

A pair of hands, one with a gold ring on the ring finger, gently cradles a small green seedling with several leaves and a small amount of dark soil. The background is dark and out of focus.

CAREERS IN AGRICULTURE

A look at the future of the industry and demand for
agricultural professionals

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To Feed a Hungry World

WE *NEED* AG CAREERS

An introduction from  **AG** Careers.com

The agricultural industry is a changing and exciting place to be. Scientific and technological advancement within agriculture has created numerous new opportunities in all realms and facets of the industry, calling on new individuals to bring with them the unique skills necessary for the increased production of food and renewable resources. With more careers possible in the industry than ever before, they are also more necessary than ever before.

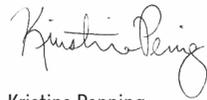
AgCareers.com has long stood by our vision of feeding the world with talent. While our efforts and those of our valued industry partners are not in vain, we are simply not reaching the right individuals fast enough. Understanding the need for increased participation in the agricultural industry in order to feed and fuel a continually growing world, we have created this publication “Careers in

Agriculture” designed to encourage people from all backgrounds to pursue careers in this industry. A dialogue has thus been set forth around the challenges facing the agricultural workforce both today and tomorrow; the multitude of diverse and interesting opportunities available globally in agriculture and food; and how to go about pursuing a career in the agricultural industry.

We invite you to explore the following pages to learn about the potential agriculture holds for you. Discover why agricultural careers are relevant and needed. Understand agriculture as a chief industry around the world. Learn how the industry is changing and ready to welcome new ideas and different experiences. Visualize the future of agriculture and how everyone has the capability and is invited to make this their career path.

While we have faith in this publication and its intended message to inspire movement toward careers in agriculture, we know that we cannot, and this book cannot, accomplish this monumental task on our own. Therefore, we ask that you share this publication with those you feel could benefit from it. Send it to your friend who has a passion for science but isn't sure which career path is most intriguing. Pass it along to a student searching for a career matching their interests in technology. Share it with someone you know who may not realize the vast career opportunities in agriculture beyond production.

We wish you the best of luck on your journey, and we believe that agriculture is the right path for you. Start here, and start now.



Kristine Penning
Creative Marketing Specialist

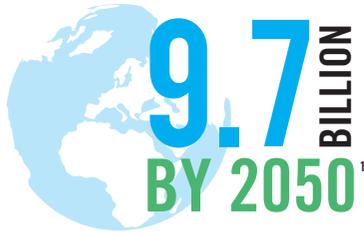


Erika Osmundson
Director of Marketing & Communications



THE WORLD *NEEDS* AGRICULTURAL CAREERS

The United Nations projects the global population to reach



AT PRESENT:



To account for a growing and already hungry planet, agricultural production will need to increase to meet food demand by



In order to meet the hefty demands of feeding and nourishing a growing world, there will need to be an influx of qualified employees in:



AGRIBUSINESS



AG MECHANICS



ANIMAL SCIENCE



FOOD SCIENCE



NATURAL RESOURCES



PLANT SCIENCE

YET AGRICULTURAL GRADS MAKE UP A MERE 1% WHILE THERE ARE NEARLY 2X THE AMOUNT OF JOB OPENINGS AVAILABLE.⁴

“An average of 35,400 new U.S. graduates with expertise in food, agriculture, renewable resources, or the environment are expected to fill 57,900 average annual openings.” - Allan Goecker, USDA 2015-2050 Employment Opportunities

¹United Nations, *World Population Prospects*

²United Nations, *Sustainable Consumption and Production*

³Alexandratos, Nikos & Bruinsma, *World Agriculture Towards 2030/2050*

⁴AgCareers.com, *Agriculture, Food & Natural Resources Enrollment & Employment Outlook*



THE *SINGLE* GREATEST CHALLENGE

Excerpts from an interview with Keegan Kautzky, Director of National Education Programs and Partnerships of the World Food Prize Foundation



The single greatest challenge we face is, how will we feed 9.5 billion people within the next 35 years? By the year 2050, we will need to be producing enough in diverse foods but also making them

accessible, distributing them evenly throughout the world, and making sure that every person on the planet can afford healthy, nutritious food that will meet their dietary needs. There has never been a more monumental challenge than that.

There are other things we're going to have to do to make sure it's possible to feed 9.5 billion people. We have emerging plant and animal diseases that we're facing. We're going to have limited resources; less available clean water to work with. How do we do that with increasingly erratic weather conditions and climate change? All of these new problems that we're going to

*Agricultural careers
are at the heart of
solving almost all of
these challenges.*

face in the next 20-30 years, things we're already facing now, are going to make that that much harder. There's one grand challenge we have to face—feeding 9.5 billion people—but there are all of these other problems and threats. How do we solve them effectively?

There are 70 million high school students in America, and most of them have no idea what they could do in the world and how they can make a difference. When we look at all students in the country, how is it that only 2-3% of them will participate in agricultural education courses? Or FFA? Or 4-H? Or a science fair? There are so many passionate, incredible young people in this country who will never understand what agriculture is and why the food system matters. They will never know all the things they could do to make a difference in the world. If a student is graduating high school today, they're going to be right in the middle of their professional career when this challenge hits its summit. Everything we do should be focused on preparing this generation of workers and these young leaders to solve these problems and meet this challenge.



Watch Keegan's full interview above

Agricultural careers are at the heart of solving almost all of these challenges. Instead of viewing these challenges as daunting, we should view this as an opportunity. This generation of young leaders and scientists and agriculturalists and engineers are going to solve some of the biggest problems we've ever faced. They have the chance to prove themselves and make a real difference in the world. This generation gets to tackle these issues and solve them. In agriculture, we should realize that every one of these majors, every career can directly help us address this: producing enough food and making sure that people have what they need to get along and survive and live a happy, healthy productive life.

If you want to have a fulfilling career that really matters, this is where you should be. As an engineer, you could be working to develop clean water systems that will protect tens of millions of kids' lives and improve the health of hundreds of millions of people around the world. You could, as a food scientist, figure out ways to better preserve food so it lasts longer on the shelf, so the cost is lower and more families could afford it, because we don't

If you want to have a fulfilling career that really matters, this is where you should be.

have to just produce more. Too often, we think that you have to be a farmer in the field, or you have to be a producer, or you have to be running an agricultural business to be a part of that community. We need food scientists as much as we need agronomists and agricultural engineers and economists. We're going to need diverse perspectives. We need agronomists in the future working as economists. We need mathematicians helping us understand statistics and commodity prices and trade regimes. So whether you are working on the farm or in the office, whether you are an engineer or an entrepreneur, or an epidemiologist, everyone has a part to play, and we really need to redefine agriculture. Whatever your passion is—arts, humanities, languages, sciences, whatever it is that you care about, that you love and enjoy every day—we need your talent and your passion in agriculture.

5 AMAZING THINGS YOU CAN DO IN AGRICULTURE



By Becky Parker, Project and Partnership Strategist at AgScape

Close your eyes and imagine your future. Do you dream of fame and fortune? Are you longing for an opportunity to apply your passion? Do you want to help people, or make a positive impact on the environment? Would you be surprised to learn that a career in agriculture can let you realize your dreams? The opportunities in agriculture are endless, and so are the benefits! Here are 5 amazing things you can do with a career in agriculture.



1 SEE THE WORLD

Agriculture is everywhere, and you can hop on for the ride. Do you want to spend a few months abroad to see another country? You can work on a dairy farm in New Zealand, a horticulture operation in Holland, or make wine in France. There are plenty of ways for you to get hands-on experience while traveling the world and learning about the different cultures in agriculture. Full-time jobs can take you abroad too! Many agribusinesses are multi-national companies, so you could have the opportunity to work in an office in Sydney, Australia, or maybe Brussels, Belgium. Whether it is a small, rural town or a big urban city; close to home or on the other side of the world - agriculture can take you there.



2 MAKE THE NEWEST DISCOVERY

Jobs in STEM (Science, Technology, Engineering and Math) are plentiful in agriculture. Every day, people are working in agriculture careers doing things like developing drought-resistant crops, manufacturing plastics from plants, or improving animal welfare through new barn designs. In a career in agriculture, you could be part of the next big discovery, which makes a positive impact on people, plants, animals, or the environment. Are you up to the challenge?

“If you are passionate and willing to work hard, the opportunities are endless.”



3 *PROVIDE NOURISHMENT*

It's hard to watch the TV or flip through your news feed without seeing something about health and nutrition. Everybody is talking about what we put in our mouths, and it turns out that there will be 9+ billion mouths to feed by 2050. Agriculture is about food: growing, processing, preparing, and improving. Maybe you will be a food scientist developing healthy 'ready-made' meals, or a farmer raising livestock to supply people with nutritious protein. You can make a career choice that helps people lead healthy lives.



4 *WORK WITH THE LATEST TECHNOLOGY*

Do you know that the agriculture sector uses robots to milk cows, and in warehouses to move food products? What about the fact that many farmers are using drones to check their crops and livestock? Or that scientists can change one or two genes in a plant's DNA to make it resistant to a certain insect? If you are always looking for the latest gadget, downloading the latest app, or thinking about how to improve your everyday life, you can apply your love of technology in agriculture.



5 *BUILD INCREDIBLE RELATIONSHIPS*

Perhaps one of the best things about agriculture is the people. Working in the agriculture and food sector is really like being part of a big family. Once you are in, there is a spot for everyone, and the door is always open. If you are passionate and willing to work hard, the opportunities are endless. Many people say that once you have worked in agriculture, you will never leave. The network you build can take you to different areas of the sector, different companies, and even different countries.



AGRICULTURAL CAREERS AT HOME & ABROAD

No matter where you reside in the world, agriculture is all around, and careers must exist globally in order for the industry to continue to thrive and connect. Take a glance at the agricultural landscape of the United States. Learn about the chief industries and career types at home in the U.S. then take a glance at international career opportunities with four industry leaders in hundreds of countries. Whether you would like to remain close to your roots or explore the world, agriculture holds boundless adventures.

50 STATES OF AGRICULTURE

By Kristine Penning, AgCareers.com

Agriculture accounts for much of the United States of America's economy as one of its top industries. The United States Department of Agriculture cites that "Agriculture and agriculture-related industries contributed \$985 billion to the U.S. gross domestic product (GDP) in 2014, a 5.7% share."¹ The United States exports agricultural goods and commodities throughout the world, especially to the European Union and Asia.²

In order to continue this monumental task of supplying vast income to the United States economy, careers in agriculture must continue to be filled. The U.S. Bureau of

workforce to increase in size in the next year, citing growth strategy as the reason behind the anticipated increase.⁵

Knowing all of this growth is occurring, the opportunity is open and available to all agricultural professionals to explore careers throughout the United States. Agriculture can be found virtually everywhere in America, especially when searching for opportunities in agribusiness. Each state has their own unique agricultural products unique to their climate, their natural resources, and their land and soil types.

Agriculture accounts for approximately 10% of United States jobs.

Labor Statistics expects "total employment in 2024 will reach 160.3 million, an increase from 2014 of almost 9.8 million jobs."³ Agriculture and its related industries account for approximately 10% of those jobs, according to the United States Department of Agriculture. On-farm employment accounts for more than 2.6 million jobs, and food-related services including manufacturing account for more than 13 million jobs, accounting for 14% of all U.S. manufacturing jobs.⁴ The 2016-2017 AgCareers.com Agribusiness HR Review found that nearly 45% of participating agricultural employers expected their

For both rural and urban professionals, however, roots often run deep in agriculture, and at times, talent is kept close to home when it could make a much larger impact elsewhere. Therefore, relocation is important to be open-minded toward. In a 2014 study done by AgCareers.com, 39% of employed and 49% of unemployed job candidates stated that they were willing to relocate for the right job opportunity.⁶

Take time to explore the following pages discussing top agricultural industries and career types by state (according to data from AgCareers.com).

¹ USDA ERS "Ag and Food Sectors and the Economy"

² USDA ERS "US Agricultural Trade - Exports"

³ Henderson, "Industry Employment and Output Projections to 2024: Monthly Labor Review: U.S. Bureau of Labor Statistics"

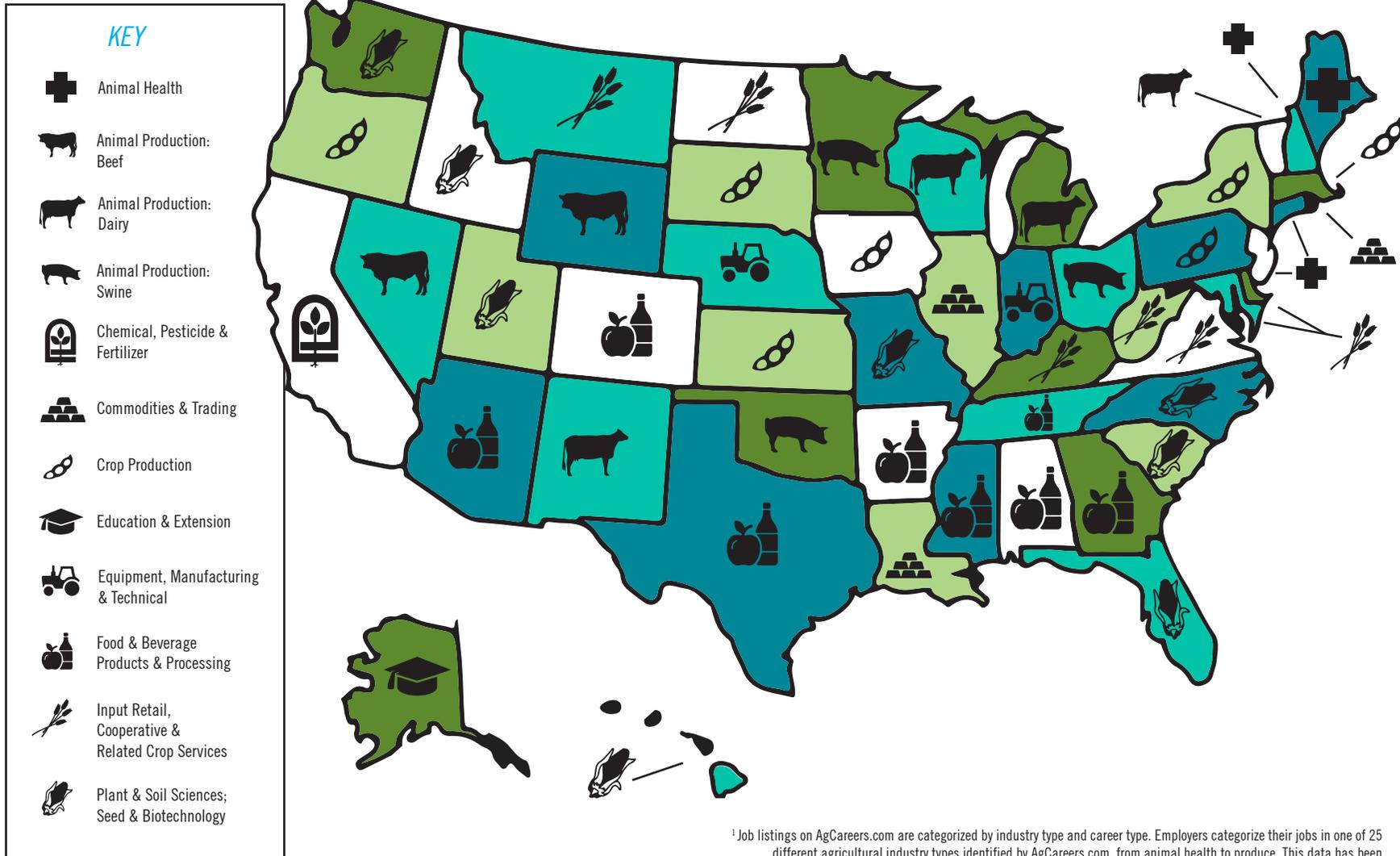
⁴ USDA ERS "Ag and Food Sectors and the Economy"

⁵ AgCareers.com, "2016-2017 Agribusiness HR Review"

⁶ AgCareers.com, "Candidate Motivation and Behavior in the Agricultural Industry"

STATES OF *INDUSTRY*

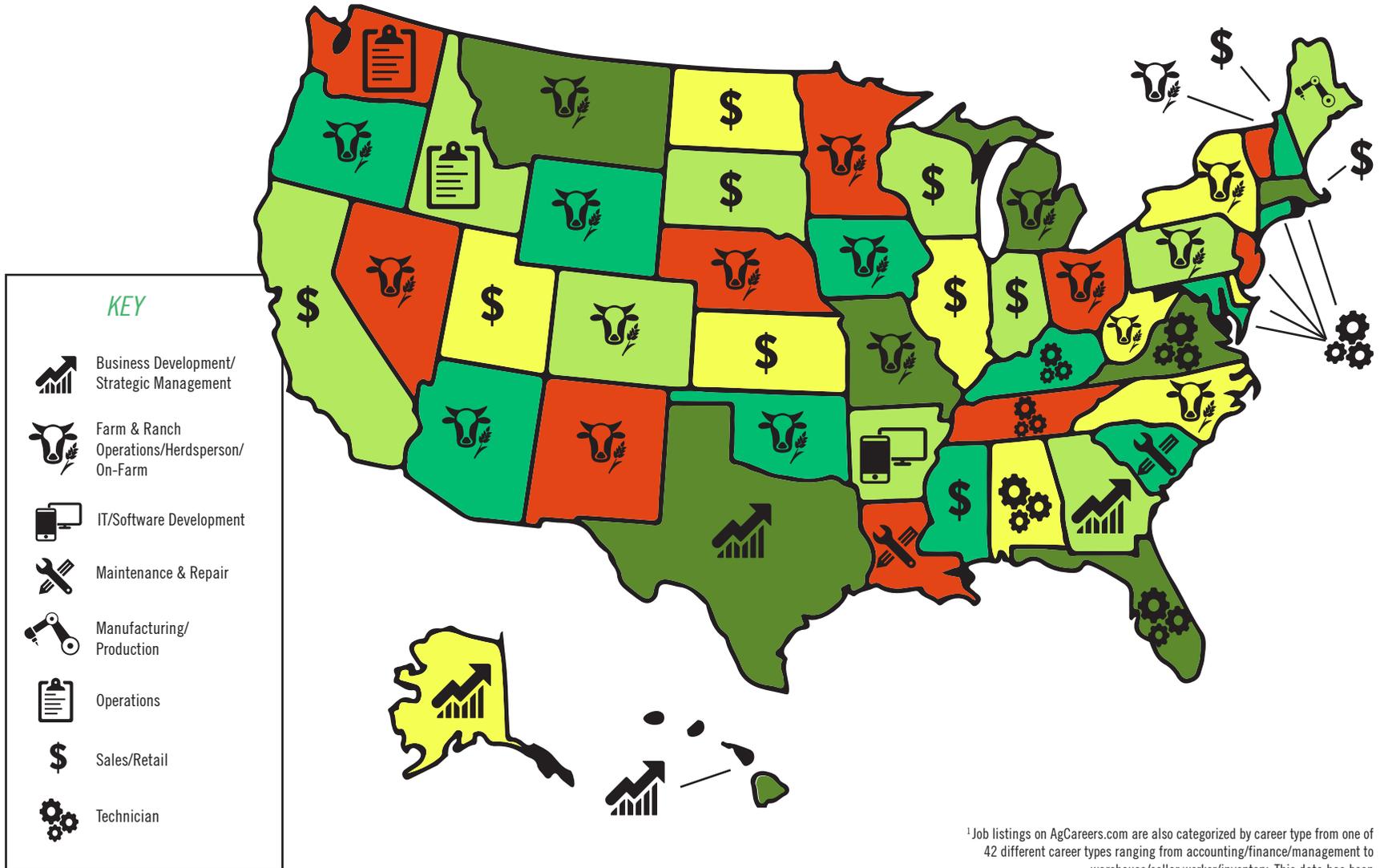
AgCareers.com records data according to top industry types in each of the 50 United States.¹
The map below displays the most popular industry type in each state.



¹ Job listings on AgCareers.com are categorized by industry type and career type. Employers categorize their jobs in one of 25 different agricultural industry types identified by AgCareers.com, from animal health to produce. This data has been gleaned from the 2016 AgCareers.com Agribusiness Job Report. For information regarding top outputs by each state, visit the United States Department of Agriculture Economic Research Services' State Fact Sheets Database.

STATES OF CAREERS

AgCareers.com records data according to top career types in each of the 50 United States.¹ A career type differs from an industry type in that a career type concerns a job such as “agronomist” whereas an industry that would correlate to that career would be “plant and soil sciences.” The map below displays the most popular career type in each state.



¹ Job listings on AgCareers.com are also categorized by career type from one of 42 different career types ranging from accounting/finance/management to warehouse/cellar worker/inventory. This data has been gleaned from the 2016 AgCareers.com Agribusiness Job Report.

AGRICULTURE AROUND THE GLOBE

Opportunities in agriculture abound globally in nearly every nation. Hear from these leading agricultural organizations about their global presences.



Looking for a career in a global industry that employs a broad range of professions, from accounting to quality control? One that produces wholesome, innovative foods using cutting edge technology? One whose products are traded around the world? Then look no further than the fresh produce and floral industry – that's right, fruit, vegetables, nuts and flowers.

Youye “Lola” Song discovered the fresh produce industry in 2013. She was a senior at Cornell University when she was invited to participate in a program called Career Pathways. The multilingual native of China was studying food science, marketing and business management. Career Pathways, hosted by Center for Growing Talent by PMA, introduces university students to career opportunities in the fresh produce industry.

“The industry's lack of, and therefore need for, young and diverse talents surprised me,” said Song.

After graduation, Song joined a U.S.-based international trading company as an account executive servicing clients across Asia.

Few people think of the fresh produce and floral industry as a career opportunity. That's despite the fact that globally the industry is a multi-trillion dollar business. U.S. retail produce department sales alone were valued at \$63 billion in 2014, reports Nielsen Perishables Group. And yet few industries offer as diverse a range of career opportunities – from farm to store and all the supply chain points in between. The fresh produce supply chain starts with market strategists, plant breeders, investors and others who make or drive decisions about what to plant. Running the farm itself takes horticulturists, farm managers, heavy equipment operators and others. Produce packing and shipping facilities employ food safety and quality assurance specialists, mechanics, computer operators and forklift drivers, to name just a few. Meanwhile, the staff at company headquarters includes finance, marketing, sales, accounting, human resources, legal, food safety, information technology and other professionals. Other links in the supply chain – such as warehousing and logistics, as well as the vast world of food retail – require yet more job functions. Fresh produce and floral products are grown, bought and sold around the globe, so the industry offers career opportunities around the world. Increasingly, today's larger fresh produce and floral businesses operate internationally or have international partners, so that they can buy or sell goods year-round.

“I definitely recommend a career in fresh produce – work in the industry is dynamic, challenging, fun, and fulfilling,” said Song. “I especially enjoy working with farmers who tend their crops like their children, with confidence, care, and pride. It gives me confidence that I am bringing quality to my customers.”

In fact, Song is so dedicated to her new industry that she now volunteers to mentor college students herself.

- Alicia Calhoun, Vice President - Talent Portfolio



Agriculture is an industry with a growing international presence which provides opportunities in many areas of business. At DuPont, we have operations in over 90 countries around the world which produces various opportunities in sales, production, research, agronomy, engineering, technology and many more. Individuals interested in positions abroad at DuPont can visit our website and select any country to review what opportunities are available at any time. While not every role will be able to hire from abroad, candidates seeking international opportunities should also consider looking at opportunities here in the United States. As an international organization, many of our positions in the states collaborate with sites worldwide which provides the opportunity to not only work on global projects but can also present opportunities to visit international sites as business needs arise.

- Jennifer Struck, Talent Acquisition Specialist



Photo Credit: PMA



Photo Credit: Pioneer Brand Products - Australia

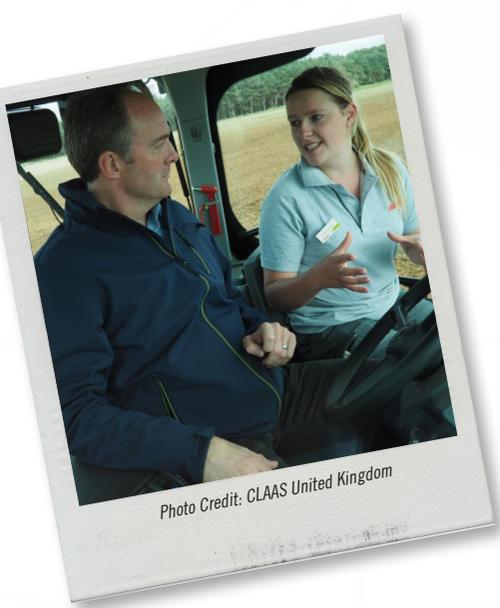


Photo Credit: CLAAS United Kingdom

CLAAS

CLAAS is a family-owned business founded in 1913 and is one of the world's leading manufacturers of agricultural equipment. The company, with corporate headquarters in Harsewinkel, Westphalia Germany, is the European market leader in combine harvesters. We are also a top performer in worldwide agricultural engineering with tractors, agricultural balers and green harvesting machinery.

Agricultural technology is one of the world's most vital economic sectors.

After all, the world's population is growing all the time – by 2025, our Earth will be home to around 8 billion people. Modern harvesting machinery is helping to cope with the increasing demand for food. High-tech products from CLAAS are currently in use in 140 countries. Ensuring exactly this for the future is our ambition at CLAAS. Therefore, not “any old job” awaits you in our company, but the challenging task of paving the way for ever increasing harvests worldwide through innovative technology. More than 11,000 employees are engaged in this task in 140 countries; talented people from all professions, who make their daily contribution towards feeding the world. Candidates for employment do not necessarily need to have specific knowledge in agricultural technology if interested in joining us in this exciting world of work.

CLAAS offers a range of opportunities for our staff to work abroad including short stays in the form of business trips or an international assignment for a limited period of time or taking on a local employment contract at a CLAAS company abroad. During an international assignment, employees will work at one of our foreign companies for a limited period. They support the establishment and development of our companies and assist in the training and integration of multinational, multicultural and multilingual teams, as well as promoting the transfer of expertise and cultural values within the CLAAS Group. An estimated 50 employees from various companies are currently at work as expatriates in 14 countries around the globe. Each of these employees will have very different experiences during their time abroad.

CLAAS North America is consistently expanding our reach locally as well for talented individuals to join our CLAAS family. Some disciplines we look to hire include engineers, technical specialists, product specialists, and sales personnel.

- Diane Vincentini, Human Resources Manager

zoetis™

Zoetis is the world's leading animal health company. Career opportunities span the globe. At Zoetis, you could research fish pathogens in Suzhou Shi, China. You could manage veterinary projects in Zaventem, Belgium. You could lead Zoetis' poultry business in Jakarta, Indonesia. You could sell medicines in Chapecó, Brazil. The international opportunities at Zoetis are boundless.

Today's world is ever more interconnected. Modern agriculturalists know the world relies on them to create a sustainable, safe, and nutritious food supply. Also important is the research and development of medicines that prevent the spread of disease among animals and humans. Food security and zoonotic diseases are just two examples of the global interconnectedness of agriculture; many more exist. Zoetis employs more than 9,000 people worldwide who have the singular focus of improving animal health around the world.

Working at Zoetis, you will contribute to the important role animals play in people's lives—for nutrition (meat, milk, and eggs) and companionship. When families throughout the world sit down at their tables for a meal, they put their trust and confidence in farmers to raise healthy animals. And the world's farmers count on Zoetis to support them. With more than 60 years of experience, Zoetis discovers, develops, manufactures, and markets veterinary medicines and vaccines, complemented by diagnostic products, genetic tests, and a range of services.

Our employees have the opportunity to explore many types of career paths and tap into new growth potential, including in international roles. Zoetis is headquartered in Parsippany, New Jersey, and we operate in approximately 45 countries. At all of our locations, we focus on the next generation of leaders by investing in the growth and development of our colleagues. And we work together to advance animal health around the globe.

- Janine Knaup,
Talent Management Lead



Photo Credit: Zoetis; National Wool Growers Association of South Africa

AGRICULTURAL CAREERS ARE FOR EVERYONE

No matter what your interest or your background, there is an agricultural career that is perfect for you. Hear from current agricultural employees that are doing fascinating work in their fields with some of the leading companies in their industries, and learn about careers you might not expect to find in the agriculture and food industries.

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CAREERS YOU WOULDN'T EXPECT TO FIND IN AG

By Kristine Penning, AgCareers.com

Typically, when one imagines agriculture, the one career that comes to mind is a farmer. While farmers are highly needed and irreplaceable in the agricultural industry, agriculture continues to advance, and new and exciting careers are being created all the time. Today, whatever your passion, you can pair it with an important career in agriculture. If you take a look at AgCareers.com, you'll find this to be especially true. Some of the most surprising careers I have found on the site include a nurse, a chaplain, and a radio broadcaster.

You'll find in the AgCareers.com Career Profiles that careers are split into seven pathways of which your interests may be classified: agricultural business, agricultural mechanics, animal science, environmental services, food science, natural resources, and plant science. But you don't have to limit your interests to these categories. You may find yourself working in any of those pathways by pursuing your passions.

If you are passionate about art or writing...

The story of agriculture needs to be told to the masses. Talented artists specializing in all different kinds of media and writers are needed to champion the industry. Look for careers in graphic design, digital media, communications, journalism, and photography. Plus, no matter which career you choose, at least choose to be artistic on the side.

If you are passionate about social sciences...

Agriculture is diversifying, and barriers must be broken in order for the industry to continue to progress around the world. For individuals interested and educated in languages, interpreters and bilingual specialists are needed to bridge the communication gaps between peoples of different cultures and backgrounds. Also, global travel is intricate to many agricultural organizations, and careers in which travel is guaranteed are not difficult to find. Consider careers in recruiting or human resources, international relations, or merchandising.

If you are passionate about health and wellness...

Dieticians and nutritionists play an important part in agriculture by acting as food scientists and understanding how the foods that we eat affect us. Animal health is also highly integral to agriculture. Careers include veterinarians, animal welfare specialists, and animal physical therapists.

If you are passionate about technology...

Technology is nothing new to agriculture; the industry is bursting with opportunities to innovate and improve

agricultural practices and data cultivation. Careers abound in precision agriculture, information technology, software development, and engineering.

If you are passionate about education...

Agricultural teachers are in short supply but highly needed in order to foster interest in agriculture in future generations. Furthermore, opportunities are available with agricultural associations aimed at educating and empowering young agriculturalists. Since education is a lifelong journey, look for work in extension, consulting, advocacy, or Farm Bureau opportunities if interested in working with adults.

If you are passionate about mathematics or science...

You've hit the jackpot! Agriculture overflows with careers rooted in science and math. You'll find that nearly every career listed in the AgCareers.com Career Profiles calls for at least basic knowledge in mathematics and some kind of science.

Nearly any career you can think of can be translated in an agricultural career. Explore opportunities with optimism, and you won't be disappointed.



Transportation may not be traditionally associated with the stereotypical image of agriculture, but Ben Doane, Barge Freight Merchandiser with CHS, Inc., knows its utmost importance.

“Growing up in a city, I wasn’t aware of how important barges are,” Ben said. “We’re feeding the global marketplace by exporting the various commodities that go into barges like corn, soybeans, grain byproducts, and wheat. If you shut down rail transportation, barge transportation, and ocean transportation, you’re cutting off the supply of those grains to the entire global marketplace, so it’s absolutely crucial.”

Ben, unlike many of his colleagues, does not have a background in agriculture. He grew up in urban St. Paul, Minnesota and tried working in various industries before finding out about CHS, Inc. His interest was peaked after learning about the global need for agriculture.

Having worked with CHS, Inc. for ten years, Ben books barge freight daily for terminals on the company’s river system that they supply barges for. This equates to competing in a volatile market.

“It goes up and down on a daily basis, so you’re trying to manage that and make money,” Ben said. “You’re studying boat logistics and keeping barges in front of terminals. You watch outside factors and economic factors like weather. Weather has a huge impact on transportation. Where different commodities flow is dependent on bids and offers in various parts of the world.”

In a role such as Ben’s, no day is ever the same.

“There are always different variables and dynamics that affect what we do,” Ben said. “Whether it’s boat logistics, high water, low water, a heavy grain harvest happening, all of those kinds of things affect what we do. No one month, no one week is the same as the next.”

Despite an often challenging atmosphere, Ben enjoys his work and the strong relationships he has built with customers and vendors because of it.

“Talking to people every day and developing relationships and building rapport helps you accomplish business,” Ben said.

Ben recommends that young professionals interested in grain merchandising study agricultural business or economics as well as possessing a strong attention to detail, a willingness to work, and a willingness to learn.

“As long as you’re willing to learn, it’s an interesting industry and you see a lot in terms of international trade and the global marketplace,” Ben said. “Also, remember that you don’t have to come from a rural background to get into agriculture.”



TICKET TO BARGE

“You don’t have to come from a rural background to get into agriculture.”

FIELDS OF OPPORTUNITY



While Eric Wuebker's title is Data Acquisition and Test Technician with CLAAS America, he possesses the skills of a "jack-of-all-trades."

"Each machine has mechanical, electrical, and hydraulic systems," Eric said.

"Reading our instrumentation data and finding where issues come up requires a good sense of multiple computer software. Communication is also very important. If you can't communicate what is happening in the field, then the knowledge gained can be lost."

Eric got interested in the fast-paced world of agricultural mechanics after an internship with Ag Leader Technology in Ames, Iowa.

"I grew to enjoy the precision ag equipment and how much more efficient and simpler farming could become with the proper set up," Eric said.

No day is ever quite the same for Eric. One day he might be fixing a machine and the next, he might be completing a report from instrumentation equipment.

"Everything that happens in the field needs to be



communicated to the designers so that they understand exactly what is happening and what needs to change," Eric said.

Eric has experienced several perks while working with international machinery manufacturer CLAAS, including travel. He has been all over the United States as well as Canada, Germany, Argentina and Hungary. With the opportunities also come challenges, however.

"There can be extremely long days while working in the field and we can be away from home for extended

periods of time," Eric said.

A recent college graduate, Eric recommends knowledge of agricultural machinery, electronic systems, and hydraulic systems to pursue a career similar to his own. However, he mostly stressed the importance of internships.

"Work hard in the classroom, but don't be afraid to take time off of school to get real job experience with internships," Eric said. "You can learn just as much from one internship as you can from 4 years of college. "

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Growing up on a dairy farm in Southwest Wisconsin, Dave Austin got his introduction to agricultural technology when tracking genetics and milk production records of his family's herd.

"While earning my B.S. degree in Agronomy at the University of

Wisconsin-Madison, I got a job in the Agronomy Molecular Biology Lab," Dave said. "While I was learning about DNA in the classroom from books and lectures, I got hands-on technology experience conducting a genetic marker study to determine the origins of current-day alfalfa varieties in North America. The first time I did a DNA extraction in the lab, I knew that I wanted to pursue an agricultural technology career."

A master's and a doctorate degree in plant breeding and genetics later, Dave learned about a position at DuPont Pioneer in Johnston, Iowa in their Research Information Management group.

"Plant scientists needed analytic and software solutions to implement new molecular breeding methods and technologies to more quickly develop superior products," Dave said. "Each new advance in scientific technology meant the collection and analysis of

increasing large quantities of data, which required new automated software systems."

Today, Dave works as Senior Information Technology Manager for Encirca Services at DuPont Pioneer, a new set of customized services that provide analytics and management tools for producers to help them boost crop productivity and profitability of their farming operations.

"Encirca Services combines the latest technology for weather, soils, agronomy and analytics to help producers maximize crop yields and reduce risk," Dave said. "To deliver innovative solutions in precision ag, we leverage a collaborative force of experts spanning fields such as plant genetics, plant physiology, soil science, physics, meteorology, computational biology, data science, and computer science."

Dave characterizes Encirca Services as a "start-up," which he says he finds "invigorating."

"We are laser-focused on helping our customers increase the productivity and profitability of their operations," Dave said. "It is extremely satisfying to know that you are working on the cutting edge of precision agriculture, implementing new technologies that appeared to be impossible just a few years ago."

Dave spends much of his time leading software

IA - Dallas County

RM111

Planted: 05/01

ON THE CUTTING EDGE

CURRENT

23.20"
65.37"

V6

2881
+124
GDU

VT

35265
-37%
SOLAR RAD

0%

Success at VT

+/- 10 yr avg

development and data management in support of Encirca. However, he said each day is a challenge to keep up.

"New and exciting technologies are developing every day, which means we must continuously adapt and adjust our plans to meet customer needs," Dave said. "Every day is a new challenge with an associated opportunity."

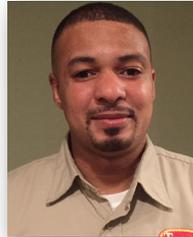
Dave encourages young professionals interested in pursuing a career in agricultural technology to seek the best education available and to possess a high level of interpersonal skills in order to work well with a team. Most of all, he recommends a "voracious appetite to learn and grow."

"There has never been a more exciting time to pursue a career in agriculture," Dave said. "Technology is making an impact in every aspect of the industry, and there is a shortage of qualified applicants for nearly every position posted. You are in demand – get engaged and be open to new opportunities you may not even know about today!"



"You are in demand. Get engaged and be open to new opportunities."

HAVE POULTRY WILL TRAVEL



Jonkenya Harried enjoys his career as Associate Director of International Commodity Sales with Tyson Foods Inc., knowing that he is making a difference.

“I am feeding people around the world a quality product, that they otherwise

would not get, at an affordable price,” Jonkenya said.

Jonkenya specializes in the sale of poultry to international markets, requiring much travel to various countries around the world.

“I look to understand their needs and help grow their markets while ensuring that Tyson’s best interest is maintained,” Jonkenya said. “It is important to build trust and relationships with our customers and to understand the markets they service.”

Hailing from Mississippi, Jonkenya developed an interest in agriculture while working with his father and grandfather. He joined FFA in high school and pursued a major in agricultural business at Alcorn State University near Lorman, Mississippi.

“I knew that an agricultural degree would offer me a sustainable career in a growing field,” Jonkenya said.

After interning with ConAgra Foods during his undergraduate studies, Jonkenya realized his passion for poultry. He has now been in his current role with Tyson Foods, Inc. for four years.

Tyson Foods, Inc. exports products to approximately 130 countries throughout the world, which comes with the task of making challenging decisions.

“We deal with trade barriers, political interference, and the unpredictability of dealing with a live animal,” Jonkenya said.

Since sales is such an integral role within the agricultural industry, Jonkenya recommends that young professionals experience working in various cross-functional roles “to gain a complete understanding of the process and work that goes into making a product.”

“It is important not to have a narrow view when working in sales,” Jonkenya said. “A good sales person must understand how changes in either supply or demand can impact team members, the company, and customers.”

Jonkenya also encourages young professionals to persevere if unable to immediately enter into a sales role.

“You will often learn the most about the products a company produces by starting in an entry-level job, and you should take that opportunity to learn everything you can about both the company and its products in those roles,” Jonkenya said. “Take time to invest in yourself by taking communication and leadership courses, get a mentor, and align yourself with people that will tell you the ‘hard’ truths but also keep you encouraged.”

“I am **feeding people** around the world a quality product that they otherwise would not get, at an affordable price.”

NEEDLE IN A HAYSTACK



the environment, including our natural resources and wildlife,” Svetlana said. “Working in this discipline every day, I design scientifically sound studies that help us understand the behavior of organic compounds in the environment. This includes conducting residue analysis of complex plant, soil, water matrices, and developing analytical methods and sampling techniques.”

*“Find your passion,
and you will be successful.”*

Svetlana’s work requires knowledge of agricultural practices, laboratory practices, sampling techniques, and environmental and analytical chemistry. She often surprises her colleagues with her agricultural knowledge.

“One can think that, as a residue chemist, you only need to know analytical chemistry,” Svetlana said. “And yet, to be successful in my job I need to understand

cross-functional disciplines, such as plant physiology or the basics of agronomy.”

Relating her career to playing “different instruments in an orchestra,” Svetlana enjoys the variety of her day-to-day work. She works with various residue levels, develops new analytical methods, designs residue studies, and works with multiple departments at Valent.

Challenges in Svetlana’s work include working with small sample sizes, avoiding sample contamination, identifying unknown compounds, and developing new, complex methods.

“More complex challenges often arise in this profession, and range from the impact of weather on crop residue studies to the impact of the political climate on our study of the environment,” Svetlana said.

Because of these challenges, Svetlana recommends this career path for anyone who enjoys solving puzzles, learning about organic compounds, and loves agriculture and the environment.

“I found my passion in solving intricate problems through residue chemistry at Valent,” Svetlana said. “Find your passion, and you will be successful.”

While Svetlana Bondarenko was pursuing a graduate-level degree, she found herself fascinated by residue chemistry.

“It is like looking for a grain of sand in an Olympic-sized swimming pool,” Svetlana said. “The particle of sand can even be masked, making it even more difficult to find. By knowing different separation and extraction techniques, and understanding gas and liquid chromatography, spectrometry, mass spectrometry and other different analytical methodology, I am able to successfully seek and analyze microscopic residues.”

Svetlana has worked as chemist with Valent USA in California for several years, recently achieving a promotion as Manager of Residue Chemistry. She takes pride in her work, knowing that she is using science to protect the environment.

“As a residue chemist, I conduct field residue studies to ensure the safety of agricultural products to people and



DOWN TO A DAIRY SCIENCE



Tyler Stratman, a farm kid from Missouri, didn't grow up around livestock, but he knew he wanted to work in a career focused on animals.

"I was more around row crops, but I always had an

interest in animals," Tyler said. "Dairy was the industry I gravitated toward, because it reminded me of the ag community I was used to growing up."

Tyler pursued education in animal science at the University of Missouri. While there, he decided to pursue a master's degree in reproductive physiology. Realizing that Missouri was "more of a cow-calf state," Tyler shifted his interests toward Idaho, the third highest-ranking state in dairy production and achieved a position as Dairy Production Specialist with Zoetis, an international animal health company.

"My job as a Dairy Production Specialist is kind of a hybrid role between a sales position but also a technical, consulting position," Tyler said. "So with that, on any given day, I could be working with farm owners and farm managers on the decision-making side by evaluating data, performance of the animals, or performance of the farm. Then there are days when I work

with employees in the barns with the cows on protocol or decisions that the owner made. Other days I work with veterinarians. Zoetis is an animal health company, so I work with veterinarians going over different products."

Tyler has been working with Zoetis for nearly a year and says the variety in his job is what he enjoys most.

"Some days I'm walking around in rubber boots and some days I'm in front of a computer," Tyler said. "I get to see the whole picture of a dairy and not just one little portion. I like being able to help influence all aspects of the organization from working with the manager to the animal caretaker."

When asked what was difficult about his role, Tyler explained that the increased concern from consumers around animal welfare and dairy production has been challenging, but he strives to bring a positive face to the industry and work to show consumers the truth behind dairy production.

"Animals are well taken care of, and a lot of consumer concerns have already been addressed by progressive dairymen," Tyler said. "We understand consumers' concerns, and we can explain how we do things."

Tyler's biggest piece of advice for students interested in pursuing a career in animal science is to experience some sort of leadership position. He said his experience within leadership positions during his undergraduate years have immensely helped his career.

"I think that when you get into a role like this, those presentation and speaking skills are going to be key," Tyler said. "You don't get out of college and magically don't have to talk in front of people anymore. You interact with a lot of owners and managers of large operations. Being able to look at information and knowing if it's relevant is also becoming important, so having statistical and analytical skills is also important."

Tyler also stressed the importance of experiencing at least one internship and to learn a second language.

"Don't be afraid to take advantage of any learning opportunity that you can," Tyler said. "If you think that a month of studying abroad in Brazil will help you get a better understanding of the dairy industry, explore that. People miss out on opportunities because they're afraid to at least give it a chance. Take the extra Spanish class in high school or college. Go on study abroad trips. I grew up in Missouri, but there's a lot of agriculture beyond that. Bring ideas from other places back. Help your producers be better from those ideas and experiences."



THE CHANGING FACE OF AGRICULTURE

As agriculture itself diversifies, so has its workforce. Today, we are seeing more women and minorities represented in the world's most important industry as well as people from more and more unique backgrounds including military veterans, disabled professionals, and urban professionals pursuing careers in agriculture. Explore the changing conversation around the face of agriculture today.

AG
Careers.com

CELEBRATING DIVERSITY



Hear from Keegan Kautzky regarding the need for increased diversity in agriculture

Keegan Kautzky, Director of National Education Programs and Partnerships of the World Food Prize Foundation, reflects on the need for diversity in agriculture

When we think about diversity, we ask, why aren't there more students that are Latino or African American in agriculture, or Asian Americans? One of the most important agriculturalists who has ever lived is still alive today. Her name is Evangelina Villegas. And she helped develop quality protein maize, which increased the digestible protein in corn. That literally improved the nutrition of tens of millions of kids around the world, because they got the essential amino acids they needed for their minds to develop and for their muscles to grow.

So here you have a Latina woman in the 1970s who develops this improved corn variety, and hundreds of millions of households everywhere are feeding their kids this improved corn variety so they grow taller and their brains fully develop. They live a better life. Almost no one has ever heard of her. Probably the most important Latina who has ever lived. The most important Latina in agriculture. Part of it is that we don't tell those stories. We don't celebrate those people and value what's happening.

Right now, at Iowa State University, there are thousands of incredible scientists and researchers and agriculturalists solving these problems. That's happening in every state. We have the largest research complex that has ever existed. Researching and studying and creating new technologies to improve the world and solve these problems. And it's happening in our own backyard. But we don't recognize it, we don't talk about it, we don't

celebrate it. It's not finding the next Norman Borlaug. It's helping show each person that they have the capacity to be Norman Borlaug and to change the world. That's maybe the bigger, deeper question. How do we create an environment that supports and creates millions of Norman Borlaug's?

There is so much talent in this world. And there is a deep passion especially among young people today to make a difference, to be connected, to understand the world that they live in, and to be a part of it. And when we talk about young people, we tend to do so in fairly derogatory ways rather than in aspirational and value-driven ways. How do we change the conversation? How do we educate and market to people to help them understand how these issues relate?

When we think about diversity, and whether or not we still have truly a population that represents and reflects all of us, there are still a lot of barriers, some seen, some unseen. We've started to make a lot of progress on gender in the agricultural industry. Where we're starting to see that is in the early stages of access to opportunities and in our educational system. We're seeing much higher rates of young women participating in secondary and collegiate programs. We're seeing that 60-70% of FFA programming is young women. We're seeing emerging leadership that is young women. But there's still a big disconnect between those mid-career professionals and

senior leadership when we look at agribusiness in America. There are very few women. There are very few racial or ethnic minorities.

We are reaching such a small segment of our potential because we're not yet opening the doors. We're not yet speaking in a way that feels inclusive and comfortable. When students come into these programs and come into companies to interview for a job, do they see people that look like them? Do they see and do they know people who have worked there, that have been a part of this organization? If they don't, they will find a great organization somewhere else. They will join another club. It's not just that we removed barriers, but we have to actively work to create an environment that is conducive and comfortable for a person to be a part of. We all want to belong. We have a very long ways to go. It's still very sad how little racial and ethnic diversity in agriculture. But when we think about geographical differences, are students from urban areas being brought into this field? They have a perspective and experience that's very relevant. Are we engaging veterans? They have a lot to contribute. Is it an environment that is comfortable for a person who is lesbian or gay or trans to help solve these problems and make agriculture better and the world better? Because that's what we should all be striving for: to utilize every person's passions and talents and energy to move us all forward to solve these problems, to make a difference.

"Women relate to each other. Women have the credibility to influence the conversation and the decisions."

WOMEN IN AGRICULTURE

Excerpts from an interview with Krysta Harden, former Deputy Secretary of the U.S. Department of Agriculture & current Vice President Public Policy & Chief Sustainability Officer with DuPont



I have encountered discrimination as a woman in agriculture, but I have never let that stop me from reaching my goals. When possible, I used the challenges to my advantage. There are times still when I am the only decision-maker at the table

who is female and that is changing. In the past, I didn't have the automatic acceptance that some of my male peers had; I always had to earn it. There have been times I felt that my ideas or concerns were dismissed or even ignored because I was a female. I found I had to work harder and to always make sure my facts were correct and I had every detail just right. There was no room for even a minor mistake. I was raised to have confidence to be that different voice and to contribute, even though it may not always be comfortable or easy.

There is a tendency sometimes to pay women less. It happened to me earlier in my career. It's not always comfortable for women to ask for raises or promotions. It can be hard to recognize your own worth when others are making you feel less. If you are working hard, making the same contributions, you deserve the same level of pay. The judgment must be based on the same criteria for both men and women. As a manager I certainly try to practice just what I preach. I recruit, hire and promote many women

because they are the best person for the job. I believe strongly that women need to help other women. We need to be fair to all candidates but certainly should be encouraging women to apply for key positions and help mentor them for growth at the highest levels.

The opportunities are endless. There's no cap anymore. We're going to see more women in the board rooms, government, leading companies, organizations, and NGOs. Women have always been involved in agriculture yet our roles haven't been valued as much as they should. My mother has always been involved in our family farm, and she had as much financial risk as my father. Many women keep the books, purchase the inputs and crop insurance and make marketing decisions. In most businesses that person would be considered the Chief Financial Officer but in many instances in a farming operation the person is called "the farm wife." Of course, many others are in the field or on the ranch doing manual labor. Just like the men, roles vary operation to operation, and all roles are equally important to the success of the business.

The good news is the awareness of women's contributions is changing. While they have traditionally been more advisors and counselors, they are now leading on the farm and ranch, in the Halls of Congress, in board rooms, anywhere decisions are being made. Women entering the work force today know they have more opportunities in agriculture, from field to fork. And, they

have strong female role models who welcome them to the industry and who will help them find the right job or role.

Our voices are needed. We bring a different perspective. We connect well with consumers. Most of the food shopping is still done by women, and even if they're not doing the shopping they're making the list. Women network. It is valuable to have women as spokespersons and leaders, talking to other women about how they feed their families — women relate to each other. Women have the credibility to influence the conversation and the decisions.

I am so excited about the future of agriculture in the U.S. and much of that excitement comes from knowing that the changes and expansion will come from different folks getting involved in the industry. They will bring new ideas, innovations and technologies. Many of these new folks will be women: wives, daughters, granddaughters, nieces and passionate young women who want to shape the future of feeding people. Not everyone will be on a farm or ranch and they will contribute to the industry in other ways. We need researchers, communicators, policy makers, teachers, nutritionists, marketers, economists, conservationists; the list is long and jobs are available!

Look at your opportunities, not your limitations. You can do it. And there are other women and men here to help. We need and want your voice, your energy, your ideas and your passion!

WOMEN IN AGRIBUSINESS

AgCareers.com conducted a survey in 2015 to collect information about the different roles men and women in the agricultural industry. Questions examined topics such as compensation, benefits, work/life balance, equality, and advocacy.

79% OF WOMEN FEEL THAT THERE IS GENDER INEQUALITY IN AGRIBUSINESS. JUST 47% OF MEN FEEL THE SAME.



WHEN ASKED ABOUT EQUAL PAY:



49%

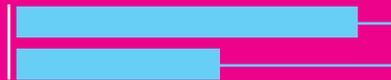
of women felt they would be better compensated if they were male.



73%

of men felt they would be paid the same if they were female, alluding that gender did not matter.

NEARLY 90% OF WOMEN FELT OPTIMISTIC ABOUT OPPORTUNITIES FOR ADVANCEMENT IN AGRICULTURE.

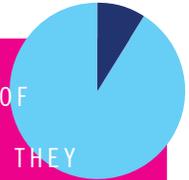


ONLY 56% OF WOMEN FELT OPTIMISTIC ABOUT THEIR OPPORTUNITIES FOR ADVANCEMENT OUTSIDE OF AGRICULTURE.

70% OF WOMEN ASPIRE TO WORK IN A HIGHER-LEVEL POSITION ONE DAY. BUT 76% EXPRESSED DIFFICULTY AS A WORKING PARENT.



MORE THAN 90% OF WOMEN STATED THAT THEY FREQUENTLY ADVOCATE FOR THE AGRICULTURAL INDUSTRY.



TOP 3 CHARACTERISTICS WOMEN FEEL THEY BRING TO AGRICULTURE:



Dependability 56%



Leadership 51%



Advocacy 31%*

View the full report:
Gender Roles & Equality in Agribusiness
on AgCareers.com.

*Totals do not equal 100%; respondents were allowed to select more than one response.

CHANGING THE CONVERSATION

By Karl Binns, Jr., MANRRS



As someone who is considered a minority and does not have a classical agricultural background, I am able to take the view of someone on the outside looking in. From the outside looking in, the agriculture industry still looks old, white and male. There is nothing wrong with any of these three things individually. However, when an industry gets stigmatized, it can be hard to recruit top talent from certain segments of the population which can lead to jobs going unfilled and stagnant growth. Those of us currently working in the industry know about the amazing research, technology and talent in agriculture. Is that message reaching everyone?

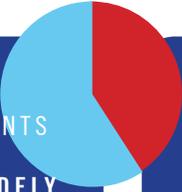
I stumbled into agriculture via a research fellowship program and I am thankful to have graduated college debt-free and have traveled the country thanks to agriculture. In many of our high schools, students who tend to perform well in math, science and English testing, seem to be steered far away from CTE programming which generally houses anything close to agriculture in public schools. When I decided to major in agribusiness, I was routinely mocked for going to college to be a “farmer.” My friends in college had no clue what I was doing and my parents, who were happy about the scholarship, really didn’t have a grasp of the broad scope of opportunities I would eventually be afforded. Even I was rather indifferent

to the idea in the beginning. In my mind, I was there for the scholarship money. If I had not joined my collegiate chapter of Minorities in Agriculture Natural Resources and Related Sciences (MANRRS) and met some amazing people of color in agriculture, natural resources and related STEM disciplines, I would have thought I did not belong in the agricultural field. This led to learning about other fantastic organizations like FFA and 4H that I had missed out on. Companies and agencies who have bought in to the ideas and practice of diversity AND inclusion should be applauded for their efforts. Please continue to partner with organizations like MANRRS, Thurgood Marshall College Fund and INROADS, but we still have work to do!

The majority of students I work with identify as minorities. Add the millennial generation component and you often have students who are very far removed from where their food comes from. There are so many negative historical perceptions, half-truths and outright wrong factoids about agriculture flying around we need to make sure education and exposure happen everywhere and not just in certain parts of the country. I would also challenge us to stop asking students what they want to be when they grow up. Some of us employed people are still trying to figure that out. Let’s ask them what problems they see that they would like to fix in the world. Inevitably, this will lead them to understand that access to safe food and fiber and our natural resources should be available to all people.

MILITARY VETERANS IN AGRICULTURE

AgCareers.com conducted a survey in 2016 aimed at both military professionals and agricultural employers, asking about the state of acceptance and active recruitment for military veterans in agriculture.



57% OF MILITARY RESPONDENTS SAID THAT VETERANS ARE WIDELY ACCEPTED AND WELCOMED INTO THE AGRICULTURAL INDUSTRY.

THE MOST-CITED REASONS FOR THIS INCLUDED:

- Outdoor/Field Work  79%
- Work that Correlates with Military Experience  61%
- Industry Culture/Professionals are More Accepting  50%*

NEARLY 90% OF EMPLOYERS STATED THAT THEY WOULD ENCOURAGE OTHER AGRICULTURAL ORGANIZATIONS TO HIRE MILITARY VETERANS.

BEST CAREER LEVEL FOR MILITARY PROFESSIONALS (RANKED BY EMPLOYERS):

- #1  Middle Management
- #2  Salaried
- #3  Hourly



47% OF VETERANS FELT AGRICULTURE WAS A MORE VIABLE CAREER PATH THAN OTHER INDUSTRIES FOR RETURNING VETERANS

TOP 3 CHARACTERISTICS VETERANS BRING ACCORDING TO EMPLOYERS:

- #1  Discipline
- #2  Reliability
- #3  Leadership

View the full report:
Veterans & Military Professionals in the Agricultural Workplace
on AgCareers.com.

*Totals do not equal 100%; respondents were allowed to select more than one response.

AGRICULTURAL CAREER PROFILES

In 2014, AgCareers.com began a project to determine and detail the various roles necessary and possible in agriculture. What started as 58 career profiles has now grown to 255, authored by AgCareers.com and with help from National FFA and Discovery Education. Here, you can explore the current 255 career profiles by clicking any of the following career pathways and then clicking on the careers of your choosing on their index pages.

**AGRICULTURAL
BUSINESS**

**AGRICULTURAL
MECHANICS**

**ANIMAL
SCIENCE**

**ENVIRONMENTAL
SERVICES**

**FOOD
SCIENCE**

**NATURAL
RESOURCES**

**PLANT
SCIENCE**

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AGRICULTURAL BUSINESS

ACCOUNTANT
ACCOUNTING MANAGER
ADMINISTRATIVE ASSISTANT
ADVISOR - GOVERNMENT STAKEHOLDER RELATIONS
AGRICULTURAL BROADCASTER
AG FINANCIAL SERVICES REPRESENTATIVE
AGRICULTURAL JOURNALIST
AGRICULTURAL LAWYER
AGRICULTURAL LEGAL ASSISTANT
AGRICULTURAL LEGISLATIVE ASSISTANT
AG LITERACY & ADVOCACY SPECIALIST
AGRICULTURAL LOAN OFFICER
AGRICULTURAL LOBBYIST
AG SCIENCE TEACHER - SECONDARY
AUDITOR
BENEFITS MANAGER
BRAND MANAGER
BUDGET ANALYST
CAREER COUNSELOR / CAREER SERVICES
CERTIFIED APPRAISER
CHIEF EXECUTIVE OFFICER
CHIEF FINANCIAL OFFICER
CHIEF OPERATING OFFICER
COLLEGE RECRUITER
COMMODITY PROCUREMENT / MERCHANDISER
COMMUNICATIONS SPECIALIST
COMPENSATION SPECIALIST
CONTROLLER
CORPORATE RECRUITER

CREDIT ANALYST
CROP ADJUSTER
CUSTOMER SERVICE REPRESENTATIVE
DATA PROCESSOR
DISPATCHER
ECONOMIST
EVENT MANAGER
EXECUTIVE ASSISTANT
EXPORT DOCUMENTATION SPECIALIST
EXPORT SALES MANAGER
EXTENSION AGENT
EXTENSION YOUTH PROGRAM COORDINATOR
FARM BUSINESS MANAGER / ACCOUNTANT
FEED MILL MANAGER
FINANCIAL ANALYST
FLEET MANAGER
GRAIN BUYER
GRAIN ELEVATOR MANAGER
GRAIN MARKETING SPECIALIST
GRAPHIC DESIGNER
HUMAN RESOURCES GENERALIST
HUMAN RESOURCES MANAGER
IT ANALYST
IT APP DEVELOPER
IT CONFIGURATOR
IT PROGRAMMER
IT SOFTWARE DEVELOPER
IT SPECIALIST
IT WEB DEVELOPER

INTERN
INVENTORY / STOCK SPECIALIST
LOGISTICS & SUPPLY CHAIN MANAGER
MARKETING SPECIALIST
OFFICE MANAGER
PATENT SCIENTIST / PATENT ATTORNEY
PAYROLL ADMINISTRATOR
PORT TERMINAL MANAGER
POST-SECONDARY EDUCATOR
PROCESS IMPROVEMENT MANAGER
PROCUREMENT SPECIALIST
PRODUCT DEVELOPMENT MANAGER
PRODUCTION MANAGER
PUBLIC RELATIONS SPECIALIST
PURCHASING ANALYST
QUALITY ASSURANCE AUDITOR
QUALITY ASSURANCE MANAGER
REAL ESTATE MANAGER
RECEPTIONIST
RETAIL BRANCH MANAGER
RISK MANAGEMENT SPECIALIST
SALES REPRESENTATIVE
SALES TRAINER
SHIPPING COORDINATOR
SOCIAL MEDIA STRATEGIST
SUPPLY CHAIN MANAGER
WAREHOUSE / FACILITY MANAGER
WEIGHBRIDGE / RECEIVABLES ASSOCIATE



ACCOUNTANT

Accountants help in the preparation and examination of financial records. They also play a major role in ensuring taxes are paid and accurate financial records are kept.

Education & Training

Bachelor's degree in accounting, economics, agricultural business, or related field. An MBA or CPA (Certified Public Accountant) is highly desired.

Recommended High School Courses

Agricultural education, accounting, business courses, economics, government, computer courses

Typical Employers

Self-employed, agricultural companies, accounting firms, government agencies

Suggested Professional Organizations

CPA Connect
American Institute of CPA's
National Society of Accountants

Job Market/Outlook



Responsibilities

- Examine financial records and statements to ensure accounts are correct and in balance
- Keep records to ensure that laws and regulations are met
- Prepare tax returns and recompense taxes for clients
- Look for ways to improve efficiency in spending
- Make recommendations to leadership or clients on spending and saving
- Provide auditing services
- Organize financial records and input information into database systems
- Prepare budgets and keep track of spending throughout the year
- Create processes to make financial tracking easier for the organization
- Analyze profits and losses in order to determine greater profitability
- Compile cash and receipts from the business day (in retail setting)
- Maintain and process payroll



ACCOUNTING MANAGER

Accounting managers are responsible for the administration of management accounts, organizational budgeting and administration of accounting.

Education & Training

Bachelor's degree in accounting; certification as a CPA is highly desired as is an MBA or Master's in Accounting

Recommended High School Courses

Agricultural education, accounting, economics, government, business and computer courses

Typical Employers

Agricultural companies, accounting firms, government agencies

Suggested Professional Organizations

The American Accounting Association
American Agricultural Economics Association

Job Market/Outlook



Responsibilities

- Manage information reports on specific topics at specified intervals
- Handle budget compilation and control, with analysis of monthly reports against budgets
- Interpret the statistical and accounting information to appraise operating results in terms of cost, budgets, and policies of operation, trends and increased profit possibilities
- Maintain general ledger
- Manage the closing and balance sheet reconciliation processes
- Oversee accounting processes including financial statements reporting, foreign currency accounting, fixed assets, governmental reporting and other accounting activities
- Oversee financial risk management processes
- Coordinate the preparation of yearly budgets
- Analyze and interpret monthly operating or project performance against budget
- Develop accounting and financial management systems and reports
- Train accountants under your leadership
- Establish and monitor internal controls and processes
- Work with internal and external audit agencies on quarterly and annual income statements
- Prepare monthly management reports
- Responsible for inventory controls and accuracy



ADMINISTRATIVE ASSISTANT

An administrative assistant may also be called a secretary, clerk, or receptionist. This person is responsible for organizational and clerical tasks, often for multiple people.

Education & Training

High school diploma; associate's degree in agricultural business or a similar field is preferred

Recommended High School Courses

Agricultural education, graphic design, mathematics, business and computer courses

Typical Employers

Agricultural companies and organizations, government agencies

Suggested Professional Organizations

The Association of Executive and Administrative Professionals
The American Society of Administrative Professionals

Job Market/Outlook



Responsibilities

- Answer telephone, take messages, and greet and announce visitors
- Assist with processing payroll for employees and temporary employees
- Perform general clerical tasks including typing, filing, and mail distribution
- Compile and update records through data entry; prepares various plant reports
- Record and verify information concerning matters such as shipments, schedules, and time sheets
- Maintain inventory of office supplies for administration and plant use; reorder supplies as needed
- Compile and analyze basic information for inclusion in reports or presentation materials, prepare charts, graphs, or tables as necessary
- May assist in budget preparation and in the preparation and control of records, statistics, and reports regarding operations, personnel changes, etc.
- Compose letters and memoranda; route or answer routine correspondence not requiring supervisor's attention
- Coordinates meetings, conferences, teleconferences and video conferences including reserving facilities, equipment and catering
- Organize travel schedules and arrange airline, hotel and car reservations
- Arrange accommodations and ground transportation for company and outside visitors
- Coordinate mail, shipping/receiving
- Manage multiple Outlook calendars and contacts simultaneously
- Prepare and process expense reports



ADVISOR – GOVERNMENT / STAKEHOLDER RELATIONS

Advisors work with both elected officials to provide insight and guidance on issues they may not be as familiar with. They also work with stakeholders to ensure their needs are heard and met if possible.

Education & Training

Bachelor's degree in agricultural economics, political science, finance, business, or public administration

Recommended High School Courses

Agricultural education, writing, economics, government, business and computer courses

Typical Employers

Agricultural companies, non-profits, senators and representatives

Suggested Professional Organizations

American Farm Bureau Federation
Checkoff Programs
American Association of Political Consultants

Job Market/Outlook



Responsibilities

- Assist in the development of political policies relating to agriculture
- Serve as the “expert” on agricultural topics to your superior or organization
- Advise on the development and implementation of policies that are of interest to the organization or representative
- Conduct research on topics relevant to the policies being developed
- Work to build and maintain relationships with constituents and other policy makers who may not necessarily stand in the same place on issues as you and your organization do
- Read reports and proposed policies and make suggestions or note areas of concern
- Spend time with stakeholders in order to better understand needs
- Schedule and preside over meetings relevant to area of interest
- Make presentations to leadership and stakeholders
- Solve problems, as things change unexpectedly
- Guide and direct office staff, set standards and monitor performance
- Train and teach others
- Identify partners and external organizations
- Remain up to date on global issues (regulatory, trade, disease, etc.) that could affect legislation and stakeholders and attend related events



AGRICULTURAL BROADCASTER

Agricultural broadcasters use radio or television to report on stories that will be found relevant by agricultural viewers, but that also may be used by regional and national outlets reaching non-ag viewers.

Education & Training

Bachelor's degree in communications, journalism, broadcasting or agricultural communications

Recommended High School Courses

Agricultural education, writing, English, computer courses, and public speaking

Typical Employers

Agricultural publications, newspapers, agricultural radio and television programs

Suggested Professional Organizations

National Association of Farm Broadcasters
 AgChat Foundation
 National Association of Broadcasters

Job Market/Outlook



Responsibilities

- Broadcasters may work in radio and television
- Gather and organize agriculture from news wires and other sources stories to share with viewers/listeners
- Report on news or stories of interest for specific publication/program
- Participate in determining editorial content of network programming and in the production of audio promotional, commercial, and value-added information
- Share news, weather, market, and feature programming with viewers/listeners
- Need to have the ability to relate agriculture to a consumer audience
- Attend live, in-person appearances as scheduled by stations
- Cultivate regular communication with contacts outside the station related to the agriculture industry
- Write scripts
- Put together advertisements
- Shoot video footage for segments
- Put together advertisement packages
- Be able to interview people in the studio and on location



AGRICULTURAL FINANCIAL SERVICES REPRESENTATIVE

Ag Financial Service Representatives are in charge of creating and increasing a unique loan/insurance portfolio, which includes term, mortgage, and operating loans. Their main customers are usually closely tied with part-time farms, hobby farms, niche agricultural farms, recreational properties, and traditional farms.

Education & Training

Bachelor's degree in agricultural business, finance, or business administration

Recommended High School Courses

Agricultural education, economics, accounting, and mathematics

Typical Employers

Agricultural lending banks and insurance companies

Suggested Professional Organizations

State Agribusiness Associations
 American Society of Farm Managers and Rural Appraisers
 American Society of Agricultural Appraisers

Job Market/Outlook



Responsibilities

- Market credit and financial services and establishing new market relationships in the consumer, farm, ranch and residential markets
- Provide documentation support for all monitoring/compliance functions with regard to existing credits within portfolios
- Ensure the certification of completions, conditions and draw-down paperwork is met
- Generate reports that monitor credit and administrative documentation
- Generate reports for debt management, annual reviews and evaluations
- Prepare documentation for lending submissions
- Ensure compliance within lending policies
- May assist in other administration tasks as required such as accounting functions
- Assist in the development of lending structures
- Perform sales of insurance products to customers and non-customer prospects
- Develop proposals for one-on-one sales calls with customers or prospects, and provide assistance with insurance sales proposals for financial officers in preparation of prospect sales calls
- Coordinate insurance programs within assigned marketing areas
- Gather acreage reports and production histories for servicing of crop insurance policies



AGRICULTURAL JOURNALIST

Agricultural journalists report and write features that will be found relevant by those involved in agriculture, but stories may also be seen by non-ag readers.

Education & Training

Bachelor's degree in communications, journalism, or agricultural communications; photography and video skills are an added bonus

Recommended High School Courses

Agricultural education, writing, English, computer courses

Typical Employers

Agricultural publications, newspapers, agricultural companies with communications departments

Suggested Professional Organizations

North American Agricultural Journalists
Public Relations Society of America
National Agri-Marketing Association

Job Market/Outlook



Responsibilities

- Plan and produce web and print articles that report current trends in agriculture
- Develop new business sources for articles and creates special reports as needed.
- May assist in the shaping of the editorial calendar for the publication
- Research and verify data and sources for stories
- Edit and copy-fit materials you write or
- Use social media to push stories, build traffic on social channels, and distribute content
- Proofread material for accuracy, which may involve working with experts for accuracy and appropriateness
- Photograph events or story subjects
- Assist in designing the layout of publications
- Topics agricultural journalists may cover
 - Agriculture news
 - Agriculture markets
 - Disease or food-borne pathogen outbreaks
 - Fairs and expos
 - New technologies in seed, equipment, chemistry, or farming practices
 - Weather
 - Labor
 - Governmental regulations
 - Training and further education opportunities



AGRICULTURAL LAWYER

Agriculture is one of the most regulated industries in our society today, so it is fitting that there are lawyers that specialize in laws pertaining to agriculture. These lawyers deal with water, environmental issues, agricultural labor, marketing, land use, pesticide use, and seed issues.

Education & Training

Bachelor's degree in relevant field, a Juris Doctor, and passing the bar exam in your state

Recommended High School Courses

Agricultural education, English, social sciences, public speaking, debate

Typical Employers

Self-employed, agricultural companies and organizations, government agencies

Suggested Professional Organizations

American Bar Association
 American Land Title Association
 The Food and Drug Law Institute

Job Market/Outlook



Responsibilities

- Assist farmers in succession planning in order to help preserve farms for future generations
- Assist in zoning, land use cases and eminent domain issues
- Obtain licenses and permits that agricultural entities may need in order to operate, such as setting up corporations, proprietorships, and partnerships
- Be a source of information to those in the agricultural industry on labor and employment laws
- Provide guidance in regulatory compliance
- Understand environmental legislation vs. landowner rights
- Assist in the implementation of federal farm policies as they apply within the state
- Provide assistance in preventing fraud and deception in packaging and labeling of products
- Give general legal counsel to individuals, companies or organizations
- Identify and carry out opportunities to help protect farms from urban sprawl and activists
- Develop a detailed knowledge of issues affecting agriculture
- Build relationships with local farmers, extension staff and scientists
- Work collaboratively with peers and external organizations



AGRICULTURAL LEGAL ASSISTANT

Agricultural legal assistants cannot give legal advice or represent individuals in court, but they play an important role in providing support for supervising lawyers.

Education & Training

Bachelor's degree in relevant field such as political science or a paralegal associate's degree

Recommended High School Courses

Agricultural education, English, computer courses

Typical Employers

Lawyers and law offices, agricultural companies or organizations

Suggested Professional Organizations

National Federation of Paralegal Associations
 State/Local Paralegal Associations
 The Association of Legal Assistants and Paralegals

Job Market/Outlook



Responsibilities

- Draft contracts and other legal documents to submit to a lawyer for review so that the lawyer can verify that the requirements of the client and the law are met
- Perform legal research that will help support arguments in the court setting or in legal briefs
- Travel to farms or job sites in order to take photo documentation or conduct interviews if needed
- Assist in real estate closings, contract writing, filing articles of incorporation and partnership agreements
- Meticulously edit documents
- Provide customer service to clients
- Conduct preliminary interviews of clients and/or witnesses
- Take courses to expand knowledge and capabilities
- File and manage electronic contracts
- Draft correspondence to outside counsels and third parties
- Contact clients to discuss areas of concern and solve problems
- Assist in budgeting and invoice management
- Provide assistance in meeting planning and booking travel

AGRICULTURAL LEGISLATIVE ASSISTANT

An Agriculture Legislative Assistant serves as an agricultural policy expert for local, state, or federal elected or appointed officials within a congressional or administrative office. They assist in managing various aspects of the officials' agriculture portfolio or other issues relating to the agricultural industry – including, but not limited to: agriculture, energy, environmental sciences, food, young and beginning farmers, commodities, etc.

Education & Training

Bachelor's degree in relevant field such as political science, law, journalism, or public relations

Recommended High School Courses

Agricultural education, civics, economics, and business courses

Typical Employers

Local, state, or federal elected or appointed officials within a congressional or administrative office

Suggested Professional Organizations

Association of Government Relations Professionals
State Agribusiness Associations
Partisan Congressional Committees

Job Market/Outlook



Responsibilities

- Familiarity with legislative administrative and judicial systems
- Maintain a working knowledge of legislative documents, legislation, policies, and initiatives
- Track advancement of related bills through the legislative process
- Conduct research to make sound legislative recommendations or implementations to officials or other working counterparts
- Garner support for the legislation and coordinate introduction of bills
- Brief the official on such subject matter and prepare him or her for official remarks and appearances, votes, programmatic logistics, and/or policy implementation work
- Respond to constituents via phone, email, or in written form in a timely, professional manner, regarding their needs or concerns
- Occasionally attend events alongside of the official representative



AGRICULTURAL LITERACY AND ADVOCACY SPECIALIST

An agricultural advocacy and literacy specialist is responsible for designing, implementing and coordinating a platform that appropriately and consistently promotes agricultural literacy and advocacy.

Education & Training

Bachelor's degree in agricultural education, agricultural communications, or other agricultural field

Recommended High School Courses

Agricultural education, computer courses, writing

Typical Employers

Agricultural organizations, Checkoff programs, large agricultural companies and farms

Suggested Professional Organizations

National Association of Agriculture Educators
 American Farm Bureau
 National Agri-Marketing Association

Job Market/Outlook



Responsibilities

- Work collaboratively with programs around the organization to ensure that the most effective literacy and advocacy methodologies and technologies are being utilized
- Design and develop resources and content for both students and teachers to help advance agricultural literacy and advocacy
- Develop and manage educational content that aligns with state educational standards
- Ensure program resources and strategies to support specific outcomes as determined by organization leaders and agricultural stakeholders
- Collaborate with marketing and communications specialists to develop messages appropriate for consumers
- Develop a social media plan to promote literacy and advocacy content
- Provide advocacy training to those with a vested interest in agriculture
- Evaluate and track metrics from programs conducted
- Create budgets for programming and certify that programs are operating according to approved budget
- Investigate innovative ways to bring agriculture to audiences off the farm
- Present to agricultural groups on the importance of agricultural advocacy and literacy



AGRICULTURAL LOAN OFFICER

Agriculture loan officers, or agricultural lenders, work to help farmers and rural citizens obtain funds needed to fund their operation, purchase property, and more.

Education & Training

Bachelor's degree in agricultural business, accounting, or finance

Recommended High School Courses

Agricultural education, computer and business courses, accounting, personal finance, economics

Typical Employers

Banks, agricultural banks

Suggested Professional Organizations

American Agricultural Economics Association
Local Chambers of Commerce
American Banks Association

Job Market/Outlook



Responsibilities

- Seek lending relationships with existing customers
- Actively call on prospective borrowers
- Explain to customers the different types of loans and credit options that are available, as well as the terms of those services
- Develop and analyze all types of credit information
- Approve within delegated authority loan structures pricing and conditions on loan transactions
- Combine agricultural and business knowledge with an in-depth understanding of each customer's current financial position in order to provide innovative and workable alternatives to solve problems the customer faces in their ongoing farming operations
- Ensure all files are maintained in a secure environment to protect borrowers' data
- Participate in training as scheduled by the supervisor
- Evaluate the risk in loan transactions and assign a probability of default and loss given default
- Manage and grow existing loan portfolios
- Participate in community and industry events
- Prepare credit analysis on assigned portfolio directly or through the use of a credit analyst



AGRICULTURAL LOBBYIST

Agriculture lobbyists work to make sure government officials hear the voice and position of companies, organizations, industries or even communities. It is their goal to influence policy development and look out for the interests of the individuals they represent.

Education & Training

Bachelor's degree in political science, law, agricultural economics, journalism, public relations, or agricultural communications

Recommended High School Courses

Agricultural education, English, social sciences, public speaking, and debate

Typical Employers

Agricultural organizations and companies, commodity groups; may work at local, state or national level

Suggested Professional Organizations

Association of Government Relations Professionals
National Association of State Lobbyists

Job Market/Outlook



Responsibilities

- Research legislation or regulatory proposals
- Remain abreast of developments and governmental issues
- Report policy introduced and in discussion to those whom you represent
- Attend various pertinent legislative hearings
- Work to develop and coordinate with grassroots efforts
- Build relationships with elected officials and their staff
- Educate and inform officials on issues in agriculture and how certain pieces of legislation or regulations could affect the industry
- Work to help your organization or company develop a policy strategy
- Assist with drafting new legislation
- Develop and suggest strategies to enact new laws and change existing laws affecting agriculture
- Address concerns and challenges to meeting compliance for international and federal regulations
- Seek congressional funding for projects or special interests
- Help your organization or company navigate the political process



AGRICULTURE SCIENCE TEACHER – SECONDARY

An Agricultural Science Teacher is responsible for the education of agriculture, food science, and natural resources for students. Using these topics, agricultural science teachers can give students vital skills that are important in the ag industry. These skills include: math, science, leadership, technology, communications, and management. They can also go the extra step in providing strong agricultural education by advising their schools FFA Chapter.

Education & Training

Bachelor's degree in agricultural education or other agricultural field when coupled with appropriate state teaching licensure

Recommended High School Courses

Agricultural education, science, mathematics

Typical Employers

Middle and high schools

Suggested Professional Organizations

National Association of Agricultural Educators
American Association for Agriculture Education
National FFA Alumni Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Conduct an instructional program educates students about career pathways in agriculture that can be used as a guide to achieving necessary skills for continued education and employment which includes preparing materials such as syllabi, homework assignments, and handouts
- Enhance youth leadership and FFA as an integral part of instruction
- Provide students with the knowledge and skills necessary to compete in a global economy
- Remain abreast and Inform students about agriculture and agricultural literacy
- Initiate, facilitate, and moderate classroom discussions
- Create lesson plans that are in conformity with school policy, for all courses offered and provide instructional materials and instructional methods used to make teaching and learning effective
- Oversee Supervised Agricultural Experience programs of all students who receive instruction by assisting students in selecting a program that fits their interests and abilities; maintaining records, locating training stations, make supervisory visits during school year and during summer month
- Supervise and maintain the school laboratory (farm, feeding center, greenhouse, meats laboratory, etc.) used for students supervised agricultural experience
- Plan and conduct an organized program of instruction and/or community involvement with adults. This may include, but not limited to alumni, young farmers, and booster clubs. Most of this instruction will be given after school, at night and during the summer
- Prepare and submit FFA rosters, entries, registrations, etc. required by the local, district, area, state, and office promptly, and keep an accurate file copy of all records and reports
- Attend in area, state, and national training meetings



AUDITOR

Auditors are responsible evaluating the finances and internal operations of a business or individual.

Education & Training

Bachelor's degree in accounting; Master's degree or extra certifications allow for more opportunity

Recommended High School Courses

Agricultural education, personal finance, business and computer courses

Typical Employers

Sizable agricultural organizations and companies, accounting firms, government agencies, self-employed

Suggested Professional Organizations

Institute of Internal Auditors
American Accounting Association

Job Market/Outlook



Responsibilities

- Analyze specific aspects of a company order to confirm compliance or determine risk
- Analyze sales activity, customer and competitor GAP analysis, financial modeling, exception reporting, IT audit, process re-engineering, product development, treasury and high-level strategic feasibility studies
- Extract data from highly developed internal and external sources to deliver insightful and innovative customer strategy and solutions
- Participate in, and/or manage, projects from conception through to implementation as either instigator or as executor across key business lines
- Auditors are assigned at the discretion of management in specific business channels or may be assigned to one specific channel
- Evaluate the adequacy and effectiveness of the company's existing systems of accounting
- Monitor compliance with corporate systems and procedures by means of periodic testing and review
- Verify the existence of assets and the extent to which they are safeguarded from loss
- Determine the reliability and effectiveness of reporting systems and management data
- Assist in the application of accounting practices, information systems procedures, and financial and operational policies and procedures throughout the company
- Identify, analyze, and prioritize business risks; assign and supervise audit responsibilities; review work performed by audit teams; identify problems and develop solutions; manage and influence others
- Manage audit project timelines
- Assist and supplement the work of the company's independent outside auditors



BENEFITS MANAGER

Benefits managers are in charge of the corporation's benefit programs which would include retirement plans and health insurance. It is also the responsibility of the benefits manager to choose the benefits supplier for the company.

Education & Training

Bachelor's degree in human resources, finance, or business administration

Recommended High School Courses

Agricultural education, mathematics, personal finance, business courses, and statistics

Typical Employers

Medium to large-sized agricultural companies

Suggested Professional Organizations

National Human Resources Association
Society for Human Resources Management
The Association of Benefits Administrators

Job Market/Outlook



Responsibilities

- Determine the company's pay system and benefit allowances
- Advise which benefits programs the company should use
- Responsible for the functional support related to third party benefits administration systems and feeds including documentation and testing
- Research benefits program options and anticipates price changes
- Communicate benefits rules and regulations to employees
- Manage records for benefits
- Ensure the integrity of the data required for successful administration by the third party administrators including system audits and system testing including: new hires, terminations, status changes, annual enrollment, etc.
- Responsible for hiring and training benefits staff
- Prepare benefits budgets
- Attend benefits workshops to learn about new services being offered in the marketplace
- Create benefit reports
- Responsible for the functional support related to compensation reporting and testing
- Responsible for routine and ad hoc reporting and analysis as required: including quarterly experience, claims analysis, financial reporting and annual enrollment reporting
- Responsible for ensuring all benefit plans are operated in compliance with applicable government regulations and required reporting and disclosure are completed in accordance with regulations



BRAND MANAGER

Agricultural brand managers utilize market and research analysis of specific products for promotion to ensure sales targets.

Education & Training

Bachelor's degree in business administration, marketing, or a relevant agricultural field

Recommended High School Courses

Agricultural education, computer and business courses, and mathematics

Typical Employers

Medium to large-scale agricultural companies, advertising and marketing agencies

Suggested Professional Organizations

National Agri-Marketing Association
Public Relations Society of America
Association of Product Management and Product Marketing

Job Market/Outlook

Poor Good Excellent

Responsibilities

- Manage brand from idea to execution
- Liaise with internal and external sales, operations, finance and communications teams
- Drive new product innovation and line extensions for the brand
- Oversee packaging design
- Develop sustainable points of difference versus the competition
- Create micro-marketing and themed programs tailored to regional/key accounts
- Deliver volume and gross margin as per product budget
- Prepare performance data as per sales plan, including estimated sales volume and related expenses
- Prepare advertising and promotion of products
- Contribute to a broader digital strategy
- Develop and refresh sales templates, presentations, and sell sheets
- Develop key relationships with suppliers and end users
- Monitor key performance metrics to track brand performance and make adjustments to plan as needed
- Coordinate appropriate tradeshow events
- Review complaints and suggestions relative to the assigned products
- Manage inventories of products to region targets
- Maintain contact with distribution centers and important customers to enhance promotion efforts
- Remain abreast of industry trends and changes and apply appropriate knowledge to modification of product(s)



BUDGET ANALYST

Budget Analysts are responsible for ensuring that the company profits and other resources are being used in the most adequate way possible. They study the company's budget to find ways to be more efficient and generate more profits.

Education & Training

Bachelor's degree in accounting, finance, business, economics, or a related field

Recommended High School Courses

Agricultural education, mathematics, English, business courses, and statistics

Typical Employers

Agricultural companies and organizations of varying sizes

Suggested Professional Organizations

American Association for Budget and Program Analysis
The American Accounting Association

Job Market/Outlook



Responsibilities

- Work alongside upper management to prepare an annual company budget
- Analyze and approve budget proposals
- Ensure all company budgets are combined and total correctly
- Predict the future financial needs of the company
- Observe corporate spending
- Report fund availability to managers
- Research cost effective budget plans for the company
- Generate financial analysis, evaluations, and cost reporting activities of current and proposed financial plans
- Provide timely and meaningful reporting of operations and budgets throughout the year
- Effectively plan for and audits financial activity
- Conduct implementation of sound accounting policies and procedures
- Provide timely managerial decisions and controls through provision of analyzed and evaluated financial operational data and information to management
- Ensure continuing departmental effectiveness through training development of staff



CAREER COUNSELOR / CAREER SERVICES COORDINATOR

Career services professionals are responsible for preparing and facilitating career preparation programs for students in either secondary or collegiate atmospheres.

Education & Training

Bachelor's or master's degree in agriculture, agricultural education, education, counseling, or a related field

Recommended High School Courses

Agricultural education, English, communications, mathematics

Typical Employers

Academic settings, most commonly agricultural and land-grant universities and colleges

Suggested Professional Organizations

The National Career Development Association
National Association of Agriculture Educators
American Association for Agricultural Education

Job Market/Outlook



Responsibilities

- Design and implement career preparation activities, resources, and career events for students involving the job search such as resume writing, interviewing, professional dress, etc.
- Regularly communicate career and internship opportunities to students
- Develop and maintain a website and/or social media for students to access career and internship opportunities and information
- Plan and coordinate career fair events
- Meet with students one-on-one by request or during office hours to discuss career opportunities and preparation
- Answer students' questions regarding employment and placement
- Oversee student placement into internships for credit
- Serve as a liaison between the university or institution you represent and workforce representatives or potential employers in agriculture
- Develop and cultivate relationships with potential employers through cold calling, mailing, networking, and site visits
- Frequently communicate with collegiate faculty to incorporate career activities into their classes and curriculum
- Partner with other offices or departments on campus to promote career services programming
- Analyze and publish student employment data and statistics to ensure success of placement efforts
- Monitor student employment requests from the community and surrounding areas
- Participate in program advising meetings as well as department meetings
- Remain up-to-date on new potential employers as well as career development news and trends



CERTIFIED APPRAISER

Certified Appraisers are responsible for evaluating and placing monetary value on various items within the agricultural sector. An example of these are property divisions, estate planning, valuing agribusiness, establishing value for potential sale, and appraising conservation easements.

Education & Training

Associate's or Bachelor's degree in agricultural business, economics, marketing, or a commodity-specific field; certification also required

Recommended High School Courses

Agricultural education, science, geography, mathematics

Typical Employers

Agricultural lending companies, appraisal firms, law firms, insurance companies, government agencies, or self-employed

Suggested Professional Organizations

American Society of Farm Managers and Rural Appraisers
American Society of Appraisers

Job Market/Outlook



Responsibilities

- Prepare accurate appraisal reports of both real and personal property and to conduct appraisals utilizing the cost, sales and income approaches to value
- Responsible for analyzing specific data in order to confirm value or determine risk
- Responsible for extracting data from highly developed internal and external sources to deliver insightful and innovative customer strategy and solutions
- Ensure that changes to all Federal Appraisal Regulations ("FIRREA") are promptly communicated to Senior Management and appraisal policies and procedures are revised as necessary
- Act as primary contact with Federal Regulators and both internal and external auditors
- Conduct collateral evaluations including site inspections for environmental risks
- Develop new business/clientele
- Utilize mathematical tools and processes to analyze data



CHIEF EXECUTIVE OFFICER

Chief Executive Officers (CEO's) work to achieve corporate objectives and effectively manage a company or a group of companies. The key responsibility of a CEO is for the direction of the company with the objective of attaining overall profitability and growth.

Education & Training

Bachelor's or Master's degree in relevant field in addition to a generally accepted minimum of five years' industry experience and leadership skills

Recommended High School Courses

Agricultural education, accounting, economics, government, business and computer courses

Typical Employers

Any size of agricultural company or organization

Suggested Professional Organizations

Agriculture Council of America
National Agri-Marketing Association
Women in Agribusiness

Job Market/Outlook



Responsibilities

- Plan, develop, organize, implement, direct and evaluate the company or organization's business units, vision, mission and overall strategy
- Ensure agreed strategies are implemented and compliance with regulatory authorities is maintained
- Establish short- and long-term goals for the organization, and advise on the impact of long-range planning and new business ventures
- Participate in the development of the company or organization's plans and programs as a strategic partner
- Enhance or develop, implement and enforce policies and procedures of the organization that will in turn improve its overall operation and effectiveness
- Maintain awareness of the competitive landscapes, opportunities for expansion, customers, markets, and new industry developments and standards
- Provide leadership to staff and educate them on business objectives to enhance employee performance
- Hire, evaluate and provide professional development opportunities for the company's senior management team
- Monitor the needs of company partners, board of directors and stakeholders
- Remain abreast of industry trends or changes
- Provide strategic financial input and leadership on decision making issues affecting the company or organization
- Provide patrons to the company or organization with effective service



CHIEF FINANCIAL OFFICER

A Chief Financial Officer's (CFO) is responsible for the entire finance and accounting function of a business. They work closely with the company or organization's Chief Executive Officer and Chief Operating Officer.

Education & Training

Bachelor's or Master's degree in accounting, finance, or business administration; consider earning CPA, gaining leadership skills and experience

Recommended High School Courses

Agricultural education, accounting, economics, government, business and computer courses

Typical Employers

Agricultural companies and organizations of varying sizes

Suggested Professional Organizations

CPA Connect
American Institute of CPA's
American Agricultural Economics Association

Job Market/Outlook



Responsibilities

- Manage the finance, accounting functions, resources and financial assets of the company and subsidiary companies
- Create, implement, administer, and evaluate all financial programs, procedures and supporting information systems of the company
- Provide leadership in the development for the continuous evaluation of short and long-term strategic financial objectives
- Ensure credibility of company finance team by providing timely and accurate analysis of budgets, financial trends and forecasts
- Develop, implement, and maintain a comprehensive job cost system
- Coordinate changes and improvements in automated financial information systems of the company
- Ensure compliance with local, state, and federal financial reporting requirements
- Serve as the primary interface with lenders and CPA firm
- Partner with senior management in the development and execution of strategic business and/or operational plans
- Hire and retain key accounting and financing talent
- Act as the point person for all tax and audit activities
- Stay informed about the regulatory environment and developments to the industry / competitive landscape to incorporate best practices throughout the company
- Provide recommendations to strategically enhance financial performance and business opportunities



CHIEF OPERATING OFFICER

Chief Operating Officers are responsible for the management of company operations with the objective of efficient and effective processes. They work to achieve corporate objectives and effectively manage a company or group of companies.

Education & Training

Bachelor's or Master's degree in relevant field in addition to a generally accepted minimum of five years' industry experience and leadership skills

Recommended High School Courses

Agricultural education, accounting, economics, government, business and computer courses

Typical Employers

Any size of agricultural company or organization

Suggested Professional Organizations

Agriculture Council of America
National Agri-Marketing Association
Women in Agribusiness

Job Market/Outlook



Responsibilities

- Oversee and direct the entire operations division of a company (may include but not limited to manufacturing operations, finance, engineering, purchasing, human resources and administration)
- Ensure proper management of resources, distribution of good and services to customers, and supply chain
- Ensure agreed strategies are implemented and compliance with regulatory authorities is maintained
- Oversee the development and implementation of sales and marketing plans
- Provide leadership in achieving profit objectives
- Supervise the establishment and implementation of service and quality standards
- Certify that appropriate internal systems, policies, procedures and controls are in place to ensure efficient and cost effective operations
- Maintain consistent and effective communication with the Chief Executive Officer, implementing his or her directives
- Advise and support senior management team with financial planning, budgeting, and decision making



COLLEGE RECRUITER

A college recruiter, or a college relations recruiter, works to hire top talent into their respective company from targeted agricultural colleges and universities. They are different from a corporate recruiter in they specialize in target audience of undergraduate or graduate students directly.

Education & Training

Bachelor's in human resources, business administration, agriculture or a related field

Recommended High School Courses

Agricultural education, government, English, business and computer courses

Typical Employers

Medium to large-scale agricultural companies

Suggested Professional Organizations

Society for Human Resource Management
 Professionals in Human Resources Association
 National Human Resources Association
 National FFA Alumni Association

Job Market/Outlook



Responsibilities

- Work with key business and HR partners to design a campus recruitment plan
- Determine core agricultural colleges and universities to target and recruit from
- Maintain relationships with core college campuses and students
- Target and hire qualified students into your company
- Manage applicant flow
- Manage the interview and selection process once qualified candidates are located
- Provide new and productive methods for recruiting talent through marketing campaigns and promotions
- Be involved in the planning and execution of summer internship or co-op programs including orientation and evaluations
- Promote any college placement or internship programs your company may have to students
- Conduct job forecasting for future positions
- Plan and attend campus career fairs and events
- Travel to targeted college campuses and conferences
- Assist with the coordination of company brand recognition at recruiting events
- Keep records of budget, expenses, cost per hire and return on investment
- Work closely with HR generalists, hiring manager and recruitment teams
- Maintain a high level of customer service



COMMODITY PROCUREMENT / MERCHANDISER

Commodity Procurement/Merchandisers oversee companies commodities and are responsible for trading, purchasing, locating, and customer accounts for each commodity.

Education & Training

Bachelor's degree in agricultural business, supply chain management, accounting, or finance

Recommended High School Courses

Agricultural education, sciences, finance, mathematics

Typical Employers

Agricultural companies, cooperatives

Suggested Professional Organizations

American Soybean Association
National Corn Growers Association
National Grain and Feed Association
Mid-America International Agri-Trade Council

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Collaborate between feed formulators and plant managers to provide lowest cost options for all feeds, feed ingredients and feed products
- Point of contact for suppliers and external market consultants and resources
- Support the Commodities group by negotiating cost saving initiatives and cost mitigation efforts
- Determines strategic supply objectives using tools and reports for decision making around products and commodity purchases
- Assesses supply base and negotiates best cost structure
- Identifies and develop a reliable and effective base of qualified suppliers
- Takes action to address supplier pricing and/or delivery issues; advises management of market conditions and supply base activity which presents significant risk or needs to be elevated to management's attention
- Drive continuous supplier quality improvement through participating in rapid improvement events, supplier quality audits, training and certifications as required
- May be responsible for identifying, developing, and implementing inter-departmental projects to achieve company initiatives
- Maintain complete updated purchasing records/data and pricing in company system
- Execution and monitoring of all regular purchasing duties
- Coordinate with user departments and suppliers in the purchasing scope of work for projects assigned
- Monitor and co-ordinate deliveries of items between suppliers to ensure that all items are delivered to site/plant on time, select and negotiate for the best purchase package in terms of quality, price, terms, deliveries and services with suppliers
- Plan and manage inventory levels of materials or products
- Monitor and co-ordinate deliveries of items between suppliers



COMMUNICATIONS SPECIALIST

A Communications Specialist works in the area of communications with primary responsibilities in the fields of writing, editing, branding, and public and media relations.

Education & Training

Bachelor's degree in agriculture communications, agriculture marketing, agricultural journalism, communications, public speaking, or a related field

Recommended High School Courses

Agricultural education, computer courses, art, English, and public speaking

Typical Employers

Agricultural companies and organizations, marketing agencies or firms, or self-employed

Suggested Professional Organizations

AgChat Foundation
Public Relations Society of America
National Agri-Marketing Association

Job Market/Outlook

Poor Good Excellent

Responsibilities

- Prepare schedules and organize meetings and interviews
- Write and design company literature
- Create effective communication strategies
- Implement email marketing
- Ensure positive relationships with clients
- Write and coordinate the production of printed and electronic marketing and educational materials
- Research, draft and disseminate press materials to appropriate news media
- Responsible for dissemination of association events and activities on social media
- Assist in the creation of audiovisual aids for staff
- Serve as photographer as needed
- Manage the media database and news clipping log
- Update information on company website and social media outlets
- Develop appealing presentations and speeches for leadership
- Available to assist other staff in program areas whenever communication assistance needed



COMPENSATION SPECIALIST

A compensation specialist supports all aspects of a company's compensation programs, processes and initiatives.

Education & Training

Associate's or Bachelor's degree in human resources, finance, or a related field; consider acquiring a Certified Compensation Professional (CCP) certification

Recommended High School Courses

Agricultural education, personal finance, mathematics, business and computer courses

Typical Employers

Medium to large-scale agricultural companies, government agencies, universities

Suggested Professional Organizations

International Society of Workers' Compensation Specialists
Society of Certified Compensation Professionals

Job Market/Outlook



Responsibilities

- Assist in the implementation and administration of base pay and incentive programs
- Participate in salary surveys
- Write and update job family descriptions
- Help with position reviews, market pricing and pay analysis
- Develop summaries, reports and routine queries
- Remain abreast of market trends and regulatory requirements
- Work with managers, employees and human resources team members to resolve issues and respond to inquiries
- Prepare and process annual variable pay and annual pay increases
- Troubleshoot basic technical issues in compensation administration systems



CONTROLLER

Controllers maintain all finances for a company. They oversee book keeping, budgets and financial reporting.

Education & Training

Bachelor's degree in accounting or business administration; may consider Certified Public Accountant (CPA) or Certified Management Accountant (CMA) certification

Recommended High School Courses

Agricultural education, English, mathematics, business and computer courses, statistics

Typical Employers

All sizes of agricultural companies

Suggested Professional Organizations

American Accounting Association
American Association of Finance and Accounting

Job Market/Outlook



Responsibilities

- Maintain a documented system of accounting policies and procedures
- Oversee the operations of the accounting department, including the design of an organizational structure adequate for achieving the department's goals and objectives
- Ensure that accounts payable are paid in a timely manner
- Ensure that all reasonable discounts are taken on accounts payable
- Ensure that accounts receivable are collected promptly
- Process payroll in a timely manner
- Ensure that required debt payments are made on a timely basis
- Maintain records of accounts
- Maintain an orderly accounting filing system
- Issue timely and complete financial statements
- Coordinate the preparation of the corporate annual report
- Manage the production of the annual budget and forecasts
- Provide financial analyses as needed, in particular for capital investments, pricing decisions, and contract negotiations
- Monitor debt levels and compliance with debt covenants
- Comply with local, state, and federal government reporting requirements and tax filings



CORPORATE RECRUITER

A corporate recruiter provides a full cycle of recruiting services to their business or organization including sourcing, attracting, and selecting talent in collaboration with business partners.

Education & Training

Bachelor's degree in human resources, business administration, agriculture or a related degree

Recommended High School Courses

Agricultural education, economics, government, English, business and computer courses

Typical Employers

Medium to large-scale agricultural companies, cooperatives, and organizations

Suggested Professional Organizations

Society for Human Resource Management
 Professionals in Human Resources Association
 National Human Resources Association
 National FFA Alumni Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Partner with hiring managers to establish recruiting strategies to identify top talent and target active and occasionally passive job seekers
- Post jobs for recruitment as needed
- May work with third party recruiters and develop professional relationships for hard-to-fill positions
- Work with business unit managers, directors, and human resource to identify and understand business requirements for open positions
- Utilize various recruiting sources to obtain adequate number of qualified applicants for staffing needs
- Verify employment eligibility of each applicant
- Collaborate with managers to identify and source qualified resumes
- Track candidates' status through entire interview process and prescreen
- Execute various forms of interviews on a regular basis and provide travel arrangements as necessary
- Handle hiring paperwork from start to finish including the job offer letter
- Contact applicants to inform them of employment possibilities, consideration, and selection
- Develop salary offers for candidates
- Conduct candidate reference and background checks
- Follow up with new hires every few months their first and second years
- Develop and maintain external relationships that may provide referrals of candidates
- Continually create new, innovative methods to improve the recruitment process
- Attend career fairs and events as needed
- Assist in developing and managing employee training programs



CREDIT ANALYST

Credit Analysts recommend which companies or producers/individuals should be extended credit based on financial records. They will also prepare reports in order to determine the risk involved in lending money to each client.

Education & Training

Bachelor's degree in agricultural business, finance, accounting, economics, or statistics

Recommended High School Courses

Agricultural education, personal finance, mathematics, economics, business and computer courses

Typical Employers

Lenders, banks, managing companies, real estate lessors, financial investors, retail credit departments

Suggested Professional Organizations

National Association of Credit Analysts
National Association of Credit Management

Job Market/Outlook



Responsibilities

- Research companies to determine risk level of extending credit
- Create finance and credit data reports
- Execute loan applications to submit for approval
- Make collection calls and customer visits
- Communicate credit policy to employees
- Examine files for criminal accounts
- Study financial records of companies/individuals to aid in financial plans
- Hold overall responsibility for completion of all monitoring/compliance functions with regard to existing credits within attached portfolios
- Review proposed structure and value of generally complex lending proposals received from banking or relationship managers, and approve as appropriate.
- Control the approval process including the certification of completions, conditions and draw down.
- Actively resolve compliance/covenant breaches through lending credit and relationship or business managers
- Recommend new proposals, process improvements and monitoring of credit and administrative functions
- Set and achieve targeted debt collection objective



CROP ADJUSTER

Crop adjusters inspect fields where an insurance claim has been made. This may be a result of weather, insect, disease or other problem.

Education & Training

Associate's or Bachelor's degree in agriculture business or related field; some states require a Claim Adjuster Proficiency Program certification and state licensure

Recommended High School Courses

Agricultural education, animal science, plant science, mathematics, biology, and chemistry

Typical Employers

Crop insurance companies, banks, government agencies

Suggested Professional Organizations

American Association of Crop Insurers
Crop Insurance Professionals Association
National Crop Insurance Services

Job Market/Outlook



Responsibilities

- Complete field inspections after loss is reported - use reading maps and aerial photos
- Measure fields, storage bins and discuss findings of crop loss with farmers
- Follow appropriate regulatory and company rules, regulations and procedures
- Perform fact finding regarding crop damage, records information and transmit loss information to accurately determine potential indemnities
- Provide excellent service to customers – both agents and policyholders (farmers)
- Utilize company software to electronically transmit claims information directly from the field to corporate office to ensure claims are processed timely and accurately
- Ability to convey regulations and interpretations to claimants, agents, and industry people on claim situations
- Articulate company position on industry topics such as new specialty crops that need to be developed
- Effectively and efficiently manage claim workload
- Maintain knowledge of USDA's Risk Management Agency rules and regulations as well as company procedures for applying all Multiple Peril Crop Insurance (MPCI), hail, and federal crop insurance regulations
- Attend training sessions as directed which are generally at the State, Regional, or National level



CUSTOMER SERVICE REPRESENTATIVE

Customer Service Representatives utilize a variety of tool, methods and techniques to ensure that clients are satisfied and that their needs are met. They also support those in sales/management roles to ensure that sales targets are achieved.

Education & Training

Associate's degree in agricultural business or another relevant field

Recommended High School Courses

Agricultural education, animal science, biology, mathematics, business and computer courses

Typical Employers

Agricultural companies and organizations, financial services companies, agricultural sales companies

Suggested Professional Organizations

National Agri-Marketing Association
Women in Agribusiness
Agriculture Council of America

Job Market/Outlook



Responsibilities

- Responsible for sales administration in an office environment and for establishing direct links with field representatives
- Provide liaison between customers and the company by ensuring prompt and efficient processing of customer correspondence, requests and orders.
- Process and follow up customer sales, complaints and service inquiries
- Process direct sales, prices and quotes
- Arrange deliveries in accordance with company practice
- Direct general inquiries to appropriate channels
- Maintain general product knowledge
- Manage after-sales services and continually improve those services



DATA PROCESSOR

A data processor provides administrative support for the capture and transfer of information for storage, processing or transmitting.

Education & Training

A high school diploma; excellent computer skills

Recommended High School Courses

Agricultural education, mathematics, business and computer courses

Typical Employers

Agricultural companies that sell or inventory large quantities like food packing plants or animal production companies

Suggested Professional Organizations

Commodity specific organizations
State agribusiness associations
National FFA Alumni Association

Job Market/Outlook



Responsibilities

- Operate personal computer equipment with Microsoft software applications Above average computer experience with 10-Key data entry
- Work with mathematical concepts such as probability and statistical inference
- Apply concepts such as fractions, percentages, ratios, and proportions to practical situations
- Proven problem solving, communication, organization and customer service skills
- Solve practical problems and to interpret a variety of instructions furnished in written, oral, diagram or schedule form
- Working in agriculture, knowledge of farming and animal agriculture terminology
- Key in codes necessary to process information with a high level of accuracy
- Input information such as reports, mailing lists, accounts, payrolls, staff records and scientific information
- Report, retrieve, confirm and update data that has been stored
- Type and re-arrange information, including highlighting parts of the text, moving paragraphs from one page to another and formatting information into columns
- Make alterations to information already stored on a computer
- Print out reports, letters, labels and other documents as required
- Sometimes required to undertake clerical duties



DISPATCHER

Dispatchers play an important role in coordinating product shipments and transfers. Their duties combine some aspects of logistics and customer service.

Education & Training

A high school diploma or an Associate's degree in agricultural business

Recommended High School Courses

Agricultural education, mathematics, computer courses

Typical Employers

Agricultural retailers, cooperatives, animal production companies, feed mills, logistics companies and other agricultural companies

Suggested Professional Organizations

American Trucking Association
Agricultural Retailers Association

Job Market/Outlook



Responsibilities

- Accept calls from sales staff, customers, and other locations for order of materials
- Take, process, and prepare orders for pickup or delivery
- Coordinate product transfers between locations
- Contact trucking companies to coordinate shipments
- Instruct drivers on load requirements
- Complete orders accurately and in a timely manner
- Operate truck scales
- Complete weight tags, bills of lading, and hazardous material shipping papers
- Take product-order inquiries via phone and email
- Communicate directions and instructions (verbally and in writing) to customers, truck drivers and the public
- Keep track of inventory of products stored in warehouses and in bulk storage
- Calculate total quantities of product by weight and / or volumetric measurements
- Perform customer service duties as needed by responding to calls and visitors in a professional manner
- Provide backup and assistance to other dispatchers and / or receptionist – answer phones during busy seasons
- Tracks and reports all shipments to security regarding authorizations on to property after hours



ECONOMIST

An agricultural economist, or industry analyst, provides high-level economic intelligence to manage risk and prepare a company or business for the future.

Education & Training

A bachelor's or master's degree in economics, agricultural business, or a related field is required

Recommended High School Courses

Agricultural education, mathematics (statistics, probability), business and computer courses

Typical Employers

Banks, lending firms, risk management firms, government agencies, or larger agricultural companies

Suggested Professional Organizations

Agricultural & Applied Economics Association
International Association of Agricultural Economists

Job Market/Outlook



Responsibilities

- Analyze agricultural, economic, and financial trends
- Gather information regarding market variables including weather, industry competition, government policy, foreign competition and policies, cost of production, consumer trends, etc.
- Write and deliver timely, insightful, and concise research reports related to industry trends, structural change, and policy initiatives
- Utilize computer-based modeling to project agricultural production
- Arrange field visits or tours to affected areas, companies, or farms
- Prepare and deliver presentations to internal and external audiences
- Remain up-to-date on trends, market conditions, and economic conditions impacting the industry and your employer
- Identify and implement key research projects
- Develop relationships with other industry experts to facilitate information sharing
- Respond to any external or customer inquiries and data requests



EVENT MANAGER

Event Managers are responsible for planning and organizing events. They make sure that the events run smoothly and are in charge of all aspects of the events.

Education & Training

Bachelor's degree in event management, agricultural business, public relations, hotel and restaurant management, or communications

Recommended High School Courses

Agricultural education, mathematics, English, personal finance, computer courses

Typical Employers

Self-employed, agricultural companies, marketing and public relations firms, event agencies

Suggested Professional Organizations

National Agri-Marketing Association
Event Planners Association
National Association for Catering and Events

Job Market/Outlook



Responsibilities

- Assess necessary budgets for events
- Keep track of RSVPs and dietary restrictions
- Prepare and mail invitations
- Ensure details of events with clients
- Hire and supervise event staff
- Reserve appropriate locations for events
- Select the food and catering services
- Order giveaways for attendees
- Ensure compliance with all health and safety regulations
- Negotiate event accommodations
- Choose an audio-visual equipment and production company
- Monitor the event while it's taking place and resolve issues on site as they arise
- Ensure proper permits are obtained to host the event in the municipality if needed
- Promote the event through advertising and social media



EXECUTIVE ASSISTANT

An executive assistant provides support to the Chief Executive Officer (CEO) or President of the company performing planning, coordination, scheduling and secretarial activities on their behalf.

Education & Training

Associate's or Bachelor's degree in business administration

Recommended High School Courses

Agricultural education, mathematics, English, computer and business courses

Typical Employers

Any size of agricultural company or organization

Suggested Professional Organizations

Association of Executive and Administration Professionals
National Executive Assistant Association

Job Market/Outlook



Responsibilities

- Act as a personal assistant and confidential secretary
- Perform secretarial tasks with a high level of competence, inclusive of personal correspondence
- Attend regular meetings and record resolutions
- Manage travel arrangements, business schedules and appointments
- Communicate with other senior management as required and act on the executive behalf in routine matters requiring immediate attention
- Organize all report and filing methods and procedures, and may participate in other functions such as public relations, accounting and personnel
- Prepare meeting schedules including coordinating itineraries, compiling materials, organizing annual meetings and reconciling expense reports
- Compose and prepare correspondence, such as staff notifications, Board minutes, and all messages from the CEO
- Update and facilitate notifications pertaining to the CEO and internal Executive team such as biographies, new hire welcome announcements, organizational changes, and business contacts
- Communicate on behalf of the CEO with good judgment and articulate with a clear understanding of the company mission
- Provide a bridge for smooth communication between the CEO's office and internal departments; demonstrating leadership to maintain credibility, trust and support with senior management staff
- Work closely and effectively with the CEO to keep him/her well informed of upcoming commitments and responsibilities, following up appropriately
- Act as a "barometer," having a sense for the issues taking place in the environment and keeping the CEO well informed



EXPORT DOCUMENTATION SPECIALIST

An export documentation specialist is responsible for supporting export activities, oversees preparation of commercial documents in accordance with export, and handles record keeping requirements to support timely payment of product.

Education & Training

Bachelor's degree in logistics, international studies, business, or a related field

Recommended High School Courses

Agricultural education, personal finance, foreign language, mathematics, business and computer courses

Typical Employers

Agricultural companies that export products internationally, banks, freight forwarders, government agencies

Suggested Professional Organizations

National Customs Brokers & Forwarders Association of America
International Air Transport Association

Job Market/Outlook

Poor Good Excellent

Responsibilities

- Prepare and audit export documentation for vessel shipments and settlements
- Process commercial invoice documents by validating data integrity and accuracy
- Communicate with appropriate internal/external customers, including trading desks, loading facilities, freight forwarders, brokers, vendors, USDA and customers
- Ensure timely processing of export shipments
- Monitor accounts payable and accounts receivable to ensure vessel transaction payments are made and collected timely
- Create, assemble and present applicable export documentation required per country specific destination in accordance with export laws and regulations
- Submit timely document instructions to freight forwarders, independent surveyors and other third party industry providers
- Verify sanctioned party screenings prior to release of export documents
- Maintain export files in an organized and cataloged system
- Support cross-functional departments involved in international business transactions
- Ensure compliance with export laws and regulations
- Continue education and ongoing review of industry requirements
- Apply and settle contract applications
- Create loading instructions for loading elevators



EXPORT SALES MANAGER

Export managers serve as intermediaries between foreign buyers and domestic sellers. Typically export managers find buyers internationally for domestic product manufacturers, these can be raw or processed agricultural goods, equipment or parts.

Education & Training

Bachelor's degree in business, agricultural economics, international business or marketing; Master's of Business Administration (MBA) is a plus

Recommended High School Courses

Agricultural education, accounting, foreign languages, business and computer courses

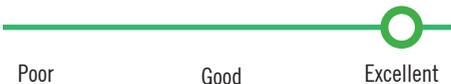
Typical Employers

Food production companies, commodity buyers and suppliers in port/cargo cities

Suggested Professional Organizations

Mid-America International Agri-Trade Council
North American Export Grain Association

Job Market/Outlook



Responsibilities

- Meet with clients to support and grow sales volume
- Serve as a secondary contact for international clients
- May require being proficient in a secondary language
- Provide leadership and guidance to your customer service, planning and logistics teams to ensure that customers receive their appropriate shipments
- Work with international brokers who attend international tradeshows and meetings
- Work to develop new business and growth opportunities and manage volumes and margins to generate efficiency for manufacturing and margins for earnings
- Investigate new sales opportunities and actively solicit business from potential customers
- Utilize in-depth industry knowledge to build credibility and become a trusted advisor with customers both domestically and abroad
- Knowledge of the details of the export business to ensure that government policies, labeling systems, transportation and payment laws are followed
- Negotiate and monitor export rates and services to reduce operating costs and increase profitability
- Respond promptly to customer complaints and look to find winning solutions



EXTENSION AGENT

Extension Agents are employed by land-grant universities and serve the citizens of that particular state by serving as an expert or teacher on a topic relating to economics, community development, agriculture, family, animal production, diet and nutrition.

Education & Training

Bachelor's or Master's degree in your desired agricultural subject area or agriculture and extension education

Recommended High School Courses

Agricultural education, family and consumer sciences, public speaking, writing, sciences, personal finance, and business

Typical Employers

State or county agencies

Suggested Professional Organizations

National Association for County Agricultural Agents
 National Association of Extension 4-H Agents
 National Extension Association of Family and Consumer Sciences

Job Market/Outlook



Responsibilities

- Actively work with team local, regional and state teams to identify issues in the interest area you work in
- Develop and execute educational programs on your interest area for the community
- Provide learning experiences that will empower people to improve their lives around critical issues
- Some positions in the academic setting will require you to conduct research
- Some extension professionals also may teach more formal courses to students enrolled at the land-grant university
- Investigate, develop and refine value-added content to a variety of delivery platform
- Create and utilize assessments to evaluate the impact of the programming
- Answer questions of local/state residents regarding your field of expertise
- Speak at industry events on topics that you may specialize in or even at local civic organization meetings
- Develop volunteer networks in order to sustain programs
- Work with local 4-H clubs by leading or teaching programming
- Maintain a high level of visibility and facilitate communications with a wide range of clientele including traditional and non-traditional learners, elected officials, agricultural and non-agricultural stakeholders, and environmental and special interest groups to promote the understanding of agriculture and natural resource issues



EXTENSION YOUTH PROGRAM COORDINATOR

An extension youth program coordinator works as an academic staff member of a county extension office, typically overseeing county 4-H chapters and programs as well as youth development programs

Education & Training

Bachelor's degree in agricultural education, education, agriculture, or agricultural communications

Recommended High School Courses

Agricultural education, home economics, health, physical education, English, art, computer courses, a focus on the sciences, mathematics

Typical Employers

County and state extension offices

Suggested Professional Organizations

National Extension Association of Family and Consumer Sciences
 American Association for Agriculture Education
 National Association of Extension 4-H Agents

Job Market/Outlook



Responsibilities

- Organize community resources in support of the development of area youth, particularly 4-H members
- Oversee and assist county or regional 4-H chapters
- Coordinate and facilitate extension and outreach programs involving K-12 students including workshops, after school activities, youth mentoring, special interest programs, summer camps, day camps, and other activities consisting of a variety of topics and themes
- Ensure assessment of activities and that programming is meeting desired needs of participants and stakeholders
- Prepare and submit county 4-H development program plan, annual report, and other reports required
- Promote 4-H and youth development programs to a variety of groups and area families to encourage and boost membership
- Create and distribute marketing and communications materials to make youth and adults aware of upcoming events and initiatives
- Provide leadership for county, district, and state learning activities including livestock shows, judging contests, public speaking, educational presentations, Share-the-Fun, etc.
- Contact and schedule judges for 4-H competitions including county fair events
- Manage due dates and entry dates for contests and judgings
- Serve on county fair board to aid in decision-making and assist in organizing 4-H related activities
- Serve on and attend 4-H committee and council meetings
- Regularly attend area 4-H club meetings to provide guidance and perform special activities or workshops
- Recruit, guide, and supervise volunteers for large activities and fundraisers
- Build long-term relationships with 4-H leaders, farmers, community members, stakeholders, relevant businesses, and any other potential area supporters and decision-makers
- Adequately budget and manage finances related to activities and expenses



FARM BUSINESS MANAGER / ACCOUNTANT

Farm Business Managers/Accountants analyze, report and give advice for a company or farms financial well-being. They conduct strenuous record keeping and oversee management accounts, company budgeting, and the administration of accounting tasks.

Education & Training

Bachelor's degree in accounting, agricultural business, finance, or business administration

Recommended High School Courses

Agricultural education, mathematics, economics, accounting

Typical Employers

Agricultural lending banks, insurance companies, and large farms

Suggested Professional Organizations

State Agribusiness Associations
American Society of Farm Managers and Rural Appraisers

Job Market/Outlook



Responsibilities

- Responsible for daily administration of financial and accounting practices of the business
- Perform accounting duties as directed including budgeting and costing control
- Responsible for costing and pricing of stock items, including in-progress and finished products
- Responsible for calculating cost pricing of work in progress stock items
- Assist management in preparing documentation for budgeting and financial reporting procedures
- Analyze and report on project and product costing
- Create production of daily and periodic cost statements
- Interpret the statistical and accounting information to appraise operating results in terms of cost, budgets, and policies of operation, trends and increased profit possibilities
- Maintain general ledger
- Develop accounting and financial management systems and reports
- Analyze and interpret monthly operating or project performance against budget
- Budget compilation and control, with analysis of monthly reports against budgets



FEED MILL MANAGER

Feed mill managers are responsible for overseeing the production, quality, costs and safety of the mill which produces feed for animals.

Education & Training

Associate's or Bachelor's degree in agriculture, animal science, poultry science, or feed mill management

Recommended High School Courses

Agricultural education, business, mathematics, chemistry

Typical Employers

Cooperatives, feed mills, animal nutrition companies, pet food companies, feed lots, integrated poultry companies

Suggested Professional Organizations

National Grain and Feed Association
 American Feed Industry Association
 State Grain and Feed Associations

Job Market/Outlook



Responsibilities

- Review production records
- Schedule feed production
- Keep inventory of feed ingredients and order as needed
- Test and review feed/grain quality
- Schedule employee shifts and keep track of employee time
- Handle customer questions and complaints
- Evaluate operating procedures
- Set quality assurance standards
- Prepare and monitor monthly, quarterly and yearly budgets
- Stay up to date on new technology and ways to make process improvements
- Train new employees and provide development opportunities
- Ensure all employees are trained on safety and continue to stay up to date
- Maintain filling equipment and other equipment needed to perform duties such as loaders, scales etc.



FINANCIAL ANALYST

A financial analyst looks at various parts of a company's finances in order to help them make better financial decisions.

Education & Training

Bachelor's degree in accounting, agricultural business, or finance

Recommended High School Courses

Agricultural education, mathematics, English, statistics, economics, and accounting

Typical Employers

Varying sizes of agricultural companies and organizations

Suggested Professional Organizations

Association of Financial Analysts
 Association for Financial Professionals
 The American Accounting Association

Job Market/Outlook



Responsibilities

- Support planning and forecasting processes as well as strategic budget planning
- Develop and recommend broad financial policies and exercise control over all finance and accounting functions of the company
- Prepare, evaluate and monitor capital expenditure projects and long-term financial plans, and also the investment of liquid assets in short-term investments
- Provide analytical support on business results and achieving financial targets via data-driven insights and recommendations
- Provide financial support to procurement group in analysis and planning of purchasing
- Drive the budgeting process for capital expenditures, assuring quality and integrity of data
- Collaborate with personnel with budget responsibility to ensure the understanding of process and outcome
- Ensure month-end corporate financial and tax reporting requirements are met
- Assist in the design, development and implementation of savings initiatives, including management reporting and audit procedures
- Benchmark business metrics within the industry
- Collaborate on the development of final budget book and presentation materials that meet management's needs, including its presentation of budget information to the Board of Directors
- Manage forecasting to include detailed department level review of future cost trends
- Advise management of financial processes to ensure proper controls exist



FLEET MANAGER

A fleet manager is responsible for managing a fleet of vehicles for a particular company that are used by its employees.

Education & Training

Associate's degree in an automotive field

Recommended High School Courses

Agricultural education, mathematics, personal finance, business and computer courses

Typical Employers

Companies that provide and maintain vehicles employees use, most commonly chemical, seed, and animal production companies

Suggested Professional Organizations

Fleet Management Association
 United Truck Drivers Association
 Association of Maintenance Professionals

Job Market/Outlook



Responsibilities

- Schedule use of fleet assets in the most cost efficient manner
- Provide for the needs of fleet drivers
- Communicate with drivers and mechanics about complaints
- Log violations, and working with various plants and departments to ensure customer satisfaction
- Monitor purchase of inventory parts
- Gather bids on maintenance work to be done
- Ensure vehicles are up to standards according to the Department of Transportation (DOT)
- Maintain correct files regarding delivery shipments, expenses, accidents, etc.
- Manage records all aspects of equipment availability and maintenance



GRAIN BUYER

A grain buyer builds relationships with producers on behalf of the company they represent or are employed by allowing them to purchase the producers grain at a fair price.

Education & Training

Associate's or Bachelor's degree in agricultural business, agricultural marketing, or a related field

Recommended High School Courses

Agricultural education, mathematics, business and computer courses

Typical Employers

Elevators, food production companies, feed mills, animal nutrition companies, and bioenergy companies

Suggested Professional Organizations

American Soybean Association
Food Ingredient Distribution Association
National Grain and Feed Association

Job Market/Outlook



Responsibilities

- Build relationships directly with farmer customers
- Write contracts and negotiate purchase agreements
- Source protein meals, screenings, mill feeds & other ingredients as needed from local producers
- Coordinate grain deliveries
- Issue purchase orders for farmer suppliers, invoice purchases from farmers and insure timely payment for farmer suppliers
- Be aware and knowledgeable of grain trading policies and current market trends via the Chicago Board of Trade
- Perform USDA grain grading procedures
- Participate in monthly commodity purchasing and inventory-related meetings



GRAIN ELEVATOR MANAGER

Grain Elevator Managers are responsible for storing grain, shipping grain to processing facilities, and buying grain from farmers.

Education & Training

Associate's or Bachelor's degree in agricultural business, economics, marketing, or an agronomic field

Recommended High School Courses

Agricultural education, biology, chemistry, mathematics, and business courses

Typical Employers

Agricultural retail suppliers, processing companies, and cooperatives

Suggested Professional Organizations

North American Export Grain Association
National Grain and Feed Association
Transportation, Elevator, and Grain Merchants Association

Job Market/Outlook



Responsibilities

- Supervise, lead, and develop assigned full-time and part-time elevator employees
- Train assigned employees to meet state, federal, and company regulatory and safety criteria
- Responsible for grain handling including incoming, stored, and outgoing grain
- Maintain the grain quality, blending, and provide grain drying services
- Implements grain pricing, considering sample and inspection grade on all incoming and outgoing grain shipments
- Ensures service charge levels are maintained
- Assists with development and implementation of grain origination marketing plans
- Responsible for compliance with OSHA; state; and federal safety regulations and maintenance and professional appearance of equipment, rolling stock, and facilities
- Provides professional customer service resulting in increased sales
- Stays current and informed on industry trends, competitive practices, and regulatory compliance



GRAIN MARKETING SPECIALIST

A grain marketing specialist is responsible for managing inbound inventory and marketing grain procurement services and programs offered by their company to producers, agents and other potential customers.

Education & Training

Associate's or Bachelor's degree in agribusiness, marketing, agricultural economics, logistics, or agronomy

Recommended High School Courses

Agricultural education, biology, mathematics, business and computer courses

Typical Employers

Large grain companies, smaller elevators and cooperatives, commodity marketers, or agricultural risk management programs

Suggested Professional Organizations

Transportation, Elevator, and Grain Merchants Association
National Grain and Feed Association

Job Market/Outlook



Responsibilities

- Buy grain in and around your designated trade area
- Conduct calls on current and potential producers to ensure customers are fully informed about the programs and services offered by the company
- Ensure the existing customer base is maintained and increase volumes through the acquisition of new customers
- Market and administer contracting programs through direct calls on individual producers and/or at general meetings held for producers
- Collaborate with other grain merchandising staff or sales staff to create and position risk management solutions for producers and members
- Create, adjust, and manage strong sales plans
- Provide pricing contract administration
- Provide timely information of schedules, pricing, contracts, grower information and competitor activity
- Provide excellent customer service to producers
- Remain up to date on industry trends and news
- Attend various industry tradeshow



GRAPHIC DESIGNER

A graphic designer creates and designs graphical marketing content and media using computer software.

Education & Training

Associate's or Bachelor's degree in graphic design, digital media, or a related field

Recommended High School Courses

Agricultural education, English, mathematics, art, and computer courses

Typical Employers

Self-employed, marketing agencies, or any size of agricultural company or organization

Suggested Professional Organizations

National Agri-Marketing Association
American Institute of Graphic Art (AIGA)
Graphic Artist Guild

Job Market/Outlook



Responsibilities

- Develop creative concepts for business marketing needs, externally or internally
- Work through various media forms producing promotional materials: print, video, social media, presentations, ads, blogs, newsletters, etc.
- Knowledge of various design software tools
- Work with communications/marketing team to execute outlined marketing strategies
- Keep abreast of changes, rules, regulations as related to various content and platforms
- Develop new creative assets for print following established brand guidelines
- Develop marketing campaign concepts and deliver through multi-channel execution (print and digital)
- Create digital assets for website the and mobile sites
- Support design needs of various departments as assigned
- Ensure all brand standards are adhered to
- Package and label design
- Create and maintain technical labels/instructions for all products
- Maintain print collateral library and requests (orders for sales staff and distribution)
- Manage all company merchandise design, ordering and vendor relations



HUMAN RESOURCES GENERALIST

Human Resources Generalists are responsible for the main HR duties including recruitment, development, and employment of staff for companies.

Education & Training

Bachelor's degree in human resources
or agribusiness

Recommended High School Courses

Agricultural education, mathematics,
business and computer courses

Typical Employers

Any sized agricultural company or organization

Suggested Professional Organizations

Society for Human Resource Management
National Human Resources Association
National Association of Colleges and Employers
Professionals In Human Resources Association

Job Market/Outlook



Responsibilities

- Responsible for recruiting and staffing logistics as well as organizational and space planning
- Coordinates performance management and improvement systems
- Manages organization development while also maintaining employment and compliance to regulatory concerns and reporting
- Liaise with both human resources managers and line managers to undertake or assist with specific initiatives, projects and assignments
- Focus on employee orientation, development, and training
- Develops policy and documentation and maintains employee relations
- Administrate compensation and benefits throughout the company and maintains employee safety, welfare, wellness and health, while focusing on employee services and counseling
- Attend community, state and school related career fairs to recruit potential candidates for the company
- Develop, post and manage company job postings



HUMAN RESOURCES MANAGER

Human resources managers plan, direct, and coordinate the administrative functions of an organization. They oversee the recruiting, interviewing, and hiring of new staff and serve as a link between an organization's management and its employees.

Education & Training

Bachelor's degree in human resources or related field; consider SHRM (Society for Human Resource Management) or SPHR (Senior Professional in Human Resources) certification

Recommended High School Courses

Agricultural education, mathematics, statistics, accounting, psychology and Spanish

Typical Employers

Medium to large-scale agricultural companies

Suggested Professional Organizations

Society for Human Resource Management
National Human Resources Association

Job Market/Outlook



Responsibilities

- Implement and support the policies and practices that are consistent with the philosophy of the company
- Have an understanding of human resource laws in order to ensure the company is compliant with laws and regulations
- Serve as the company representative in termination hearings
- Partner with other members of the human resources department to ensure consistent overall human resources leadership and procedures
- Conducts new hire on-boarding and early engagement for all new employees
- Recruit and interview new talent
- Serve as an advisor for human resources issues to leadership
- Find innovative ways to recruit and retain new talent
- In collaboration with accounting department, advise employees on benefits and pay issues
- Provides management with human Resource related information reports
- Works with individual in charge of payroll regarding pay, absences, and time reporting matters
- Provides direction to employees on all human resource related policies and procedures
- Conducts human resource audits and risk assessments
- Handle dissolving employee conflict



INFORMATION TECHNOLOGY ANALYST

An Information Technology Analyst supports the analytical needs of a business through the analysis of moderately complex system data and summary reports.

Education & Training

Bachelor's degree in information technology or other relevant field

Recommended High School Courses

Agricultural education, advanced mathematics, and computer courses

Typical Employers

Medium to large-scale agricultural companies and organizations with major technology systems

Suggested Professional Organizations

Association of Information Technology Professionals
Network Professionals Association

Job Market/Outlook



Responsibilities

- Collect and analyze data to enable decision-making and process improvement for specialty area
- Cull moderately complex data and extrapolate trends and patterns
- Derive conclusions and summarize actionable insight for specialty area
- Collaborate with internal/external customers to validate conclusions/hypotheses
- Design and prep various reports, charts, graphs to depict trends
- Proactively seek opportunities for the IT department to deliver business value
- Lead projects to deliver new information and technology to the business areas
- Drive value from existing IT applications through data availability, business process improvements and other means
- Find and act on replication opportunities between sites and functions
- Leverage knowledge of the business, IT portfolio and architectural standards to develop and quantify business cases to provide input to the IT roadmap
- Influence changes to IT standards to meet evolving business or industry directions

INFORMATION TECHNOLOGY APP DEVELOPER

An IT App Developer, or a mobile developer, designs, builds, tests, produces, and improves mobile apps for a business.



Education & Training

Bachelor's degree in computer science, information technology, MIS, information systems, or software engineering

Recommended High School Courses

Agricultural education, mathematics, coding, and computer courses

Typical Employers

Medium to large-scale agricultural companies

Suggested Professional Organizations

Association of Information Technology Professionals
National Association of Programmers
Network Professionals Association
Software Development Forum

Job Market/Outlook



Responsibilities

- Design and develop mobile applications for iOS and Android per the company's technology and communications vision or strategy
- Create visually appealing as well as intuitive user interfaces
- Analyze, review, and assess user requirements, specifications, and models for understanding the needs of the user
- Gather information for the app development via interviews, focus groups, research, etc.
- Document internal and external source code
- Create implementation and test specifications for new applications; participate in testing
- Handle support and documentation of the mobile applications created
- Troubleshoot and implement testing solutions
- Work closely with marketing and business team members as well as other developers to ensure goals and objectives are met
- Participate in future mobile app development plans and discussions



INFORMATION TECHNOLOGY CONFIGURATOR

A role as an IT configurator is functional consulting role usually specializing in the configuration of large software products.

Education & Training

Master's degree in computer science or computer engineering

Recommended High School Courses

Agricultural education, mathematics, coding, and computer courses

Typical Employers

Medium to large-scale agricultural companies

Suggested Professional Organizations

Association of Information Technology Professionals
Network Professionals Association
Software Development Forum

Job Market/Outlook



Responsibilities

- Prepare gap analysis on one program version to the highest program version
- Configure various modules to meet specific business requirements
- Design and develop interfaces, reports and forms
- Test software
- Provide post implementation support
- Plan and lead software upgrades
- Utilize conceptual understanding of other functional areas
- Establish time schedules with the programming and business sections for computer programming and configuration scheduling
- Ensure that adequate documentation and internal communication is provided so that users are aware of impacts of change
- Facilitate process improvement and develop new functionality of software used within the business



INFORMATION TECHNOLOGY PROGRAMMER

An IT analyst ensures that writing, testing and maintenance of computer programs and applications are analyzed to meet user and process needs.

Education & Training

Associate's or Bachelor's degree in computer science, information systems or other technical area

Recommended High School Courses

Agricultural education, mathematics, and computer courses

Typical Employers

Medium to large-scale agricultural companies and organizations with both internal and external software needs

Suggested Professional Organizations

Association of Information Technology Professionals
National Association of Programmers
Network Professionals Association

Job Market/Outlook

Poor Good Excellent

Responsibilities

- Design all or part of an information system
- Oversee program design activities to ensure they meet business process objectives
- Analyze development objectives against corporate objectives and problems specified by analysts and/or designers
- Perform all programming and/or configuration assignments
- Define and incorporate system security and control procedures to protect data entrusted to assigned systems
- Analyze and resolve software errors in a timely and accurate fashion
- Ensure the documentation for programming, users of the system and other support service workers meet overall business process
- Provide status reports where required
- Draft design specifications for software applications
- Create and maintain documentation for code and/or configuration throughout the system development lifecycle
- Ensure the testing of the programs meet acceptance criteria
- Train end users on established programs
- Provide on-call support and problem resolution
- Perform required maintenance and install enhancements to ensure effective operation of systems



INFORMATION TECHNOLOGY SOFTWARE DEVELOPER

Software developers create programs for computers or other devices that fill a specific need or niche within an agricultural business.

Education & Training

Bachelor's degree in computer science or computer engineering

Recommended High School Courses

Agricultural education, mathematics, coding, and computer courses

Typical Employers

Medium to large-scale agricultural companies

Suggested Professional Organizations

Association of Information Technology Professionals
Software Development Forum
Association of Software Professionals

Job Market/Outlook



Responsibilities

- Provide technical and systems design expertise to assist in the development, implementation, review and upgrade of Microsoft.Net-based management and decision making systems
- Act proactively in providing suggestions in regards to product development, new services and technologies or enhancements to existing systems/configurations which will assist the end user in improving overall service to customers
- Develop test plans along with expected results and perform quality testing
- Prepare implementation plans along with back-out and recovery plans
- Install and test software
- Provide on-going production support as needed
- Provide estimates on project requests; ensure timely delivery based on the estimates
- Actively participates on assigned team projects fulfilling task assignments, meeting deadlines, and proactively seeking attainment of team goals
- Ensures that technical skills are kept up to date to provide most efficient support to end users
- Assists in the development of programming expertise within the systems development team
- Promote agile practices such as continuous integration, paired programming, and cross-functional development within the team
- Knowledge of agricultural terminology specific to the sector of agriculture the software is being developed for is a plus



INFORMATION TECHNOLOGY SPECIALIST

Serves as support to branch offices and administrative office on all phases of technology use by employees.

Education & Training

Associate's or Bachelor's degree in computer science, information systems or other technical area

Recommended High School Courses

Agricultural education, mathematics, coding, and computer courses

Typical Employers

Varying sizes of agricultural companies and organizations

Suggested Professional Organizations

Association of Information Technology Professionals
 Network Professionals Association
 CompTIA

Job Market/Outlook



Responsibilities

- Assist in Administering and maintaining technical infrastructure that includes, but not limited to: customer servers, switches routers, desktops, laptops and networks where applicable and as needed to support Technical Services Systems & IT structure
- Assist in administering and maintaining security, hardware and applications for all Technical Services Systems
- Administers and maintains virtualization technologies and all current and future programs/software
- Assist in the development of innovative new technologies that will enhance the company's position in the market.
- Research and test new technologies for implementation into the IT portfolio, as directed
- Performs maintenance and troubleshooting on company computers
- Ensures computers are secure from cyber threats
- Installs and supports software programs used by the company
- Provides training and support to employees



INFORMATION TECHNOLOGY WEB DEVELOPER

Builds and maintains a website to fit the needs to the company or customer. The work of a web developer requires layout and writing code.

Education & Training

Bachelor's degree in information technology or computer science

Recommended High School Courses

Agricultural education, mathematics, coding, and computer courses

Typical Employers

Medium to large-scale agricultural companies, public relations firms, software developers, or self-employed

Suggested Professional Organizations

Association of Information Technology Professionals
International Web Association
Association of Web Design

Job Market/Outlook



Responsibilities

- Undertake web development design activities including definition of data and error message arrangements
- Develop websites, using content management system, templates and workflows
- Use XML tools and technologies.
- Analyze database integration from web environments
- Modify and document web code to correct errors or to enhance a program's capabilities
- Assist designers in researching and documenting computer users' requirements.
- Be responsible for unit testing of software and make amendments where required
- Plan, direct, and execute measurable and continuous improvements to corporate and regional websites HTML5/CSS/JavaScript development and site production (Hand code)
- Primary administrator and orchestrator of site content
- Design and develop new web page layouts including associated custom code
- Work cross functionally with IT and Internet security teams
- Manage digital assets such as images and videos
- Optimize websites and web pages for Search Engine Optimization and Search Engine Marketing
- Troubleshooting site, solving issues with content, links navigation, and user experience
- Monitor and report analytics for websites



INTERN

An intern role is professional position where appropriate on the job training in a specialized area will enable career growth. Internships are typically 12 weeks long, project based and will involve an assigned mentor/manager to oversee the student intern.

Education & Training

Internships typically completed during pursuit of Bachelor's or Master's degree

Recommended High School Courses

Agricultural education, English, accounting, and computer courses

Typical Employers

Varying sizes and types of agricultural companies and organizations

Suggested Professional Organizations

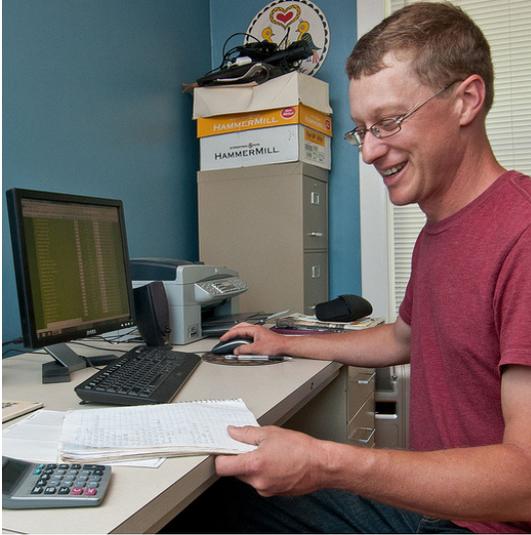
National Agri-Marketing Association
National FFA Alumni Association
Young Farmers and Ranchers Organization

Job Market/Outlook



Responsibilities

- Assist professional role in defined profession while observing day-to-day duties.
- Assist with reporting, analysis, as they relate to assigned intern project.
- May be required to undertake special projects such as policy and procedure updates, documentation of existing systems and processes, development of specifications and business case documentation.
- May be asked to perform some administration and clerical duties.
- Attend any professional development trainings to gain industry certification.
- Comply with occupational health and safety standards.
- Take on other duties as required to enhance the performance of the business unit and its goals.
- Present key findings to manager and upper management
- Take part in group project or activities as they relate to the assigned job



INVENTORY / STOCK SPECIALIST

The role of an inventory/stock specialist responsible for the reporting and management of physical and book value stock on hand.

Education & Training

A high school diploma or an Associate's degree in agricultural business or supply chain management

Recommended High School Courses

Agricultural education, mathematics, business and computer courses

Typical Employers

Any agricultural company that sells or distributes product

Suggested Professional Organizations

Association for Operations Management (APICS)

Job Market/Outlook



Responsibilities

- Ensure that stock figures received, either direct or by handling agents, are inputted into the system to ensure up-to-date stock on hand reconciliation processes (physical to book value)
- Ensure that appropriate checks are in place for the payment of storage and handling fees
- Overall responsibility for adhering to occupational health and safety standards and setting company policy in regard to the movement of inventory and management of stock
- Record inventory movement and assign associated value
- Work closely with logistics, warehouse and purchasing management
- Record raw material or commodity receivables and storage in a production/processing business
- Receive and process customer orders and complete necessary paperwork
- Communicate with logistics staff regarding known issues relating to the ability/inability to move or store stock
- Record raw material or commodity receivables and storage in a production/processing business
- Communicates relevant issues, activities and events to Production Manager
- Monitor the payment of storage and handling fees



LOGISTICS & SUPPLY CHAIN MANAGER

Those in Logistics and Supply Chain Management positions are responsible for overseeing the execution of factory or customer deliveries, freight quotations, onsite pickup, and overflow and direct-to-port. They also are in charge of implementing the contractual, regulatory and strategic supply chain goals of a company.

Education & Training

Bachelors or Master's degree in agricultural business, economics, logistics, or supply chain managements

Recommended High School Courses

Agricultural education, science, mathematics

Typical Employers

Varying sizes and types of agricultural companies and organizations

Suggested Professional Organizations

Agricultural & Applied Economics Association
International Association of Agricultural Economists
Mid-America International Agri-Trade Council

Job Market/Outlook



Responsibilities

- Develop and manage a logistics plan for the business unit, including road, rail and coastal shipping transportation, to develop least cost supply chain strategies, short and medium term
- Review sources of supply and service provider contractual terms in order to develop alternatives if required
- Develop the plan to ensure least cost path for material management
- Utilize freight and product storage contracts, key customer and supplier records of performance and sales/supply information
- Proactively manage the delivery/receivable schedule to meet sales and purchase contractual terms
- Proactively manage product deficiencies, including reordering, rejection, breakdowns, contamination, delays etc.
- Set guidelines to ensure that goods, materials or services purchased are of the quality specified
- Undertake major contract negotiations within the approved pricing policy and establish service programs
- Utilize measurement processes to schedule service
- Address issues if economies are not exercised to achieve schedules to meet delivery requirements
- Budget responsibility for the department
- Proactively work with the logistics team for agreed timing of services



MARKETING SPECIALIST

Marketing Specialists are responsible for getting the appropriate communication message and medium delivered to the public. By doing so, they ensure that the company meets their sales goals. Marketing Specialists also watch over companies/clients promotions for their products and services through their marketing skill sets.

Education & Training

Bachelor's degree in agricultural business, marketing, journalism, communications, education or business administration

Recommended High School Courses

Agricultural education, mathematics, art, English, writing, business and computer courses

Typical Employers

Variety of agricultural companies and organizations, advertising agencies, or you may be self-employed

Suggested Professional Organizations

National Agri-Marketing Association
National Association of Farm Broadcasting
American Agricultural Editors Association

Job Market/Outlook



Responsibilities

- Plan, develop, and direct the efforts for distribution of company product
- Develop and execute marketing programs to increase annual sales volume and revenue
- Develop a marketing strategy for the organization, such as advertising, promotions, public relations, trade marketing, digital and social media
- Responsible for internal and external communications
- Coordinate and execute special events
- Work with suppliers to ensure distribution programs including training/education, pricing, inventory management, communication pieces, reporting, tradeshow, etc.
- Create incentive programs for sales people and suppliers
- Monitor brand performance and use information gained to recommend actions
- Provide financial analysis and business planning for each individual brand if applicable
- Conduct market research on own products as well as competitive products
- Develop a marketing budget and adhere to outlined expenses
- Work with all other functions of the business to carry out business goals



OFFICE MANAGER

Office managers within the agricultural industry typically handle administrative and customer service duties within an office setting.

Education & Training

High school diploma or Associate's degree in business administration, accounting or a related field

Recommended High School Courses

Agricultural education, personal finance, mathematics, business and computer courses

Typical Employers

Varying sizes and types of agricultural companies and organizations, farms, government agencies, cooperatives, mills, and universities

Suggested Professional Organizations

National Association of Professional Receptionists
The American Society of Administrative Professionals

Job Market/Outlook



Responsibilities

- Process business activities through computers
- Generate and review customer checks and buyer invoices
- Prepare bookkeeping packets and provide accounting reports as needed by management
- Manage data entry and inventory
- Manage accounts receivables and setup new buyers
- Process general administrative expenses
- Process time sheets for hourly workers and assist in collecting new hire paperwork
- Support corporate office accounting departments
- Provide excellent customer service
- Provide support to the facility manager and regional office manager
- Recruit and hire seasonal labor
- Manage technology needs like software updates, virus protection, etc.
- Maintain office organization and purchase supplies



PATENT SCIENTIST / ATTORNEY

Patent scientists (or patent attorneys) serve a unique role in large agricultural organizations that produce new products. Their responsibility is to evaluate patent validity on new products or services from both a legal and scientific perspective.

Education & Training

Master's or Doctorate in your preferred field of work as well as some level of legal training; J.D. recommended

Recommended High School Courses

Agricultural education, business and computer courses, a focus on the sciences, mathematics

Typical Employers

Large agricultural companies and organizations, continually discovering and creating new products

Suggested Professional Organizations

National Association of Patent Practitioners
American Intellectual Property Law Association

Job Market/Outlook



Responsibilities

- Manage intellectual property matters relating to a company's products or creations
- Perform patent assessments and the drafting of patent applications
- Provide infringement opinions and help to develop patent strategies
- Prosecute patent applications and conduct opposition proceedings
- Evaluation and due diligence of patent licensing and acquisition opportunities
- Control and manage the allocated budget for patent portfolios
- Perform presentations and become involved in intellectual property review meetings
- Support business objectives and counseling inventors in line with areas of commercial focus
- Work closely with and advise scientific researchers, project managers, and heads of business units within the company
- Remain closely involved in negotiation agreements with third parties



PAYROLL ADMINISTRATOR

A payroll administrator works in a support role to for the payment of wages to personnel.

Education & Training

Associate's or Bachelor's degree in accounting or business/agricultural business

Recommended High School Courses

Agricultural education, mathematics, personal finance, business and computer courses

Typical Employers

Medium to large-scale agricultural companies and organizations

Suggested Professional Organizations

American Accounting Association
National Society of Accountants

Job Market/Outlook



Responsibilities

- Calculate time sheets/records
- Assess deductions and additions to salary entitlements
- Prepare banking requirements for the timely payment of wages and superannuation
- Interpret and analyze industrial awards and salary information and remain aware of changes to benefit entitlements
- Maintain internal wages and superannuation records
- Prepare forecasts and budgets for salaries and wages for management reporting
- Ensure all payroll transactions are processed timely
- Review paperwork and import files received from Human Resources
- Prepare submissions for 401K contributions
- Reconcile medical, dependent care and transit reimbursement accounts with third party administrators monthly
- Provide all information and materials requested for all payroll related audits
- Oversee and prepare payroll records for tax purposes



PORT TERMINAL MANAGER

Responsible for planning, administering and reviewing the operations on a port terminal in order to optimize resource use, minimize costs and maintain quality standards.

Education & Training

Bachelor's degree in engineering, logistics or business

Recommended High School Courses

Agricultural education, physics, mathematics, business and computer courses

Typical Employers

Agricultural companies that ship products internationally or domestically or the government

Suggested Professional Organizations

American Association of Port Authorities
American Association of Exporters and Importers

Job Market/Outlook



Responsibilities

- Lead the safe, effective, efficient and profitable production operation of a port terminal facility by managing all aspects of the terminal to meet customer and throughput commitments
- Develop and deliver on business plans to meet port terminal commitments
- Oversee terminal budget
- Handle coordination with rail carriers on delivery of product (minimize of rail demurrage)
- Manage vessel tug, barge switching and fleeting operations
- Responsible for safety and health throughout the terminal, including proper handling of dangerous goods
- Lead, develop and implement strategic and operational planning for a port terminal facility
- Liaison with industry stakeholders and represent the company on external committees and associations
- Supervise shipping process and inventory management ensuring that freight arrives at its destination in a timely manner
- Monitor computerized automation system, to ensure that all equipment is operational, and production levels are met and maintained in accordance with goals and objectives
- Oversee coordination and distribution of all products to maximize efficiency of port terminal space, expedition of loading vessels, along with the blending of grains to meet grade standards while maintaining the best possible profit margins



POST-SECONDARY EDUCATOR / UNIVERSITY PROFESSOR

Post-Secondary Educators teach agriculture related courses at the college or university level within their specialized area of expertise. Some may also conduct research as part of their role within the university.

Education & Training

Doctorate degree in chosen discipline but in some cases, a Master's degree will suffice

Recommended High School Courses

Agricultural education, biology, botany, chemistry, mathematics and computer courses

Typical Employers

Community colleges, junior colleges, technical schools and universities that have agricultural programs

Suggested Professional Organizations

North American Colleges and Teachers of Agriculture
National Association of Agriculture Educators
American Association for Agricultural Education

Job Market/Outlook



Responsibilities

- Design and teach classes in chosen discipline subjects
- Prepare and deliver lectures
- Utilize and teach the most recent technology within the industry
- Prepare course materials such as syllabi, presentations and handouts
- Demonstrate technical skills and task in laboratory settings
- Assign and grade papers as well as laboratory projects
- Conduct research in subject discipline and publish papers
- Apply for and secure grant funding
- Collaborate with other educators and scientist on research projects and courses
- Advise undergraduate and graduate students
- Attend meetings
- May serve as advisor for clubs and organizations



PROCESS / CONTINUOUS IMPROVEMENT MANAGER

A process manager or a continuous improvement manager facilitates process improvement plans within a division or throughout a company.

Education & Training

Bachelor's degree in engineering, operations management or business management

Recommended High School Courses

Agricultural education, sciences, business and computer courses, personal finance, and advanced mathematics

Typical Employers

Medium to large-scale agricultural companies and manufacturers as well as research firms

Suggested Professional Organizations

Association for Manufacturing Excellence
Business Process Management Institute

Job Market/Outlook



Responsibilities

- Identify and document business and gap analysis for workflow
- Develop and implement business improvement strategies
- Coordinate and manage key process improvement/change projects (e.g. launch new products)
- Facilitate business process re-engineering within and across divisions
- Communicate to the business and stakeholders on projects and initiatives
- Make recommendations for change, involving process redesign and business case development
- Ensure efficient and effective resource use at the lowest cost
- Ensure accurate and organized process documentation in procedures, paperwork and computer business systems
- Prepare and present annual process review documents
- Supervise product quality by adherence to product and packaging specifications, sanitation and inspection
- Ensure ongoing coaching, development and training of team members for a productive work environment
- Establish measurable criteria to ensure desired results are obtained; provide management with updates via tracking reports on project progress
- Align process goals with company's key initiatives/accountabilities
- Assist with identification of hard and soft training needs; identify potential workforce training grants



PROCUREMENT SPECIALIST

Procurement specialists specialize in finding goods or services for a business at a good price and meets the needs of the business.

Education & Training

Bachelor's degree in supply chain management or similar field; consider obtaining a Certified Procurement Professional (CPP) certification

Recommended High School Courses

Agricultural education, statistics, mathematics, business and computer courses

Typical Employers

A variety of agricultural companies including seed and chemical companies, food and animal production companies, and grain marketing firms

Suggested Professional Organizations

American Purchasing Society
Association of Certified Procurement and Operations Professionals

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Work across business units to plan and prioritize purchasing activities
- Review planned orders, create requisitions for purchased items, and manage approval process
- Transmit and prioritize approved purchase orders to the chosen supplier
- Track order acknowledgments, prepare and communicate shortage and back order reports
- Ensure that if there is a potential for a shortage or interruption in supplies that the affected parties are notified for planning purposes
- Track orders and confirm delivery dates and costs
- Review, update, and maintain purchase orders until they are fully completed
- Ensure orders adhere to supplier agreements and contracts
- Negotiate contracts, agreements and pricing with suppliers
- Handle occurrences when contracts or agreements are not kept
- Lead finance and logistics staff in resolving reception and invoice discrepancies
- Identify opportunities and implement actions to achieve efficiencies
- Contribute to consolidation, reduction, and rationalization of the local supplier base
- Build strong relationships with suppliers



PRODUCT DEVELOPMENT MANAGER / DEMAND PLANNER

Product development managers oversee product control, strategy and distribution throughout sales networks.

Education & Training

Master's or doctorate degree in desired field; for example, to work for a crop or seed company, you will need a degree in plant pathology

Recommended High School Courses

Agricultural education, sciences, business and computer courses

Typical Employers

Medium to large-scale agricultural companies, research firms, and some government agencies

Suggested Professional Organizations

Product Development and Management Association
National Society of Professional Engineers

Job Market/Outlook



Responsibilities

- Develop new products through an existing range of key accounts and customer contacts
- Identify and develop new technology that will potentially add value to the company
- Assess the profitability of new products through market research and competitive analysis
- Work closely with other business units to trial products and plan field trials
- Assist in positioning product performance and present at company meetings as well as commercialization meetings
- Manage global development programs including proper design and execution of activities across multiple areas according to approved budgets and timelines
- Train and support sales staff
- Develop label use recommendations
- Manage relationships with production personnel, stakeholders, trial staff and brand managers
- Analyze and communicate results and recommendation to upper management
- Assist with customer service calls as necessary



PRODUCTION MANAGER

Production Managers work in a variety of settings within agriculture including animal production, seed and chemical production, and the food sector. They are responsible for overseeing day to day activities as they relate to the successful production of the product the company produces.

Education & Training

Bachelor's degree in agricultural business, food science, animal or poultry science

Recommended High School Courses

Agricultural education, animal science, mathematics, Spanish, biology and chemistry

Typical Employers

Food processing facilities ranging from meat to dry packaged goods as well in live animal production settings and in the chemical/biotech industry

Suggested Professional Organizations

National Association of Manufacturers
American Society of Animal Science
American Poultry Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Prepare and administer work orders
- Schedule production crew assignments
- Ensure work orders are completed on time and within budget
- Ensure that production crew is trained and in compliance with federal, state, and company regulations to ensure work is completed in a safe manner and to avoid work related accidents
- Ensure production crew is trained on proper use and handling of chemicals
- Interview, hire, evaluate performance, and administer disciplinary actions for production crew personnel
- Oversight of employee and food safety programs
- Achievement of productivity, efficiency, customer service, cost, quality, safety and employee engagement objectives
- Confer with management personnel to establish processing and quality control standards, to develop budget and cost controls, and to obtain data regarding types, quantities, specifications, and delivery dates of products ordered
- Plan and direct processing activities and establishes processing priorities for products in keeping with effective operations and cost factors
- Coordinate processing activities with procurement, maintenance, and quality control activities to obtain optimum processing and utilization of human resources, machines, and equipment
- Revise processing schedules and priorities as a result of equipment failure or operating problems
- Consult with engineering personnel relative to modification of machines and equipment in order to improve processing and quality of products



PUBLIC RELATIONS SPECIALIST

Public Relations Specialists develop and correlate an influential company brand for clients and employees.

Education & Training

Bachelor's degree in agricultural business, marketing, journalism, communications, education or business administration

Recommended High School Courses

Agricultural education, art, mathematics, public speaking, business and computer courses

Typical Employers

Medium to large-scale agricultural companies, marketing firms or agencies, or self-employed

Suggested Professional Organizations

National Agricultural Communicators of America
National Agri-Marketing Association

Job Market/Outlook



Responsibilities

- Prepare internal and external communications
- Support management with media liaison, media releases, speeches and promotional material
- Create public relations opportunities and media coaching for senior managers
- Liaise with clients, advertising agencies, media and suppliers
- Work closely with function managers in the process of company product/service launches to ensure maximum exposure and that protocols are adhered to
- Report on media coverage
- Promote positive issues and address negative issues surrounding products as part of business unit marketing initiatives
- Assist with the management of incidents that arise and liaise with identified media groups



PURCHASING ANALYST

Purchasing analysts look at market outlooks and determine when and what to buy when contracting with vendors, ordering supplies or making a big investment in a product, technology etc.

Education & Training

Associate's or Bachelor's degree in agricultural business finance or accounting

Recommended High School Courses

Agricultural education, mathematics, business and computer courses

Typical Employers

Agricultural companies that produce products for retail, organizations, and the government

Suggested Professional Organizations

Supply Chain Management Association
Council of Supply Chain Management Professionals
American Purchasing Society

Job Market/Outlook



Responsibilities

- Research product comparisons and prices
- Determine cost effectiveness and price history to determine if time is right for purchasing
- Maintain a network of parts and equipment suppliers
- Document purchases of equipment by area and specification
- Purchase needed equipment from the most cost-effective supplier
- Negotiate favorable pricing from suppliers
- Maintain an awareness of supply
- Develop short- and long-term sourcing strategies with leadership
- Develop and implement short- and long-term strategies to purchase cash corn and/or basis levels at or below the market and profit plans
- Develop, monitor, pursue, and execute tactical and strategic initiatives in the areas of commodities, vendor/contract relationships, and supplier management



QUALITY ASSURANCE AUDITOR

A quality assurance auditor monitors companies production process to ensure they are in compliance with governmental regulations.

Education & Training

Bachelor's degree in food science, animal science, poultry science or other related field; addition certification and/or licensure required

Recommended High School Courses

Agricultural education, mathematics, biology, chemistry, business and computer courses

Typical Employers

Food production companies, government agencies, or you may work as a third party contractor

Suggested Professional Organizations

Society of Quality Assurance
Quality Assurance Association
International Association for Food Protection

Job Market/Outlook



Responsibilities

- Perform product sampling duties and prepare reports based on findings
- Provide legible, accurate, complete and timely computer entries and documents
- Ensure appropriate decisions are made regarding the quality characteristics of products, materials and equipment
- Able to meet sensory demands of the job: taste and feel
- Safely use chemicals required for testing and cleaning
- Successfully complete Hazard Analysis Critical Control Point (HACCP), Good Manufacturing Practice (GMP), and Food Security Training
- Ensure attendance and participation in training activities appropriate to the position and to incorporate acquired skills and knowledge
- Ensure no injuries to self or others by following safe work practices and policies
- Ensure the interface with team members and other support groups is in a participative management style conducive with operational goals
- Report findings to management, if it is of safety concerns, do so immediately



QUALITY ASSURANCE MANAGER

A quality assurance manager is a leadership management role responsible for the policy, strategy and testing methodology to meet regulatory authority compliance.

Education & Training

Bachelor's degree in agricultural business, food science, animal science, poultry science or other related field

Recommended High School Courses

Agricultural education, mathematics, biology, chemistry, business and computer courses

Typical Employers

Various agricultural or food producing companies

Suggested Professional Organizations

Society of Quality Assurance
Quality Assurance Association
International Association for Food Protection

Job Market/Outlook



Responsibilities

- Must be knowledgeable of all state and federal regulations for the product being produced
- Responsible for the quality control aspects of raw materials and finished products
- Assist in setting quality standards and ensure that production is maintained at such standards
- Develop, implement and maintain the organization's quality management systems and ensure continuing compliance to relevant quality standards
- Ensure weekly swabs/samples are taken and sent for testing. Takes action for any swabs / samples that come back with non-compliance levels
- Maintain the corporate quality manual and quality records
- Review and report the principle causes of quality loss and non-conformance
- Ensure all check sheets are correctly completed and all non-compliance found have had the correct action taken and signed off
- Arrange, coordinate and participate in external quality audits
- Supervise quality control aspects of raw materials and finished products
- Implement and maintain the quality management systems and ensure continuing compliance to relevant quality standards are implemented and maintained
- Review and report the principle causes of quality loss and non-conformance
- Arrange, coordinate and participate in external quality audits



REAL ESTATE MANAGER

Real estate managers in the agricultural industry are responsible for overseeing and supporting a company or business's real estate strategies by managing all aspects of real estate transactions.

Education & Training

Bachelor's degree in agricultural business, economics or a related field

Recommended High School Courses

Agricultural education, advanced mathematics, personal finance, business and computer courses

Typical Employers

Medium to large-scale agricultural businesses and agricultural lending organizations

Suggested Professional Organizations

National Association of Farm Managers
and Rural Appraisers
National Association of Realtors
Realtors Land Institute

Job Market/Outlook



Responsibilities

- Organize and manage the company's real estate portfolio through developing and following standardized processes, providing guidance on evaluating real estate strategies and negotiating the business term
- Assist with mergers, acquisitions, divestitures and leasing
- Provide real estate related consultation and coordinate the processes for acquiring and developing land
- Responsible for lease administration and real estate database management
- Develop and manage relationships with third party real estate providers
- Collaborate with other corporate functions ensuring real estate processes are aligned and followed
- Facilitate the negotiation of real estate incentives and tax appeals
- Consult on construction projects pertaining to property acquisition and expansion
- Assist business in preparing and presenting operational and capital budgets for real estate related activities



RECEPTIONIST

Receptionists provide a service role by greeting people and attending to inquiries made by customers or company staff.

Education & Training

High school diploma or Associate's degree in business administration

Recommended High School Courses

Agricultural education, English, accounting, mathematics, and computer courses

Typical Employers

All sizes and types of companies and organizations

Suggested Professional Organizations

National Association of Professional Receptionists
 International Association of Administrative Professionals
 American Society of Administrative Professionals

Job Market/Outlook



Responsibilities

- Provide a courteous reception and information service for callers
- Operate the switchboard, receive and relay all incoming calls
- Take messages for those unable to be contacted
- Provide information to assist clients, or refer them to appropriate contacts, either in the organization or elsewhere
- May also be required to take charge of outgoing mail, arranging for courier deliveries and assist in simple clerical work such as copy, typing, receiving payments and order of stationery and office supplies
- Arrange appointments for callers or for people working in the organization and maintain calendars
- In marketing/sales areas, assist in the promotion of products and give prices and details to customers
- Directs persons to correct destination
- Deal with queries from the public and customers
- Ensure knowledge of staff movements in and out of organization
- Perform general administrative and clerical support
- Prepare letters and documents
- Receive and sort mail and deliveries
- Schedule appointments
- Maintain appointment diary either manually or electronically
- Maintain tidiness of the reception area
- Other duties as required and assigned



RETAIL BRANCH MANAGER

A retail branch manager oversees the daily operations of a retail store including inventory, personnel, sales, and finances.

Education & Training

Associate's or Bachelor's degree in agriculture business or marketing

Recommended High School Courses

Agricultural education, mathematics, personal finance, business and computer courses

Typical Employers

Independently owned and operated retail stores, company-held chain stores, or self-employed

Suggested Professional Organizations

Agriculture Retailer's Association
National Agri-Marketing Association

Job Market/Outlook



Responsibilities

- Handle merchandising, budgeting, credit control, accounting, inventory and expense control
- Employ, train, develop, supervise and terminate personnel in a retail location
- Provide quality service within acceptable productivity ratios
- Direct and perform fieldwork, including selling, and building good will
- Comply with all government regulations to maintain a minimal level of liability for the retail location. Examples: OSHA Wage and Hour Law, EEO, Sales Tax, etc.
- Operate the business for adequate return on investment to keep it financially sound
- Responsible and accountable for all environmental and safety compliance at retail locations
- Maintain good relations with local civic leaders, patrons and board, keep the company image at a very high level in the community
- Supervise truck and equipment maintenance, routes, degree-day systems, use of loaned equipment, which requires climbing, crawling on and around equipment being inspected
- Handle all complaints promptly and thoroughly
- Responsible for budget compliance
- Responsible for management of branch merchandise
- Build relationships with suppliers and customers



RISK MANAGEMENT SPECIALIST

Risk Management specialists manage risk for producers by identifying, measuring and advising regarding decisions on financial risk for an organization.

Education & Training

Bachelor's or Master's degree in agricultural business, accounting, finance, risk management, or related field

Recommended High School Courses

Agricultural education, mathematics, statistics, accounting, and business courses

Typical Employers

Agriculture marketing groups, banks, grain merchandisers, consulting firms, or self-employed

Suggested Professional Organizations

The Risk Management Society
Public Risk Management Association

Job Market/Outlook

Poor Good Excellent

Responsibilities

- Find strategies to reduce price risk on agricultural commodities Use software to create models to look at hedge effectiveness, trends and price sensitivities
- Look at the impact that pests, disease, ecological factors and other factors could have on crop production
- Use agricultural data and government agency reports in order to conduct risk assessments for clients or state/federal government to facilitate improved agricultural trade
- Conduct economic impact studies to look at the long and short term impact on policies being considered
- Ensure compliance with US Generally Accepted Accounting Principles (GAAP) as set by the US Securities Commission (SEC) when hedging
- Develop, monitor and communicate risk management measurement procedures
- Develop weather forecasts and financial forecasts for farmers to aide in decision making
- Provide hedging strategy recommendations with varying risk tolerances
- Monitor commodity prices and potential threats to prices
- Provide daily or weekly credit and risk reports to clients based on their needs
- Conduct market research on best practices, competitive landscape and new hedging tools



SALES REPRESENTATIVE

Sales Representatives for food, seed, feed, and fuel market their certain product to different companies within the agricultural sector including producers, suppliers, and dealers. To be able to do so, they are given a certain territory to work within.

Education & Training

Associate's or Bachelor's degree in agricultural business or a field that relates to the product you are selling

Recommended High School Courses

Agricultural education, mathematics, economics, business courses, biology, chemistry, botany

Typical Employers

Wide variety of agricultural companies or self-employed

Suggested Professional Organizations

National Agri-Marketing Association
Agriculture & Applied Economics Association
Women in Agribusiness

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Maintain and grow a territory of accounts
- Outline and achieve distribution and growth objectives/sales goals within a specific geographic area through effective account management
- Introduce new products, promote improved distribution and ensure promotional results
- Recommend programs for brand building and line expansion of existing brands
- Stay abreast of business/market conditions, intensively plan sales efforts, recognize new opportunities within each account and maintain the necessary territory records
- Provide educational training to accounts through seminars and trade events
- Build and develop the trust and confidence of the retailer through knowledge of products, persuasive presentations, and overcoming objections
- Conduct sales meeting for area distributors



SALES TRAINER

Sale trainers plan, develop, implement and evaluate training and development programs for company sales staff.

Education & Training

Bachelor's degree in human resources, agriculture education, agriculture business or degree relating to product/services being offered

Recommended High School Courses

Agricultural education, mathematics, biology, business and computer courses

Typical Employers

Agricultural companies with larger sales staffs or you may be self-employed

Suggested Professional Organizations

National Association of Sales Professionals
Professional Sales Association
National Ag Retailers Association

Job Market/Outlook



Responsibilities

- Design and coordinate staff training programs based on organizational and employee needs
- Analyze training needs to ensure objectives and goals of the organization and work area are met
- Develop training resources e.g. preparation of notes and visual displays from researched information
- Conduct training courses including demonstrating equipment, operating video recorders/cameras and leading group discussions or role-playing activities, or employ experts to do so
- Evaluate the effectiveness of training programs; evaluation involves using such methods as surveys, questionnaires, interviews and observation, then using the results to plan future courses or to amend existing ones
- Obtain information on work-related external courses, prepare reports on their suitability and make recommendations on staff attendance at training courses
- Provide career development sessions for existing staff and conduct induction sessions for new employees
- Assist in the recruitment, development, utilization and retention of work force
- Work with Training Manager and Sales Marketing Managers to design, develop and/or deliver advanced sales manager training program and experienced sales content.
- Works with Training Manager on Succession Planning process for member or retail operations
- Coordinate follow-up and evaluations with employees to assure new skills and techniques have successfully been implemented on the job
- Work directly with member and retail division and HR managers to assess, deliver and ensure implementation of knowledge and skills



SHIPPING COORDINATOR

A shipping coordinator is responsible for export logistics, the execution of shipping services and compliance documentation activities required for in/out-bound shipping activities.

Education & Training

High school diploma or an Associate's degree in logistics

Recommended High School Courses

Agricultural education, mathematics, personal finance, foreign language, business and computer courses

Typical Employers

Medium to large-scale agricultural companies that continually ship and receive goods

Suggested Professional Organizations

International Air & Shipping Association
Mid-America International Agri-Trade Council
Grower-Shipper Association

Job Market/Outlook



Responsibilities

- Manage key relationships and negotiate freight rates with shipping merchants and traders
- Execute stevedoring activities
- Supervise loading and unloading of shipping vessels
- Coordinate functional logistics staff internally to facilitate land based freight movements, both inbound and outbound from port; communicate shipping schedules, orders and meeting deadlines
- Review orders and available inventory
- Process order changes/cancellations
- Determine the most efficient and economical method of shipping
- Create shipping paperwork and schedule loads
- Coordinate returns and reconcile inventory counts
- Follow established policies, procedures and objectives



SOCIAL MEDIA STRATEGIST

Social media strategists develop, manage and track Internet content on their employer's social media pages. Because of the popularity of social media, social media strategists play a crucial role in defining agriculture's brand to the masses.

Education & Training

Bachelor's or Master's degree in communications or agricultural communications

Recommended High School Courses

Agricultural education, English, communication, graphic design, art, and computer courses

Typical Employers

Various medium to large-scale agricultural companies and organizations

Suggested Professional Organizations

AgChat Foundation
Public Relations Society of America
National Agri-Marketing Association

Job Market/Outlook



Responsibilities

- Familiarity with existing social media outlets and commitment to knowledge of new outlets
- Write effective content for the web
- Support digital campaigns that have social media components and provide thought leadership and tactics to drive optimum consumer and commercial engagement
- Manage day-to-day social editorial calendar for social media channels and drive participation
- Protect the organization and its brands by responding to issues that arise in social media
- Familiarity with social media analytics metrics and resources
- Record social media analytics and performs forecasting for marketing to achieve sales objectives
- Draw conclusions and makes recommendations based on campaign analysis
- Manage external vendor relationships
- Lead and manage marketing projects, including planning, budget and status reporting
- Monitor and analyze metrics and outcomes of marketing programs.
- Track and report on budget for assigned programs.
- Suggest, develop, and implement tests and mail strategies for assigned programs



SUPPLY CHAIN MANAGER

A supply chain manager is responsible for the management of goods, materials, services and/or equipment of either a division of a company, or an entire company.

Education & Training

Bachelor's or Master's degree in supply chain management or other business-related degrees

Recommended High School Courses

Agricultural education, mathematics, statistics, and business courses

Typical Employers

Medium to large-scale agricultural companies that produce mass quantities

Suggested Professional Organizations

Supply Chain Management Association
Council of Supply Chain Management Professionals
The Distribution Business Management Association

Job Market/Outlook



Responsibilities

- Work directly with operations/co- packer operations and supply planning to ensure demand and inventory targets are met
- Undertake major contract negotiations within the approved pricing policy and establish service programs to match the company's requirements
- Contribute to the development of established supply policy and procedures
- Prepare reports and communicate inventory measurements to management
- Develop and monitor distribution requirements plans, initiate priorities based on customer needs and production availability
- Work closely with sales, marketing and customer service to identify proactive inventory adjustments in support of both sales and operational targets
- Maintain documentation and operating procedures for demand/supply planning process and related systems
- Actively participate with contract manufacturing, finance, sales/marketing, research and development and project managers towards new product development and launch
- Proactively facilitate and recommend re-engineering, best practices & consensus between the following areas: supply chain, sales/marketing, operations, finance and IT
- Work closely with plant operations and material managers towards the accurate and timely distribution of products
- Audit supply companies



WAREHOUSE / FACILITY MANAGER

In store facilities and warehouses, Facility/Warehouse Managers are in charge of supervising staff, security, processes and procedures.

Education & Training

Associates or Bachelor's degree in agricultural business

Recommended High School Courses

Agricultural education, business courses, mathematics, and a focus on the sciences

Typical Employers

All sizes and types of agricultural organizations

Suggested Professional Organizations

Midwest Equipment Dealers Association
National Agri-Marketing Association
Women in Agribusiness

Job Market/Outlook



Responsibilities

- Manage a store or warehouse and its security
- Organize receipts, storage and sale of goods
- Control all warehouse facilities and the planning and layout of stores
- Maintain stock records and documentation on incoming and outgoing stocks
- Ensure inventory is stored in accordance with safety records and company policy
- Maintain economic level of stock on hand
- Ensure OSHA procedures are adhered to within warehouse
- Manage staff and casual workers
- Responsible for the planning and operational procedures of the warehouse



WEIGHBRIDGE / RECEIVABLES ASSOCIATE

A weighbridge associate (also known as receivable associate or bulk handler) is responsible for receivables handling and using electronic data capture systems to weigh and handle products delivered.

Education & Training

A high school diploma is required

Recommended High School Courses

Agricultural education, economics, government, computer courses, geography, and mathematics

Typical Employers

Various sizes and types of agricultural companies

Suggested Professional Organizations

Food Processing Suppliers of America
 North American Export Grain Association
 Institute of Packaging Professionals

Job Market/Outlook



Responsibilities

- Spot, connect, load and unload rail cars, bulk containers, tank trucks, etc.
- Control the loading of material or the operation of continuous feeding equipment such as pumps and conveyors, chemical raw materials, intermediates or active ingredients
- Check the operation of equipment visually, through gauges and instruments or through computer operated monitoring equipment
- Control and adjust the operation of equipment
- Inspect controls and equipment to identify wear/damage and arrange maintenance
- Prepare shift operation reports, record breakdowns and levels of productivity
- Monitor storage tank inventories
- Cooperate with logistics to agree on daily or weekly load schedules
- Ensure safety and regulatory compliance in handling or loading areas

AGRICULTURAL MECHANICS

ASSEMBLY TECHNICIAN
AUTOMATION COORDINATOR / TECHNICIAN
CARPENTER / LABORER
CONSTRUCTION FOREMAN
COTTON GIN & WAREHOUSE MANAGER
DEALER SERVICES REPRESENTATIVE
DESIGN ENGINEER
ELECTRICAL ENGINEER
ELECTRICIAN / ELECTRONICS TECHNICIAN
GEOSPATIAL ANALYTICS SCIENTIST
HEAVY EQUIPMENT OPERATOR / FORKLIFT OPERATOR
HYDRAULICS TECHNICIAN
LIVESTOCK HAULER
MAINTENANCE / SERVICE TECHNICIAN
MECHANICAL ENGINEER
PARTS MANAGER
PRECISION AGRICULTURE SPECIALIST
RENDERING TRUCK DRIVER / RENDERING MAINTENANCE
SALES REPRESENTATIVE: EQUIPMENT & AG SYSTEMS
SERVICE WRITER
TRUCK DRIVER
WELDER



ASSEMBLY TECHNICIAN

Assembly technicians assemble parts to the main machine or agricultural equipment while maintaining quality workmanship.

Education & Training

A high school diploma or an Associate's degree in a power technology field (automotive, agricultural power, diesel, etc.)

Recommended High School Courses

Agricultural education, agricultural mechanics, industrial technology, welding, mathematics

Typical Employers

Agricultural equipment or system factories or production plants

Suggested Professional Organizations

Farm Equipment Manufacturers Association
American Welding Society
Association of Equipment Manufacturers

Job Market/Outlook



Responsibilities

- Independently carry out general assembly procedures and work by assembly instruction sheets
- Assemble subassemblies or parts of subassemblies to the main machine being worked on
- Check and double check work and correct any assembly problems
- Assist in planning assembly procedures and administer the completion of a machine
- Conduct final functional tests to verify that the assembled unit operates properly and that it is of high quality
- Read and understand blueprints, technical drawings, and specifications
- Keep work area neat, clean, and orderly
- Follow prescribed safety regulations



AUTOMATION COORDINATOR / TECHNICIAN

Automation technicians are responsible for the installation, operation and maintenance of computer/robotic systems used in a variety of agricultural sectors.

Education & Training

Bachelor's degree in electrical engineering, electronics technology, bio-engineering, biological sciences or computer science

Recommended High School Courses

Agricultural education, computer courses, mathematics, industrial technology, and physics

Typical Employers

Agricultural factories and processing/packaging plants as well as companies that heavily rely on computer data processing software

Suggested Professional Organizations

The International Society of Automation
The Organization for Machine Automation and Control
IEEE Robotics and Automation Society

Job Market/Outlook



Responsibilities

- Proficiency in multiple skill clusters including electricity and electronics, fluid power, mechanical systems, and manufacturing processes
- Assist engineering and plant staff with the specification, installation, and modification of systems
- Perform the administration, configuration, design, maintenance, programming, and qualification of assigned Client-Server Computer Systems, Equipment Control Systems, Process Control Systems, and Historical Data Systems.
- Work with team members, site customers and leadership on assigned projects to communicate status, manage expectations, resolve issues, and insure top quality service.
- Provide expertise to continue advancement of automated systems throughout the site
- Install, maintain, and inspect control system and workstation installations throughout the facility. Inspect and review manufacturing equipment installations for design and troubleshooting purposes
- Ensure machines are properly calibrated (especially in regards to weight)
- Coordinate personnel schedules and duties as required to accomplish departmental goals
- Provide technical and business guidance and mentoring for automation technicians and automation engineers
- Provide system operation training on the assigned automation systems
- Provide troubleshooting and maintenance support for all assigned automated systems potentially at all hours depending upon plant schedule



CARPENTER / LABORER

Carpenter/Laborers are responsible for implementing general maintenance, mechanical, and carpentry duties.

Education & Training

A high school diploma or an Associate's degree in a relevant field as well as some certifications

Recommended High School Courses

Agricultural education, a focus on sciences, industrial technology, and mathematics

Typical Employers

Various sizes and types of agricultural companies

Suggested Professional Organizations

American Wood Council
 American Institute of Constructors
 National Association of Women in Construction

Job Market/Outlook



Responsibilities

- Unload, carry and stack material and place tool and equipment in position
- Clean for general maintenance
- Operate wheel loaders, forklifts, skid steers, and similar equipment
- Assist operations personnel, maintenance personnel and supervisors as needed
- Build or wooden fixtures used in buildings, using woodworking machines, carpenter's hand tools, and power tools.
- Select and order lumber and other required materials
- Assemble and fasten materials to make framework
- Read and interpret blue prints, assembly instructions and similar directions
- Work with and/or remove hazardous material
- Perform minor plumbing, welding and/or concrete mixing work
- Other manual duties as directed



CONSTRUCTION FOREMAN

A construction foreman constructs agricultural buildings and structures such as barns, sheds, grain bins, mills, plants, elevators, and more.

Education & Training

A high school diploma or an Associate's degree in a relevant field such as carpentry, construction equipment operation, power technology, or building systems

Recommended High School Courses

Agricultural education, agricultural mechanics, industrial technology, welding, computer and business courses, mathematics

Typical Employers

Agricultural construction companies or self-employed

Suggested Professional Organizations

American Institute of Contractors
National Association of Agricultural Contractors
National Association of Women in Construction

Job Market/Outlook



Responsibilities

- Lead a team to complete construction projects
- Perform repairs and service work on the structure or building equipment
- Ensure quality and cost standards set by company or building owner are met in a timely manner
- Participate in project planning, scope, assessments, layout, and other details
- Communicate progress, issues, and solutions to supervisor or stakeholders throughout the construction process
- Explain, execute, and sign contracts with any subcontractors involved
- Execute daily management of excavators, concrete crews, framers, electricians, and equipment installers
- Receive and verify material shipments are of correct quantities and quality
- Submit project accurate and timely project reports
- Complete purchase orders, inventory documents, and time sheets



COTTON GIN & WAREHOUSE MANAGER

A cotton gin and warehouse manager oversees all operations involved in cotton ginning processes, logistics with USDA Cotton Classing offices, logistics with producers, storage and marketing of cotton bales.

Education & Training

A high school diploma is required but an Associate's degree in agricultural mechanics, engineering, business, and/or marketing is preferred

Recommended High School Courses

Agricultural education, physics, mechanics, industrial technology, accounting, computer courses, and mathematics

Typical Employers

Private or cooperative gins in all cotton-producing states, or you may be self-employed if an owner

Suggested Professional Organizations

National Cotton Ginners Association
Cotton Incorporated
National Cotton Council

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Oversee ginning operations and equipment upkeep and maintenance
- Ensure all phases of machinery operations are calibrated and functioning for efficiency and throughput
- Transport harvested cotton from field to gin
- Dry, clean, remove cotton seed from lint and baling and package cotton
- Package and ship samples to USDA Classing offices
- Oversee data management and reporting bale ID numbers and sample classing data
- Market and facilitate sales and shipment of cotton bales with brokers
- Handle logistical storage of cotton bales in warehouses
- Oversee gin safety protocols and procedures according to OSHA guidelines
- Market cotton seed and gin trash to potential buyers



DEALER SERVICES REPRESENTATIVE

A Dealer Services Representative is the primary contact between two companies in a business to business relationship, often between larger suppliers and smaller distributors. Dealer services representatives support the dealers and field personnel with resources, answers and information through verbal, written and electronic communication channels.

Education & Training

A high school diploma or an Associate's degree in business

Recommended High School Courses

Agricultural education, mathematics, personal finance, business and computer courses

Typical Employers

Large companies with branches that sell their products such as an equipment dealer, parts retailer, insurance, finance, software or feed company

Suggested Professional Organizations

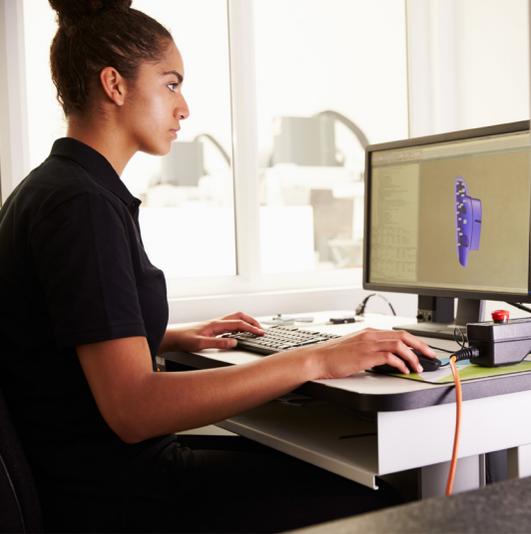
Agricultural Retailers Association
North American Equipment Dealers Association

Job Market/Outlook



Responsibilities

- Respond to incoming communications from dealers, customers, and field personnel via phone, e-mail, and other communication methods
- Forward incoming communications to the appropriate person(s) if the request is beyond the representative scope of familiarity or responsibility
- Enter a summary of each incoming communication into a log to ensure each request is handled
- Generate a weekly report detailing frequent issues brought up by dealers
- Provide structured training to dealers and field personnel in using electronic resources
- Assist and encourage dealers to use available electronic resources to resolve issues
- Work with leadership in the development and maintenance of electronic and printed resources
- Build relationships with dealers and serve as intermediary between them and your company to initiate positive changes
- Assist with preparing and distributing monthly and special dealer mailings



DESIGN ENGINEER

A Design Engineer designs and develops agricultural equipment and system products and serves as a technical resource by participating in design reviews and providing input of new projects.

Education & Training

Bachelor's degree in agricultural or mechanical engineering is required; knowledge in steel fabrication, welding, and machining also essential

Recommended High School Courses

Agricultural education, agricultural mechanics, industrial technology, welding, computer courses, advanced mathematics

Typical Employers

Agricultural equipment and systems manufacturers

Suggested Professional Organizations

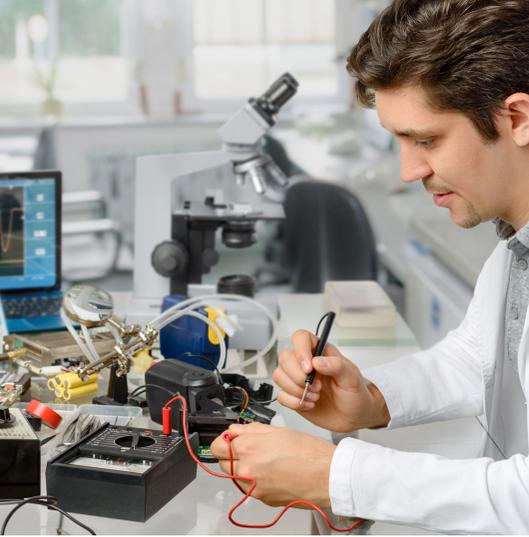
American Society of Mechanical Engineers
Institute of Industrial and Systems Engineers
Farm Equipment Manufacturers Association

Job Market/Outlook



Responsibilities

- Design major components and/or subsystems
- Develop and evaluate product designs based on customer needs, manufacturability, cost, and safety
- Develop design specifications, collaborating with product management, sales and marketing, manufacturing, product development, testing, and customers for projects assigned
- Develop test plans and direct testing of the design
- Ensure all requirements are completed to meet prototype and test schedules
- Set product quality and tolerance specifications for designs
- Design and/or select hydraulic, power transmission, and structural components needed to implement design
- Perform engineering design calculations
- Operate design software to design, layout, produce drawings, and develop bills of materials
- Work with manufacturing to develop tooling and new manufacturing processes as assigned
- Develop high level understanding and knowledge of company products
- Remain abreast of new products, technologies, materials, construction methods, testing procedures, and competitive equipment in industry
- Participate in product design reviews and provide input on design based on experience and knowledge
- Provide technical support as needed to purchasing, suppliers, manufacturing, dealers, and customers



ELECTRICAL ENGINEER

Electrical engineers use technology to install, repair, service, and create electrical operations.

Education & Training

Bachelor's degree in electrical, industrial, mechanical or agricultural engineering

Recommended High School Courses

Agricultural education, a focus on physical sciences, and mathematics

Typical Employers

Farm equipment manufacturers, grain milling operations, research firms, meat processing companies, and some government agencies

Suggested Professional Organizations

National Electrical Contractors Association
 Farm Equipment Manufacturers Association
 Institute of Electrical and Electronics Engineers
 National Society of Professional Engineers

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Create electricity generating stations using semiconductors on a circuit board while developing a new electronic device
- Oversee installation, maintenance and repair of new and existing electrical systems
- Design blueprints and diagrams for electrical components
- Participate in technical integration for complete system to ensure system meets product specification.
- Work with Supply Management, Sales, Marketing, Manufacturing, and Quality Assurance to optimize designs for cost, quality, and manufacturability.
- Use computers and other technologies such as global positioning to create and test electrical equipment
- Tear apart and reassemble equipment
- Read dials and meters to determine amperage, voltage, electrical output and input at specific operating temperature to analyze parts performance
- Develop electrical warning systems
- Ensure compliance with local and national electrical codes
- Maintain an inventory of the instrument/electrical/electronic parts
- Assist in developing, trainings and reviewing electrical programs and procedures for company



ELECTRICIAN / ELECTRONICS TECHNICIAN

Electrician/Electronics Technicians implement wiring and the maintenance for mechanical equipment in electrical systems.

Education & Training

A high school diploma or an Associate's degree in industrial equipment technologies, HVAC maintenances or electrical/electronic technology

Recommended High School Courses

Agricultural education, a focus on sciences, mathematics, industrial technology, and mechanics

Typical Employers

Farm equipment dealers and manufacturers, grain milling operations, research firms, meat processing companies, and government agencies

Suggested Professional Organizations

National Electrical Contractors Association
International Association of Electrical

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Installation, maintenance and repair of electrical systems
- Read blueprints and diagrams while troubleshooting and diagnosing electrical problems
- Perform preventative maintenance to avoid operational failures of electrical systems
- Install electrical wiring, assemble electrical parts and test fixtures and components that provide electricity to related instruments
- Provide drawings and suggestions related to inspection and testing
- Use computers and other technologies to test electrical equipment
- Tear apart and reassemble equipment
- Read dials and meters to determine amperage, voltage, electrical output and input at specific operating temperature to analyze parts performance
- Install electrical warning systems
- Ensure compliance with local and national electrical codes
- Maintain an inventory of the instrument/electrical/electronic parts
- Assist in developing, trainings and reviewing electrical programs and procedures for company



GEOSPATIAL ANALYTICS SCIENTIST

A geospatial analytics scientist assesses, integrates, manipulates and extracts data from GPS and other databases to improve software platforms used in precision agriculture.

Education & Training

Master's degree in agricultural engineering, civil engineering, computer science or geographic information systems

Recommended High School Courses

Agricultural education, advanced mathematics, biology, geography and computer courses

Typical Employers

Government agencies and agricultural companies working on precision agriculture platforms including equipment manufacturers

Suggested Professional Organizations

Coalition of Geospatial Organizations
Geospatial Technologies Project
Urban and Regional Information Systems Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Apply in-depth familiarity of geospatial intelligence and multi-spectral images to provide analytic support including the planning, preparation and maintenance of maps and geographic representations to display layers and data attributes using mapping techniques
- Work with IT and other scientists to develop software platforms that enable cutting-edge research and development to revolutionize plant breeding and biotechnology
- Develop research strategies for discovery projects in precision agriculture platforms
- Utilize the latest mathematical innovations to propose software solutions that accommodate emerging trends in data quantity and quality
- Design and test algorithms and conduct prototyping to evaluate possible scenarios leveraging computational and statistical techniques for the development of novel approaches for high-throughput data analyses
- Work collaboratively with interdisciplinary scientists internal and external to your company
- Organize challenging problems
- Develop new solutions utilizing mapping technologies



HEAVY EQUIPMENT OPERATOR / FORKLIFT OPERATOR

A heavy equipment or forklift operator is responsible for the loading and unloading of goods.

Education & Training

A high school diploma and forklift certification

Recommended High School Courses

Agricultural education, diesel mechanics,
industrial technology, and mathematics

Typical Employers

Any agricultural business or organization that
regularly transports and receives goods

Suggested Professional Organizations

The Forklift Truck Association
Industrial Truck Association
Material Handling Equipment Distributors Association

Job Market/Outlook



Responsibilities

- Pull and stage orders for delivery with extreme accuracy
- Load and unload trucks with designated products
- Unload incoming products and materials
- Ensure specification and quantity of orders are correct
- Secure loads, close and seal trucks where necessary
- Ensure product is transported from storage or receiving area in a manner consistent with safety, quality and production goals
- Verify stock and identify losses
- Keep inventory of goods loaded and record and sign tallies
- Remove, weigh, stretch wrap and record finished pallets
- Provide commodities to production lines
- Maintain a clean and safe working area around loading area
- Sample products and notify supervisor of any irregularities
- Process report requests, documents, deliveries and/or materials for the purpose of disseminating information and/or materials to appropriate parties
- Perform minor repair works as required for efficient loading operations



HYDRAULICS TECHNICIAN

Hydraulics Technicians are responsible for overseeing and implementing the installation, maintenance, and repairs for the hydraulic components of equipment.

Education & Training

A high school diploma or more preferably an associate's degree in industrial equipment technologies, mechanics, precision systems service, HVAC Maintenances or electronics

Recommended High School Courses

Agricultural education, mathematics, sciences, industrial technology, diesel mechanics and computer courses

Typical Employers

Farm equipment dealers and manufacturers, and government agencies

Suggested Professional Organizations

International Fluid Power Society
Farm Equipment Manufacturers Association

Job Market/Outlook

Responsibilities

- Installation, maintenance and repair of hydraulic systems
- Read blueprints and diagrams while troubleshooting and diagnosing problems
- Perform preventative maintenance to avoid operational failures of hydraulic systems
- Welding, metal fabrication and electrical assembly
- Provide drawing review and suggestions related to part inspection and testing
- Use computers and other technologies to investigate and repair hydraulic equipment
- Reassemble machines and equipment
- Read dials and meters to determine amperage, voltage, electrical output and input at specific operating temperature to analyze parts performance
- Operate drill press, grinders, engine lathe, or other machines to modify parts tested or to fabricate experimental parts for testing



LIVESTOCK HAULER

A livestock hauler safely and efficiently delivers livestock from a farm to market or processing plant with animal welfare being the foremost concern.

Education & Training

A high school diploma plus CDL certification

Recommended High School Courses

Agricultural education, animal science, biology, Spanish, and mathematics

Typical Employers

Food and livestock production companies

Suggested Professional Organizations

United Truck Drivers Association
 Women in Trucking Association
 American Trucking Association

Job Market/Outlook



Responsibilities

- Drive livestock to and from market/slaughter house to farm
- Observe all government and company regulations at all times
- Responsible for any and all needed maintenance on tractor or trailer to be taken care of by the garage or maintenance personnel
- Pre-trip the truck (tires, fuel, oil) and check the load before leaving
- Monitor the livestock's conditions on the trip and take appropriate action
- Help load and unload truck
- Accurately complete delivery forms and forward the documentation for timely processing
- Post-trip the truck (wash, fuel, tires)
- Comply with all DOT rules and regulations as well as biosecurity requirements set by company
- Maintain an excellent safety record
- Be willing to work flexible hours as many loads happen during the evening and early morning



MAINTENANCE / SERVICE TECHNICIAN

Maintenance/Service Technicians are the point of contact for making repairs on agricultural implements and lawn and garden equipment. They are responsible for implementing a basic diagnosis and executing it for clients. Maintenance/Service Technicians also work heavily with diesel engines, gasoline engines, and transmissions.

Education & Training

A high school diploma or more preferably an associate's degree in industrial equipment technologies, mechanics, heavy equipment and transport technology

Recommended High School Courses

Agricultural education, mathematics, sciences, industrial technology, diesel mechanics and computer courses

Typical Employers

Farm equipment dealers and manufacturers

Suggested Professional Organizations

International Fluid Power Society
Farm Equipment Manufacturers Association
Midwest Equipment Dealers Association

Job Market/Outlook



Responsibilities

- Perform assembly, maintenance and repair of mechanical equipment
- Read and interpret technical manuals
- Perform preventative maintenance to avoid operational failures of mechanical systems
- Welding, metal fabrication and electrical assembly
- Travel to work on equipment in the field as well as in shop setting
- Schedule repair appointments with clients
- Use computers and other technologies to investigate and repair mechanical equipment
- Reassemble machines and equipment
- Operate drill press, grinders, engine lathe, or other machines to modify parts tested or to fabricate experimental parts for testing
- Maintains condition of vehicles, inventory, tools, and equipment



MECHANICAL ENGINEER

Mechanical engineers are involved with the generation, distribution, and use of energy. This could be as a part the control and automation of manufacturing systems, the design and development of machines or the solutions to environmental problems.

Education & Training

A Bachelor's or Master's degree in mechanical engineering

Recommended High School Courses

Agricultural education, mechanics, industrial technology, advanced mathematics, sciences, and computer courses

Typical Employers

Engineering services, research and development or manufacturing companies

Suggested Professional Organizations

The American Society of Mechanical Engineers
 American Society of Agricultural Engineers
 National Society of Professional Engineers
 Agricultural Engineers Association

Job Market/Outlook

Poor

Good

Excellent



Responsibilities

- Review and develop mechanical specifications, piping specifications, layouts and trouble shooting plans
- Develop and implement preventative maintenance plans for equipment
- Assist in the development of process documentation and improvement
- Assist with training and implementation of mechanical maintenance programs
- Assist in the oversight of mechanical construction activities
- Develop materials as needed for the checkout and start up of the facility
- Possibly manage one or more specific portions of work for a project
- Assume maintenance engineer responsibilities
- Provide leadership in maintenance work processes and determining opportunities for improved efficiency
- Analyze problems to see how a mechanical device could be used help solve the problem
- Design or redesign mechanical devices, creating blueprints so the device can be built
- Develop and test prototypes of new machinery
- Analyze the test results and change designs as needed
- Oversee the manufacturing process



PARTS MANAGER

Parts managers are responsible for product inventory, warranty and service support to external customers.

Education & Training

An Associate's degree in business or a mechanical field

Recommended High School Courses

Agricultural education, mathematics, sciences, business and computer courses

Typical Employers

Parts retailers, farm equipment dealers, and salvage yards

Suggested Professional Organizations

National Ag Retailers Association
National Association of Equipment Dealers
Regional equipment dealer associations

Job Market/Outlook



Responsibilities

- Knowledge of company parts inventory titles/names and uses
- Develop and manage the parts and warranty process for a manufacturing or product import company
- Set strategy for support standards for critical items and new product introductions
- Set and approve warranty and service-policy matters
- Develop key relationships with manufacturer to negotiate warranty, product performance and service
- Ensure technical information, bulletins, product upgrades and recalls are effectively managed
- Assist in the management of dealer/technical representative service, maintenance training and dealer's customer installation process
- Responsible for ensuring progress on preventative customer care activities
- Set the priorities for service and customer care actions
- Serve as a communicator between the customer and service staff



PRECISION AGRICULTURE SPECIALIST

Precision agriculture specialists provide support and technical assistance to growers who are using precision technologies on their farms.

Education & Training

A Bachelor's degree in agricultural engineering, agronomy, or agricultural business; additional certification may be required

Recommended High School Courses

Agricultural education, chemistry, biology, plant science, botany, horticulture, computer courses, and mathematics

Typical Employers

Precision equipment/software providers, agriculture retailers, cooperatives, equipment manufacturers and dealers, and extension

Suggested Professional Organizations

International Society of Precision Agriculture
Agricultural Retailers Association

Job Market/Outlook

Poor

Good

Excellent



Responsibilities

- Implement actual work of grid and contour differential global positioning systems for soil sampling, developing information maps, recommendation maps
- Implement variable rate application of lime and nutrients
- Implement practical application of record keeping and nutrient management plans
- Assist in marketing precision agriculture program to producers
- Network with local government and extension leaders concerning Precision Ag practices
- Participate in meetings within sales area which offer an opportunity for sales and improved public relations as approved by supervisor
- Provides technical service and recommendations to patrons and prospects based on proficient knowledge of fertilization calculation and other formulations
- Assist customers in installing and calibrating their precision equipment
- Provides training for other retail employees in precision ag
- Assists in handling customer concerns and complaints
- Interpret satellite remote sensing to identify and map field variability
- Prepare variable rate fertility, fungicide, and seeding maps for customers
- Prepare variable rate and flat rate fertility, fungicide, and seeding recommendations
- Using GPS and soil test zones, locate fields by legal land description and perform soil sampling duties in field
- Provide agronomic services in field using the scouting apps or software, including pre-seed, post-seed, fungicide, pre-harvest, post-harvest recommendations
- Understand and participate in the company or farmer's business plan and strategies



RENDERING TRUCK DRIVER / RENDERING MAINTENANCE

A rendering truck driver or rendering maintenance professional is responsible for transporting and processing deceased animals to create byproducts. In this case of rendering, animals have already died due to natural causes, disease, or euthanization and are therefore not meant for human consumption. Animal remains from meat processing facilities are also often rendered to create other products such as livestock or pet food and biodiesel.

Education & Training

A high school diploma is required; if driving a truck, a valid CDL is also required

Recommended High School Courses

Agricultural education, animal science, agricultural mechanics, biology, mathematics

Typical Employers

Rendering and biofuel facilities; food, livestock, and animal/pet food companies

Suggested Professional Organizations

National Renderers Association
American Trucking Association
United Truck Drivers Association
Women in Trucking Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Schedule and coordinate load schedules with farms and livestock facilities as well as rendering plants
- Visit farms and livestock facilities regularly and on-demand to collect remains of deceased animals
- Transport remains to rendering plants
- Accurately enter rendering sales orders and invoices
- Observe all government and company regulations at all times
- Responsible for any and all needed maintenance on tractor or trailer
- Perform pre-trip inspections including tires, fuel, and oil
- Regularly clean the truck following load completions and refuel
- Comply with all DOT rules and regulations as well as biosecurity requirements
- Maintain and clean expeller units
- Operate a forklift if necessary
- Maintain a safe and professional working environment



SALES REPRESENTATIVE: EQUIPMENT & AG SYSTEMS

Sales representatives specializing in agricultural equipment, ag systems, or precision agriculture technology optimize retail sales of their products to an assigned territory.

Education & Training

A Bachelor's degree in business, agricultural business, agriculture, marketing, or agricultural systems

Recommended High School Courses

Agricultural education, agricultural mechanics, business and computer courses, mathematics

Typical Employers

Agricultural equipment manufacturers and dealerships, or ag systems manufacturers and dealers

Suggested Professional Organizations

Farm Equipment Manufacturers Association
North American Equipment Dealers Association
State and regional equipment dealers associations

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Oversee retail sales and promotion of products and relationship building
- Conduct sales calls and presentations
- Make recommendations to customers
- Monitor competitive activities
- Implement marketing tools and maintain public relations through customer education and promotion of new products and services
- Develop sales territory for future growth
- Manage inventory of new and used equipment and parts
- Maintain relationships within dealer guidelines and provide after sales product follow-ups as well as support equipment operations as needed
- Attend industry tradeshow and events to represent products and communicate with customers in-person
- Coordinate with billing or accounting staff to ensure accurate invoicing
- Monitor market conditions and changes



SERVICE WRITER

A service writer supports a service manager and assists in the daily operation of the service department by maintaining records and documentation associated with servicing of equipment.

Education & Training

A high school diploma or an Associate's degree in agriculture, construction, or related mechanical degree

Recommended High School Courses

Agricultural education, mathematics, industrial technology, business and computer courses

Typical Employers

Equipment dealers and other mechanical service providers

Suggested Professional Organizations

North American Equipment Dealers Association
Regional Equipment Dealer Associations
National FFA Alumni Association

Job Market/Outlook



Responsibilities

- Answer phone calls in the service department and waits on customers at the service counter
- Assist in scheduling work, answering questions and advising on repairs within established guidelines
- Communicate with customers on additional repairs needed and obtains approval
- Start repair orders, enter tech notes and parts on orders, review for accuracy and obtain service manager approval before finalizing
- Process warranty claims including computation of charges and filing with the correct manufacturing company in a timely, accurate manner; follow up to be certain that claims are paid
- Assist service manager in coordinating special promotions, clinics and other departmental events
- Generate reports and completes other paperwork as requested
- Review technician time postings for accuracy and assists time reporting
- Assist customers with picking up, dropping off, loading and unloading equipment
- Coordinate transportation for equipment coming and going between the dealership and customer sites
- Work with delivery drivers and third party vendors to assure timely pickup & delivery
- Assist the service manager in assuring that the shop is in compliance with governmental regulations, safety guidelines, company policies, and up-to-date on manuals and other resources



TRUCK DRIVER

A truck driver is the point of contact for receiving, transporting, and delivering products within the ag industry. They ensure that products such as livestock, equipment, and feed are safely delivered to their desired locations.

Education & Training

A high school diploma as well as CDL certification

Recommended High School Courses

Agricultural education, animal science, biology, industrial technology, and mathematics

Typical Employers

Any agricultural company or organization that regularly ships goods or livestock; you may also be self-employed

Suggested Professional Organizations

United Truck Drivers Association
 American Trucking Association
 Women in Trucking Association

Job Market/Outlook



Responsibilities

- Observe all government and company regulations at all times
- Ensure that the tractor and trailer is cleaned and maintained in a safe working manner; this includes identifying all needed maintenance on tractor or trailer requiring attention by maintenance
- Accurately perform a pre-trip inspection that includes tires, fuel, oil etc.
- Before loading ensure that the compartments are free of feed or ingredients
- Ensure that the tarp cover is securely fastened and protecting ingredients from contamination
- Collect samples of ingredients for quality assurance testing
- Accurately complete delivery forms and forward the documentation for timely processing
- Load and Unload trucks when at destination
- Monitor the conditions of the livestock on the trip and take appropriate action



WELDER

Welders are responsible for welding equipment and most commonly, machines. They also weld together framework made out of steel for buildings.

Education & Training

A high school diploma or, in many cases, a welding certification

Recommended High School Courses

Agricultural education, a focus on sciences, industrial technology, welding, and mathematics

Typical Employers

Equipment dealers and manufacturers, seed production companies, cooperatives, feed and grain companies, food production companies, and other agricultural companies that produce goods

Suggested Professional Organizations

American Welding Society
United Association of Journeymen and Apprentices
Welding Research Council

Job Market/Outlook



Responsibilities

- Assemble, install and repair equipment such as grain and feed handling, storage and drying equipment (including bucket elevators) boiler and boiler components, scrubbers, fans, pumps, conveyors, gear boxes and turbines
- Read and interpret layout plans, blueprints, or other drawings
- Maintenance and repair of equipment
- Complete steel construction, working high in the air, underwater or in shop setting
- Support company safety and continuous improvement programs
- Inspect, maintain, troubleshoot and repair equipment
- Utilize arc, oxygen/acetylene, MIG, TIG and plasma methods to safely perform welding and cutting functions
- Position and secures work piece, using hoist, crane, wire and banding machine, or hand tools
- Maintain records of maintenance activities including the use of a computerized maintenance management system



ANIMAL SCIENCE

ANIMAL BIOTECHNOLOGIST
ANIMAL CARETAKER / OPERATIONS MANAGER
ANIMAL GENETICIST
ANIMAL PHYSICAL THERAPIST
ANIMAL WELFARE SPECIALIST / AUDITOR
APIARY WORKER / BEEKEEPER
ARTIFICIAL INSEMINATION TECHNICIAN
BEEF FARM WORKER
BLOODSTOCK AGENT
BREEDING MANAGER
CARCASS MERCHANDISER
DAIRY FARM WORKER
EMBRYOLOGIST
FALCONER
FARM WORKER - SMALL RUMINANT
FARRIER
FEEDMILL OPERATOR
FEEDLOT MANAGER
FOOD ANIMAL VETERINARIAN
HERD NUTRITIONIST
HERDSMAN
HORSE TRAINER / INSTRUCTOR

LIVESTOCK AUCTIONEER
LIVESTOCK BUYER
LIVESTOCK GRADER
LIVESTOCK LOADER
MEAT INSPECTOR
PENRIDER
PET GROOMER
POULTRY FARM WORKER
POULTRY HATCHERY MANAGER
PRESSURE WASHER OPERATOR
RANCH MANAGER
SALES REPRESENTATIVE:
FEED & ANIMAL HEALTH
SMALL ANIMAL VETERINARIAN
SOW FARM MANAGER
SWINE FINISHING FARM MANAGER
SWINE NURSERY WORKER
VETERINARY ASSISTANT
VETERINARY PATHOLOGIST
VETERINARY TECHNICIAN
ZOOLOGIST



ANIMAL BIOTECHNOLOGIST

Animal Biotechnologists are responsible for researching how nutrients in feed and/or animal reproductive processes impact animal health. They then create methods for more efficient production using their research findings.

Education & Training

Master's degree in animal science, poultry science, or a similar field

Recommended High School Courses

Agricultural education, animal science, chemistry, biology, and mathematics

Typical Employers

Food production companies, contract growers with integrated production facilities, animal pharmaceutical companies, university research farms, or you may be self-employed

Suggested Professional Organizations

American Poultry Association
American Society of Animal Science
National Institute for Animal Agriculture

Job Market/Outlook



Responsibilities

- Disseminate technical information to veterinarians or related animal health personnel
- Perform daily insemination, heat detection and schedule of the herd
- Maintain records of procedures, farm calls and emergencies
- Routine maintenance and sterilization of equipment and machinery
- Semen collection and processing semen orders
- Attend training programs and education workshops to ensure customer satisfaction
- On-farm training of personnel
- Analyze client needs and develop nutritional plans for their animal(s)
- Develop and test new feed supplements for farmers
- Assess new nutritional products and feed combinations
- Investigate nutritional disorders
- Write reports and give informational presentations regarding animal nutrition
- Customize ingredient blends and management programs
- Monitor feed formulations to meet standards and quality control regulations
- Evaluate chemical and nutritional value of feeds and feed supplements
- Coordinate research trials
- Initiate and support patent applications for securing new products
- Ensure health, safety and environmental procedures and regulations are put in place and followed
- Attend training when needed and coordinate training for team members
- Monitor laboratory analysis and assist when needed



ANIMAL CARETAKER / OPERATIONS MANAGER

Animal Caretakers/Operations Managers are responsible for the care of animal production facilities for food consumption.

Education & Training

A high school diploma or an Associate's degree in animal science or related major

Recommended High School Courses

Agricultural education, animal science, biology, and mathematics

Typical Employers

Food production companies, contract growers, university research farms, or you may be self-employed

Suggested Professional Organizations

American Poultry Association
American Society of Animal Science
National Pork Producers Council

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Responsible for learning and overseeing all aspects of an animal operation, which may include a processing plant, feed mill, and live production
- Plan, organize, staff, direct, and control activities to achieve cost effective production including
- Animal husbandry duties such as, bedding, feeding, watering, medicating, lighting, vaccinating, natural breeding, artificial insemination, and pregnancy-check
- Maintain farm records, such as mortality, individual flock/herd records, maintenance schedules, estimated operating costs, and monitoring of animal health/feeding requirements
- Manage personnel in order to produce a quality product in an efficient manner
- Responsible for the coordination of information and communication between all personnel/manager of the individual functions of the operation
- Identify and improve all areas of operation efficiencies
- Work closely with contract growers to ensure that procedures and processes are consistent with the overall goals of the organization
- Direct relations with all governmental regulatory agencies and management and resolution of issues
- Also work with all support departments such as Quality Assurance/Quality Control, maintenance, human resources, accounting
- Develop and adhere to operational budgets – provide feedback to management regarding cost of inputs and suggestions for selling price points
- Administrative duties – include team time cards, scheduling, training and safety responsibilities
- Work with human resources regarding all areas of employee relations
- Assistance with on-farm duties as needed, such as filling in for a supervisor/farm manager



ANIMAL GENETICIST

Animal Geneticists analyze the genetic makeup of animals in order to discover which genes cause them to behave certain ways. Geneticists may also study animal health to determine what causes animals to be immune to specific diseases, or fail to thrive in certain environments.

Education & Training

Master's or doctorate degree in genetics or related field like animal science, biology, dairy science, or poultry science

Recommended High School Courses

Agricultural education, animal science, chemistry, biology, writing, and mathematics

Typical Employers

Animal pharmaceutical companies, breeding companies, government agencies, and universities

Suggested Professional Organizations

National Cattleman's Beef Association
International Society for Animal Genetics
Genetics Society of America

Job Market/Outlook



Responsibilities

- Provide insight into how methods and processes that support genetic evaluation can be improved
- Summarize and communicate genetic trends for reports
- Continually review and communicate data input and output needs of the breeding programs
- Analyze phenotypes (physical characteristics) available from the global production system to understand what makes profits for customers
- Find ways to improve selection decisions and develop approaches to accelerate genetic differentiation between different breeds
- Assist in the mapping of genomes for various species
- Compare the genetic makeup of one animal or species to another in order to how the gene affects reproduction or growth
- Develop new ways to evaluate traits in animals
- Investigate disease resistance
- Crossbreed animals to obtain new combinations of desirable characteristics
- Conduct quantitative research around breeding program activities and processes



ANIMAL PHYSICAL THERAPIST

An animal physical therapist rehabilitates animals that have had surgery, amputation, have been injured or suffer from chronic pain so that they may enjoy a higher quality of life.

Education & Training

Master's degree in physical therapy (most animal physical therapists have a degree to treat humans but choose to treat animals) or veterinary medicine

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, and mathematics

Typical Employers

Animal hospitals, animal rehabilitation facilities, and universities with veterinary programs

Suggested Professional Organizations

American Society for Animal Science
International Association for Veterinary Rehabilitation
and Physical Therapy
American Association of Rehabilitation Veterinarians

Job Market/Outlook



Responsibilities

- Observe animal patients and perform exams
- Determine proper rehabilitation or recovery plan
- Communicate with clients and veterinarians to agree on a rehabilitation plan and determine medical treatment
- Utilize laser therapy, ultrasound, shockwave and radiography equipment
- Assist animal patients in strengthening and exercise routines
- Perform stretches and massages on animal patients
- Organize checkup appointments with clients following completion of rehabilitation



ANIMAL WELFARE SPECIALIST

A professional working as an animal welfare specialist or auditor typically perform animal handling/welfare audits and food safety audits on farms, animal production facilities, and animal processing facilities.

Education & Training

Bachelor's or Master's degree in animal science; PAACO certified and other certifications desired

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, Spanish, mathematics

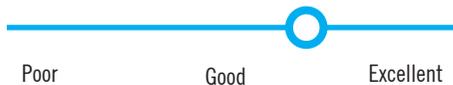
Typical Employers

Government, animal production companies, food and restaurant companies, animal processing facilities, and animal welfare organizations and agencies

Suggested Professional Organizations

Animal Agriculture Alliance
Professional Animal Auditor Certification Organization
American Humane Society

Job Market/Outlook



Responsibilities

- Perform audits at assigned facilities, assuring consistency and accuracy in all audit reports
- Ensure company and/or legal standards are maintained in terms of animal handling/welfare, euthanasia, and food safety
- Support farms and production facilities in the development and implementation of corrective actions identified in internal or external audits and provide follow-up to ensure completion
- Properly report and record animal welfare misconduct
- Collect information regarding sources of high stress in animals
- Provide training as requested/needed regarding animal welfare practices
- Ensure that livestock truck drivers are adhering to animal welfare policies
- Lead and implement programs, protocols, or policies to drive improvement in animal well-being or recommend changes to existing standards
- Participate in animal care investigations as designated
- Schedule and conduct travel inspections
- Possess a working knowledge of livestock handling tools
- Monitor animal research news and animal rights extremism risk activity in assigned region



APIARY WORKER / BEEKEEPER

An apiary worker, often called a beekeeper, manage colonies of honeybees for the production of honey as well as pollination services.

Education & Training

A high school diploma or an Associate's or Bachelor's in entomology or biology

Recommended High School Courses

Agricultural education, animal science, biology, natural resources, horticulture, and Spanish

Typical Employers

Honey-producing companies, privately-owned apiaries, or you may be self-employed

Suggested Professional Organizations

American Beekeeping Federation
 American Honey Producers Association
 American Entomological Society
 State and local Beekeepers Associations

Job Market/Outlook

Responsibilities

- Maintain colonies of healthy bees for pollination and production of honey
- Ensure sufficient food reserves
- Construct hives and replace combs
- Collect and package any hive products including honey, beeswax and pollen
- Make decisions on yards, treatment, splits, honey harvesting and all other beekeeping decisions
- Build and manage queen rearing operations
- Ensure breeding yards are kept at optimal level of production
- Maintain strict control over diseases and pests
- Identify and report hive health concerns
- Market honey products to consumers or distributors (in smaller work settings)
- Prepare colonies for both production and wintering during season changes
- Wear and maintain protective clothing and gear
- Train other beekeepers on your team
- Participate in ongoing R&D trials
- Clean and maintain beekeeping equipment
- Keep colony records

Poor

Good

Excellent



ARTIFICIAL INSEMINATION TECHNICIAN

An artificial insemination technician inseminates animals with semen to assist impregnation in the breeding of livestock species.

Education & Training

High school diploma or an Associate's degree in animal, poultry, or equine science; AI certification also required

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, and mathematics

Typical Employers

Vertically integrated livestock production companies, or you may be self-employed

Suggested Professional Organizations

National Cattleman's Beef Association
National Livestock Producers Association
National Pork Producers Council

Job Market/Outlook



Responsibilities

- Provide artificial insemination (AI) services to clients, use understanding of anatomy to accurately place semen in the proper place in the reproductive track
- Maintain proper sanitation
- Store, travel with, thaw and prepare semen for insemination
- Promote new and current products/services to customers
- Offer reproductive consultation to breeders and farmers
- Perform pregnancy checks on animals
- Use humane handling practices when working with the animals
- Oversee and assist with heat detection
- Work closely with farm supervisor to better understand operation and its goals
- Keep records of insemination services
- Give vaccinations as needed



BEEF FARM WORKER

A beef farm employee assists in daily operations on the farm. This can include birthing, feeding and breeding.

Education & Training

A high school diploma or an Associate's degree in animal science or animal husbandry

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, and mathematics

Typical Employers

Various beef farms and producers, ranches, feedlots, or you may be self-employed as a producer

Suggested Professional Organizations

National Cattlemen's Beef Association
State/Local Cattleman's Association

Job Market/Outlook



Responsibilities

- Distribute daily feed rations
- Identify sick animals and determine proper treatment or contact veterinarian
- Assist in breeding programs including artificial inseminations and synchronization
- Transport cattle to market
- Assist in branding and tagging of calves
- Assist in vaccination programs
- Maintain and build fence
- Maintain equipment
- Understand current beef markets
- Maintain high standards of animal welfare



BLOODSTOCK AGENT

Bloodstock agents are hired to buy and sell horses for breeding and racing.

Education & Training

High school diploma or an Associate's degree in equine science; certification also available

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, and mathematics

Typical Employers

Auction companies, bloodstock agencies, breeding farms, racing companies, or you may be self-employed

Suggested Professional Organizations

Thoroughbred Owners and Breeders Association
Equine Science Society
American Association of Equine Practitioners
American Society of Equine Appraisers

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Assist owners in evaluation of horses based on pedigree and either provide appraisal or determine asking price
- Visit farms that breed horses to select foals for purchase
- Acquire shares in stallions on owner's behalf
- Meet with potential buyers to discuss their needs and determine which horse or horses would best fit them
- Attend auctions and bid on behalf of clients
- Facilitate the process of purchasing horses including determining commission and establishing credit
- Recommend equine veterinarians, boarding facilities and trainers to patrons
- Also advise clients according to their purpose for their horse (i.e. mating recommendations, racing plans)
- Determine when breeding horses are failing and notify owners
- Maintain records of purchases and sales
- Remain abreast of changes in the horse market and industry trends



BREEDING MANAGER

Breeding or Multiplication Managers are responsible for all aspects of a company or organization's breeding departments. In the swine industry, these professionals are known as Farrowing Managers.

Education & Training

A high school diploma or an Associate's degree in animal science, animal husbandry, or agribusiness

Recommended High School Courses

Agricultural education, animal science, biology, computer courses, and mathematics

Typical Employers

Livestock companies or large farms

Suggested Professional Organizations

American Association of Swine Practitioners
American Association of Bovine Practitioners
Dairy Farmers of America

Job Market/Outlook



Responsibilities

- Oversee the welfare, feeding, monitoring, record-keeping, care and day-to-day management of the animals in your department
- Oversee room set-up and initial inspections for mother animals
- Confirm that all animals have proper feed and water
- Monitor and assist mother animals during birth
- Monitor health of all animals
- Oversee C-sections as needed
- Manage proper euthanization to mother and baby animals
- Warrant that vaccinations of mother and baby animals are completed
- Manage weaning
- Oversee that nursery processes are completed and that wounds are treated (tail length, castration, tattooing, ruptures)
- Ensure proper ventilation to animals and assign heat lamp management
- Schedule and assign tasks to meet production goals
- Oversee general maintenance of facility including cleanliness, pest control, feed systems, power washing, etc.
- Complete daily checks on security and alarm systems, and respond to them
- Train and develop breeding staff
- Keep records and paperwork of breeding, births, weaning, illness and disease, accidents, supplies and euthanizations
- Maintain the highest level of animal health and welfare



CARCASS MERCHANDISER

A carcass merchandiser, or a meat merchandiser, is responsible for the sale and merchandising of animal carcasses (most often pork and beef) by working closely with livestock graders.

Education & Training

Bachelor's degree in animal science, meat science, agriculture, or related field

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, business courses, mathematics

Typical Employers

Livestock production, processing, and sales organizations

Suggested Professional Organizations

American Association of Meat Processors
National Meat Association

Job Market/Outlook



Responsibilities

- Know and understand USDA grading standards and company merchandising specifications
- Determine whether or not USDA grading on each carcass is in line with company standards
- Evaluate carcasses using grading data and the hide color collected from slaughter
- Utilize camera vision grading
- Determine how carcasses will be merchandised by factors such as Quality Grade, Yield Grade, weight range, ribeye area, breed type, and candidacy for branded programs (i.e. Certified Angus Beef)
- If determined that grading is inaccurate or unjustified, request re-grade from official livestock graders
- Correlate grading with other sales professionals
- Assist in merchandising meat products to food and meat retailers
- Sort and group carcasses according to customer and retailer wants
- Assist in areas of sales, credit, billing, training, and invoicing
- Maintain refrigeration, spacing of carcasses, ribbing, and lighting in grading areas, reporting any discrepancies to the appropriate personnel



DAIRY FARM WORKER

A dairy farm employee assists in daily operations on the farm. This can include milking, calving, feeding and breeding.

Education & Training

High school diploma or an Associate's degree in animal science, animal husbandry or dairy science

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, and mathematics

Typical Employers

Dairy farms of varying sizes, cow/calf operations, or you may be self-employed

Suggested Professional Organizations

American Dairy Association
Dairy Management Inc.
United Dairy Industry Association

Job Market/Outlook



Responsibilities

- Ensure cattle have access to food and water.
- Identify sick animals and work with veterinarian to determine proper treatment
- Assist in breeding programs including artificial inseminations and synchronization
- Perform and assist in milking operations
- Assist in tagging and feeding of calves
- Assist in vaccination programs
- Maintain and build fences
- Clean milking parlor after each milking
- Ensure milk quality and safety is not compromised by following standards
- Maintain high standards of animal welfare
- Take milk samples from tanks
- Clean tanks after milk is picked up by truck



EMBRYOLOGIST

An embryologist provides reproductive services and research in the areas of embryo creation, IVF (in vitro fertilization), cloning, and transgenic animal production.

Education & Training

Bachelor's or Master's degree in animal reproduction, animal science, or biology

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, chemistry, computer courses, and mathematics

Typical Employers

Research firms, universities, or large-scale animal health or production companies

Suggested Professional Organizations

International Embryo Technology Society
American Embryo Transfer Association
American Society of Animal Science

Job Market/Outlook



Responsibilities

- Prepare embryos for research purposes
- Perform IVF, artificial insemination, cryopreservation of embryos and embryonic transfer
- Coordinate and schedule farm trips for retrieval of animal eggs and sperm
- Set up filters, medias and supplies used during the collection of embryos
- Rinse, search, wash and accurately grade embryos according to protocols
- Freeze embryos for storage in liquid nitrogen
- Monitor and fill nitrogen storage tanks when needed
- Perform oocyte searching and evaluation for IVF
- Monitor and record temperatures and other appropriate information
- Maintain, clean and label collection vessels
- Maintain embryo inventories
- Complete documentation of pertinent information
- Reorder supplies when needed
- Assist veterinarians when necessary
- Participate in new product creation by serving as a consultant
- Perform quality control of embryology media



FALCONER

A falconer uses birds of prey such as eagles, hawks, falcons or owls to control in an environmentally friendly way the behavioral patterns of pest bird species such as pigeons, gulls, starlings and sparrows as well as to trap and euthanize/exterminate or relocate pest animals and wildlife affecting agricultural production.

Education & Training

High school diploma or an Associate's degree in wildlife management, environmental sciences, or poultry science as well as licensure and certifications for handling birds of prey

Recommended High School Courses

Agricultural education, earth science, biology, botany, chemistry, biology, natural resources, and mathematics

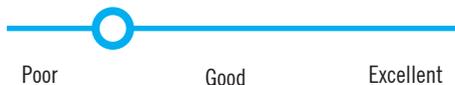
Typical Employers

Falconers are typically self-employed and are hired by vineyards, produce farms, golf courses, and grain storage facilities

Suggested Professional Organizations

North American Falconers Association

Job Market/Outlook



Responsibilities

- House and care for falcon or other birds of prey
- Safely and humanly transport birds
- Knowledge of animal behavior to train bird of prey to chase away nuisance flocks of birds or capture small rodents
- Discuss client needs and assist in developing proper mode of action using birds of prey
- Conduct animal control seminars
- Achieve and main proper licensing to operate falcon as a means for abatement, trapping & exterminating pest
- Knowledge of proper bird handling techniques
- Knowledge of avian behavior to select the appropriate bird of prey to eliminate the pest



FARRIER

A farrier specializes in the hoof care of equine such as horses, ponies, mules, and donkeys. Typically, they clean, trim, and shoe horses' hooves.

Education & Training

High school diploma; apprenticeship recommended as well as animal/equine science background

Recommended High School Courses

Agricultural education, animal science, industrial technology, welding, business courses, mathematics

Typical Employers

Mostly self-employed either full-time or part-time, but some may be employed by large stables, horse breeders, or horse racing companies

Suggested Professional Organizations

American Farrier's Association
 American Association of Professional Farriers, Inc.
 Guild of Professional Farriers

Job Market/Outlook



Responsibilities

- Trim horse hooves using utensils such as rasps and nippers
- Clean hooves and remove excess hoof walls and dead sole
- Observe hooves for signs of disease or poor health as well as lameness problems
- Intervene before a potential problem occurs with a horse's hooves by alerting veterinary personnel
- Perform basic level of therapy toward horses' lower limbs
- Fabricate or purchase horseshoes to fit horses, as requested by owner and tailored to the horse's duties (riding, racing, working, etc.)
- Remove old shoes and replace with new ones, either via hot or cold shoeing
- If shoes are fabricated, adapting and adjusting through blacksmithing may be required to ensure the right fit
- Purchase and utilize tools and supplies necessary for farrier duties which typically include: anvil, anvil stand, nippers, forge stand, pullers, hammers, blades, tongs, rasps, gloves, knife sharpener, apron, hoof care accessories (nails, staples, pins), and pre-made horseshoes
- Maintain a calm and caring demeanor to effectively work with and comfort horses
- May perform grooming activities as requested or desired
- If self-employed, handle billing and recordkeeping for clients



FARM WORKER – SMALL RUMINANT

Small ruminant farm workers are responsible for the daily care and maintenance of sheep that are used for meat or wool production, or goats that are used for meat or dairy production.

Education & Training

High school diploma

Recommended High School Courses

Agricultural education, animal science, biology, and mathematics

Typical Employers

Small to large-scale sheep and goat operations or you may be self-employed

Suggested Professional Organizations

American Sheep Industry Association
 National Lamb Feeders Association
 American Lamb Board
 American Goat Society
 American Dairy Goat Society
 Wool Grower Associations

Job Market/Outlook

Responsibilities

- Ensure animals have access to food and water at all times
- Identify sick sheep or goats and determine proper treatment or contact veterinarian
- Administer vaccinations and medications
- Assist in breeding programs like artificial insemination and castration; also assist in lambing or kidding
- Regularly bottle feed rejected lambs and kids
- Cut lamb tails once of age
- Assist in tagging lambs and kids
- Shear sheep at least yearly or hire sheep shearer to do so; some farmers choose to sell wool as well
- Perform and assist in milking operations for dairy goats; clean milking parlor after each milking and ensure milk quality is not compromised by following standards
- Maintain high standards of animal welfare at all time
- Transport lambs or goats to market once ready for sale or slaughter
- Clean and maintain farm buildings and fences
- Be willing to work flexible hours as lamb and kid births often occur at night and sometimes need assistance



FEED MILL OPERATOR

Feed mill operators are responsible for assisting in the management of the mill and feed crews, in the process of storing, mixing and delivering of feed for cattle, hogs or poultry.

Education & Training

Bachelor's degree in feed/grain science or an animal agricultural field

Recommended High School Courses

Agricultural education, animal science, industrial technology, mathematics, and physics

Typical Employers

Animal production companies and independent feed mills

Suggested Professional Organizations

American Feed Institute Association
National Grain and Feed Association

Job Market/Outlook



Responsibilities

- Ensure the mill is kept clean including the grounds surrounding the mill
- Ensure daily, weekly, and monthly routine preventative maintenance tasks including greasing bearings, checking gear boxes, inspection/tightening of belts, etc. is conducted
- Assist in repair and maintenance projects with the maintenance staff
- Assist in maximizing the efficiency of the mill
- Filling micro ingredient boxes and clean out ingredient bins as needed
- Work with employees to identify and addressing ingredient flow issues
- Bag complete feeds
- Load complete feeds orders on to trucks
- Ensure that company safety practices are adhered to
- Receive ingredients into the mill - both bulk and bagged
- Conduct grading of ingredients received



FEEDLOT MANAGER

Feedlot Managers oversee daily operations of feed yards. They provide knowledge and support for herd nutrition, marketing, and environmental conditions for livestock in feedlots.

Education & Training

Associate's degree in animal science or agribusiness

Recommended High School Courses

Agricultural education, animal science, biology, and mathematics

Typical Employers

Food production companies, contract growers with integrated production facilities, large farms, or you may be self-employed

Suggested Professional Organizations

National Cattlemen's Beef Association
American Society of Animal Science

Job Market/Outlook



Responsibilities

- Ensure profitable operations of the feedlot to optimize feeding parameters
- Manage feedlot and appropriate safety standards and relations with employees, suppliers and customers
- Prepare short and long term operational plans supportive to the feedlot in conjunction with the General Manager
- Prepare budget and report operational and capital expenditure
- Report of weekly and monthly feedlot performance
- Repair and maintain equipment and structures as per agreed standard and program such as stock water, yards, buildings etc.
- Ensure that all health and safety standards are adhered to and that the working environment is clean, tidy and hygienic for all employees
- Manage efficient expenditure of allocated funds
- Ensure security of all assets including land, livestock produce and inventories
- Efficient and productive personnel management and assessment of staff



FOOD ANIMAL VETERINARIAN

Food Animal Veterinarians are responsible for the care of animals that are raised for food production and human consumption. They provide medical care consisting of research, diagnoses, and prevention.

Education & Training

Doctorate of veterinary medicine; Bachelor's degree in animal science, biology, chemistry, or similar field is a prerequisite to a doctorate degree

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, physical sciences, and mathematics

Typical Employers

Food production companies, government agencies, some university research farms, or you may be self-employed

Suggested Professional Organizations

American Veterinary Medical Association
 American Society of Animal Science
 American Association for Laboratory Animal Science

Job Market/Outlook



Responsibilities

- Provide health care for livestock, and possibly laboratory animals
- Examine animals to determine nature of illness or injury
- Diagnose and treat injuries
- Monitor animal performance and provide regular feedback via performance management reports
- Provide technical expertise in health management including biosecurity, disease identification, prevention, control and treatment, regulatory and food safety requirements.
- Research new diseases, medicines and procedures
- Mentor veterinarian technicians regarding veterinarian medicine and animal related illnesses
- Test and vaccinate, prevent and control contagious animal diseases
- Responsible for ensuring sanitary measures before, during and after all procedures
- Operate medical equipment
- Euthanize animals when necessary
- Provide preventative care to maintain animal health
- Document for each specific animal treated
- Oversee staff and office/business affairs



HERD NUTRITIONIST

Research and advisory role that advises on raw material product selection, maintenance feeding programs and modification of diets to meet certain desired outcomes.

Education & Training

Bachelor's or Master's degree in animal nutrition, animal science, poultry science, or related field

Recommended High School Courses

Agricultural education, animal science, anatomy, biology, chemistry, and computer courses

Typical Employers

Cooperatives, veterinarians, feed companies, or you may be self-employed

Suggested Professional Organizations

Animal Nutrition Association
 American Association of Swine Practitioners
 American Poultry Association
 American Society of Animal Science

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Frequently observe animals' behavior and eating habits
- Understand current feed rations and nutritional value
- Get to know the farm and the ultimate end use for the animals to better formulate a diet for them
- Educate farmer and employee on appropriate diets, product mix, dietary planning and preparation of fodder or food to treat an illness or disease and/or to enhance and maintain optimum health performance
- Determine performance benchmarks and process as defined by regulatory and company policies
- Conduct and evaluate dietary studies and other fodder, food and nutrition-related research
- Monitor aspects of feed manufacturing and quality control
- Advise on product development and marketing strategies and provide nutritional information to consumer market
- Monitor aspects of feed manufacturing and quality control
- Research alternative raw product inputs for desired minimum nutritional results
- Assist in keeping records of antibiotics, medicines etc.



HERDSMAN

A herdsman typically manages the day- to-day farm operations for the farm/ranch owner. Many times a herdsman will live on the property to be close to the animals at all times of the day.

Education & Training

Associate's or Bachelor's degree in animal science or a livestock related field

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, and mathematics

Typical Employers

Large-scale ranches or farms or corporate animal production companies

Suggested Professional Organizations

National Cattlemen's Beef Association
American Sheep Industry Association
American Dairy Association

Job Market/Outlook



Responsibilities

- Identify sick animals and administer proper care and/or call the veterinarian
- Managing a breeding program including conducting artificial insemination
- Build and repair new and existing fence and electric fence
- Work independently and as a team
- Operate heavy equipment and semi tractor-trailers
- Assist with birthing
- Maintain wells (electric/gas), pipelines, repair and maintain property and equipment
- Transport animals to market
- Keep thorough records in regards to
- Communicate with the farm/ranch owner on a regular basis



HORSE TRAINER / INSTRUCTOR

A horse trainer or instructor works with horses to ready them for riders, races or shows.

Education & Training

Associate's degree in equine science or equine studies;
consider additional workshops or apprenticeships to
become more familiar with training horses

Recommended High School Courses

Agricultural education, animal science,
biology, mathematics

Typical Employers

Public and private stables, horse breeders, rodeo
companies, large ranches, or you may be self-employed

Suggested Professional Organizations

Walking Horse Trainers Association
Certified Horsemanship Association
Equine Science Society

Job Market/Outlook



Responsibilities

- Assist horses in adapting to saddles and bridles
- Reward and train horses to obey commands
- Analyze horses' dispositions to anticipate any possible behavioral problems such as kicking, tossing or biting; train accordingly to prevent future behavioral problems
- Teach horse to perform various exercises
- Be strongly versed in various equestrian styles and train horse according to owner's or rider's preferences (i.e. Western Pleasure, English, jumping)
- Acclimate horses to riding on various terrains and to boarding trailers
- Observe horse's nutrition and health, and inspect injuries; notify veterinarian if needed
- Assist in grooming and make grooming recommendations
- May be also tasked with stable maintenance and waste management as well as feeding and watering



LIVESTOCK AUCTIONEER

A livestock auctioneer sells animals at public auctions.

Education & Training

Associate's or Bachelor's degree in animal science; attend auctioneering school and be licensed by state

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, business courses, personal finance and mathematics

Typical Employers

Typically self-employed but may also work for auction companies or sale barns

Suggested Professional Organizations

National Auctioneers Association
 Certified Auctioneers Institute
 Livestock Marketing Association

Job Market/Outlook



Responsibilities

- Must be familiar and knowledgeable of livestock animal terminology
- Point out desirable qualities of livestock on sale including age, breed, weight, etc.
- Auction animals off at public sales and auctions
- Spot and signal bids from audience members
- Declare winners of animals and direct them to purchase site
- Maintain crowd control
- Assign lot numbers to animals and direct handlers or pen riders where to send animals
- Tag or mark animals for identification in sale ring
- Complete various paperwork and recordkeeping tasks on sale animals



LIVESTOCK BUYER

Livestock buyers sell, buy, and select livestock for individuals and companies.

Education & Training

Associate's degree or Bachelor's degree in animal science, agribusiness, or marketing

Recommended High School Courses

Agricultural education, animal science, biology, business courses, personal finance, and mathematics

Typical Employers

Food production companies, contract growers with integrated production facilities, auctioneer companies, or you may be self-employed

Suggested Professional Organizations

National Cattlemen's Beef Association
 American Poultry Association
 American Society of Animal Science
 National Pork Producers Council

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Identify livestock acquisition opportunities on a daily basis and secure budgeted throughput levels by offering a range of pricing, hedging and service alternatives to growers in the designated region
- Negotiate price with growers and suppliers
- Prepare regular reports for analysis by management on competitor activity, purchasing trends and complaints/queries concerning products
- Recommend solutions to problems involved in the preparation of contracts and negotiations with customers
- Schedule transportation for animals
- Advise growers regarding care and maintenance of livestock to ensure safe and efficient production
- Visually inspect animals for carcass characteristics
- Stay up-to-date regarding market conditions and animal supply
- Transfer information to the scale house coordinators for price reporting and scheduling purposes
- Ensure USDA and Packers & Stockyard Administration regulatory guidelines are being met



LIVESTOCK GRADER

Livestock graders serve the purpose of assuring that accurate grades are placed on livestock or meat that is sold according to standards set by the United States Department of Agriculture (USDA).

Education & Training

Associate's or Bachelor's degree in animal science, meat science, agribusiness, agriculture or related field; must be certified by United States Department of Agriculture

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, business courses, economics, government, computer courses, and mathematics

Typical Employers

Government agencies like state Departments of Agriculture

Suggested Professional Organizations

American Meat Science Association

Job Market/Outlook



Responsibilities

- Determine the grade of market livestock with high accuracy based on the length of the animal, the degree of muscle, frame size and the amount of visible fat
- Weigh livestock using livestock scales
- Assign grades according to USDA standards
- Complete and file grading paperwork
- Keep abreast of specific livestock markets
- Attend livestock sales or visit sites like farms or feedlots where grading is requested
- Collect product information from sellers
- Work closely with marketing specialists and buyers
- Remain up to date on industry trends and news



LIVESTOCK LOADER

Load out personnel assist in loading market livestock onto and off of trucks.

Education & Training

High school diploma and driver's license

Recommended High School Courses

Agricultural education, animal science, biology, Spanish, and mathematics

Typical Employers

Food and livestock production companies

Suggested Professional Organizations

National Pork Board
 National Cattlemen's Beef Association
 American Poultry Association
 National Lamb Feeders Association

Job Market/Outlook



Responsibilities

- Assure safety and practice of proper animal handling techniques during load out
- Follow proper biosecurity guidelines and procedures
- Assist in load schedules
- Ensure proper health care of animals
- May at times need to lift or move animals manually
- Clean loading unit as needed
- Maintain load out equipment
- Be willing to work flexible hours as many loads occur in the evening or early morning hours



MEAT INSPECTOR

A Meat Inspector ensures that meat is safe from contamination and that the process it goes through follows quality assurance regulations. They inspect all meat products including, poultry, seafood, beef, pork, etc. before the initial packaging.

Education & Training

Bachelor's degree in food science, microbiology, or meat science

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, anatomy, and mathematics

Typical Employers

Food or meat processing companies as well as state and federal government agencies

Suggested Professional Organizations

National Meat Association
Association of Meat Inspectors
American Association of Meat Processors

Job Market/Outlook

Poor Good Excellent

Responsibilities

- Inspect and grade various types and cuts of meat
- Inspect live animals, game or poultry for any signs of disease
- Making sure that unfit meat is destroyed properly
- Conduct postmortem examinations on diseased animals
- Examine samples for bacterial or non-desirable excess material
- Prepare reports from test results
- Observe employees and daily procedures to assure standards are met
- Send animal tissue to lab for testing
- Perform quality control analysis including tests and inspections of products and processes
- Serve as the on-site liaison with regulatory officials, safety inspectors, compliance auditors, and other external personnel
- Manage and perform daily pre-operational, operational, and mid-shift clean maintenance inspections and tours by utilizing visual cues and observations and microbiological analysis
- Assure and ensure strict adherence and compliance to Good Manufacturing practices (GMPs), Standard Operating Procedures (SOPs), and Sanitation Standard Operating Procedures (SSOPs)
- Manage Vendor certification program
- Direct and perform shelf life and other inventory-related studies for product quality and safety; material freshness, aging, molding, and preservation
- Manage labeling and nutritional labeling requirements, in accordance with U.S. Food and Drug Administration (FDA) and USDA (Dept. of Agriculture) regulations and standards



PENRIDER

A pen rider monitors and moves cattle around a feeding operation. Most of their daily duties are completed on horseback.

Education & Training

High school diploma; knowledge of cattle and horses

Recommended High School Courses

Agricultural education, animal science, biology, Spanish, and mathematics

Typical Employers

Large livestock production companies and feedlots

Suggested Professional Organizations

National Cattlemen's Beef Association
State Cattleman or Feeders Organization

Job Market/Outlook



Responsibilities

- Utilize a horse to ride through assigned pens daily and identify sick animals by observing outward signs of distress
- Segregate sick cattle for treatment by driving them to nearest hospital pen
- Assist in shipment of cattle by opening gates, driving cattle to shipping areas for weighing; counting cattle and separating strays; checking withdrawals
- Move/drive cattle from one area of the yard to another by utilizing humane low stress techniques including slow movement of cattle
- Return treated cattle to home pens from hospitals
- Return stray animals to home pens
- Ride horse safely by awareness of surroundings and exercise of caution in dangerous situations.
- Maintain appearance of break room by properly disposing of trash, wiping feet upon entering and sweeping/mopping according to posted schedule
- Maintain cleanliness of horse facilities by sweeping floor and cleaning stalls
- Report observed pen maintenance issues to appropriate yard employee for repair (broken water tanks, bunks, holes, etc.)
- Alert supervisor to possible problem pens through observance of unusual trends (including concerns about feed, conditions of cattle received, etc.)
- Comply with all applicable safety and animal welfare rules and policies



PET GROOMER

A pet groomer or pet stylist professionally grooms dogs, cats, and other pets. A horse groom specializes in grooming, tacking, and bathing horses.

Education & Training

High school diploma; apprenticeship recommended

Recommended High School Courses

Agricultural education, animal science,
anatomy, biology

Typical Employers

Pet salons and stores, veterinarians, kennels, or you
may be self-employed

Suggested Professional Organizations

National Dog Groomers Association
Professional Cat Groomers Association of America
International Professional Groomers, Inc.
Intellectual Groomers Association

Job Market/Outlook



Responsibilities

- Greet clients and pets and take instructions for grooming them per the client's wishes in a professional manner
- Bathe and clean pets prior to grooming
- Groom pets by brushing and scissoring fur, filing or clipping nails, cleaning ears and teeth, or coloring fur or hair to the preference of client
- Administer grooming all while ensuring safety and compassion for animal
- Recognize skin or coat issues as well as parasites, injury, or disease symptoms in order to report to pet owners
- Sweep or vacuum grooming area after each pet has been groomed
- Clean tub and grooming equipment after each grooming
- Instruct owners and clients on proper washing care for their pets
- Schedule, book, and verify appointments
- Maintain records
- Keep inventory of grooming products such as shampoo and soap
- Be willing to work flexible hours including weekends



POULTRY FARM WORKER

A poultry farm employee assists in daily operations on the farm. This can include checking birds, collecting eggs and feeding.

Education & Training

High school diploma; Associate's degree in poultry science or animal science may be beneficial

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, Spanish, and mathematics

Typical Employers

Poultry farms and contract growers

Suggested Professional Organizations

U.S. Animal Agriculture Alliance
National Chicken Council
State Poultry Association/Federation

Job Market/Outlook



Responsibilities

- Ensure birds have access to food and water
- Walk through the house to identify sick or injured birds
- Utilize proper biosecurity standards when entering and exiting houses
- On layer farms, assist with egg collection, washing and sorting
- On layer farms, assist with putting eggs in cartons
- Control temperature of houses for ultimate bird comfort
- Conduct maintenance on the house and watering/heating system as needed
- Control house lighting to meet bird needs
- Maintain high standards of animal welfare



POULTRY HATCHERY MANAGER

Hatchery Managers over see all aspects of a poultry hatchery. This includes the management of personnel, eggs and equipment.

Education & Training

Bachelor's degree in animal or poultry science

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, and mathematics

Typical Employers

Poultry production companies that are vertically integrated or companies that provide stock for smaller poultry operations

Suggested Professional Organizations

Poultry Science Association
World's Poultry Science Association
State level associations and federations

Job Market/Outlook



Responsibilities

- Manage and coordinate, through supervisory personnel, hatchery activities such as, egg pick-up and deliveries, care, incubation and hatching, grading, vaccination, and preparation and shipping of chicks
- Oversee Quality Assurance/Quality Control program
- Monitor and manage facility equipment and repairs, addressing maintenance issues.
- Oversee hatchery sanitation
- Keep a current knowledge of industry trends and information regarding hatchery equipment and operations
- Manage animal welfare program
- Plan and oversee hatchery budget
- Comply with all company policies, animal welfare guidelines, and local, state and federal laws, and regulations
- Manage chick care, maintenance, packing and transfer activities
- Manage and maintain weekly hatch schedules providing proper number of birds to processing plant
- Direct supervision of salaried and hourly employees



PRESSURE WASHER OPERATOR

Operates power washer to remove dirt, debris, and staining within animal production facilities and animal transportation vehicles.

Education & Training

High school diploma

Recommended High School Courses

Agricultural education, Spanish, mathematics, and personal finance

Typical Employers

Animal production, animal feed companies, construction companies, in processing plants, chemical plants, or you may be self-employed

Suggested Professional Organizations

Pressure Washing Association
 American Trucking Association
 United Association of Journeymen and Apprentices

Job Market/Outlook



Responsibilities

- Operate pressure washer machinery safely and effectively to clean a variety of surfaces.
- Use degreasers or removal chemical as label recommends when requested by supervision
- Maintain established schedule as requested and provide feedback to improve schedule efficiency
- Erect scaffolding as needed
- Clean up rubble, debris and other waste materials from area being washed
- Carry out company biosecurity and safety procedures.
- Other manual duties as directed.
- Read plans, instructions, or specifications to determine work activities.
- Keep tools and equipment in good repair



RANCH MANAGER

A ranch manager oversees and maintains cattle or sheep on a large land area.

Education & Training

High school diploma; an Associate's degree in animal science or animal husbandry would be beneficial

Recommended High School Courses

Agricultural education, animal science, biology, business courses, personal finance, and mathematics

Typical Employers

Ranch owners, large cattle-feeding companies, or you may be self-employed on your own ranch

Suggested Professional Organizations

United Cattlemen's Association
National Cattlemen's Beef Association
State Cattle or Beef Associations

Job Market/Outlook



Responsibilities

- Daily monitor herd by riding horseback, in a truck or tractor
- Ensure animals have access to water and food at all times
- Identify sick animals and determine proper treatment or contact veterinarian
- Transport animals to market
- Assist in branding or tagging of animals
- Oversee and administer vaccination programs
- Corral animals for vaccinations or branding
- Maintain and build fences as well as any shelter buildings
- Maintain ranch and herd equipment
- Hire, train and supervise ranch hands or herdsmen
- Monitor grazing land to ensure livestock is properly fed; may need to setup and monitor irrigation systems during droughts
- May plant and harvest hay or forage to save for winter feed supply
- Maintain financial, operational, production and employee records
- Remain up to date regarding markets and industry trends
- Maintain high standards of animal welfare



SALES REPRESENTATIVE: FEED & ANIMAL HEALTH

Feed and Animal Health Sales Representatives are responsible for the selling of products that are manufactured by the company that they work for. They also service the products within the animal sector of agriculture.

Education & Training

Bachelor's degree in animal science, agricultural business, or a related major

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, business courses, and mathematics

Typical Employers

Feed and animal nutrition companies

Suggested Professional Organizations

American Veterinary Medical Association
 American Feed Industry Association
 Animal Health Institute
 American Society of Animal Science

Job Market/Outlook



Responsibilities

- Disseminate technical information to veterinarians or related animal health personnel
- Analyze, develop, and implement sales goals and plans
- Maintain and grow the market share within a specific sales territory
- Execute marketing meetings with sales team
- Develop territory business planning template
- Participate in brand forecasting function and accuracy
- Attend regional, annual and vendor meetings
- Work with supplier representatives to install programs or products
- Attend training programs and education workshops to ensure customer satisfaction
- Develop and implement a sales call process to productively manage accounts within a specific territory



SMALL ANIMAL VETERINARIAN

A small animal veterinarian is responsible for the diagnosis and treatment of sickness, disease and injury in companion animals like dogs, cats, rabbits, caged birds, and other small pets.

Education & Training

Doctorate of Veterinary Medicine; may also consider certifications for therapy, ophthalmology, anesthesiology, neurology, or critical care

Recommended High School Courses

Agricultural education, animal science, biology, anatomy, computer courses, and mathematics

Typical Employers

Clinics, animal hospitals, laboratories, animal health companies, or you may be self-employed in your own practice

Suggested Professional Organizations

American Veterinary Medical Association
American Association of Feline Veterinarians
World Small Animal Veterinary Association

Job Market/Outlook



Responsibilities

- Provide clinical and surgical care and disease surveillance to small animals
- Prescribe and administer medications and set fractures
- Administer vaccinations and draw blood for testing
- Humanely euthanize terminally ill or fatally wounded animals
- Perform reproductive surgeries like spay or neuter procedures
- Give technical advice on products for small animals or pets
- Operate medical equipment like x-ray machines and ultrasound technology
- Advise on measures to prevent the occurrence or spread of diseases
- Adhere to standard safety protocols and maintain a clean, sterile environment
- Communicate and educate pet owners about disease, preventative, breeding and behavior
- Perform site visits as needed



SOW FARM MANAGER

A sow farm manager oversees all aspects of a sow farm where adult female hogs are housed to birth piglets and where those piglets remain for the first four weeks of their life. They must be able to have both people management and animal care skills.

Education & Training

Associate's or Bachelor's degree in animal science

Recommended High School Courses

Agricultural education, mathematics, animal science, anatomy, biology and chemistry

Typical Employers

Independent swine producers and contract growers

Suggested Professional Organizations

National Livestock Producers Association
National Pork Producer's Council

Job Market/Outlook



Responsibilities

- Plan and direct all production phases on the farm and implement processes as required
- Implement action plans to meet farm-specific and company-set goals
- Actively communicate with the service manager and veterinarians to ensure herd health
- Be in compliance with all biosecurity protocols and ensure all other employees and visitors are also in compliance
- Order feed, supplies, and equipment for the farm, herd, and employees
- Produce well written production reports in a timely manner
- Provide daily leadership and direction to all farm staff
- Reinforce compliance of all policies and procedures
- Conduct team meetings to communicate the goals and direction of the farm and the company
- Ensure all safety procedures are in place and take action to lower safety incidents on the farm to protect both the animals and sows
- Assist with the breeding of sows, gestation and farrowing of pigs
- Provide development opportunities for employees on the farm and offer guidance to employees to reach their personal and professional goals
- Train new employees on feeding, handling and other duties
- Maintain active communications with the production recruiter to inform of staffing needs
- Manage feed and medication inventory and supply
- Ensure cleanliness and sanitation of the site
- Keep thorough records of vaccinations, illness, medications, breeding etc.



SWINE FINISHING FARM MANAGER

A finishing farm manager manages daily operations for animal livability on farm during the last phase of the grow-out stage of the pig. They are responsible for overseeing all aspects of the health and growth of the animal in an effective and safe manner.

Education & Training

High school diploma or Associate's degree in swine management or animal science

Recommended High School Courses

Agricultural education, animal science, mathematics, biology, and chemistry

Typical Employers

Swine production farms who house and produce swine for processing

Suggested Professional Organizations

National Pork Producer's Council
National Pork Board

Job Market/Outlook



Responsibilities

- Supervise farm activity
- Write and enforce biosecurity plans
- Monitor and follow-up on every aspect of animal productivity.
- Stay up to date on innovations and research within the industry.
- Monitor animal health and behavior
- Work with veterinarian to determine treatment of sick/injured animals
- Order and arrange shipment for feed
- Daily interaction with the animals to ensure animal well-being
- Assign duties and examine work for exactness and conformance to policies and procedures
- Prepare, review, and complete reports including weekly production reports, action reports supply orders, maintenance reports, feed orders, and employee time cards
- Tour all farm departments daily with supervisors.
- Administer and participate in the company safety program
- Monitor ventilation and water availability in all barns



SWINE NURSERY WORKER

A swine nursery farm worker oversees the health of newly weaned piglets to ensure optimal growth at an early age in the pig's life.

Education & Training

Associate's or Bachelor's degree in animal science

Recommended High School Courses

Agricultural education, mathematics, animal science, anatomy, biology and chemistry

Typical Employers

Swine production farms who house and produce swine for processing

Suggested Professional Organizations

National Pork Producer's Council
State pork association
National FFA Alumni Association

Job Market/Outlook



Responsibilities

- Maintain barn temperature and ventilation equipment and controls to provide the right amount of heat and fresh air for best environment to promote growth
- Prepare feed formulations to meet the changing nutritional needs of young pigs
- Perform pen management, culling, sorting, and safety procedures
- Report potential or existing problems to Production Supervisor/Assistant Production Supervisor
- Ensure proper usage of medication following the drug residue avoidance/broken needle policies, along with keeping accurate records of data
- Unloading/sorting of wean pigs according to weekly schedules
- Some maintenance work is required, along with troubleshooting problems with equipment and filling out work orders
- Responsible for accurate and timely record keeping of nursery activities
- Perform euthanasia according to company policy, and in a timely manner



VETERINARY ASSISTANT

A veterinary assistant works alongside a veterinarian to assist in the medical treatment of sick or injured animals.

Education & Training

Associate's degree in animal science, veterinary medicine or veterinary technology

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, computer courses, and mathematics

Typical Employers

Animal health companies, livestock production companies, laboratories, clinics, and animal hospitals or animal shelters

Suggested Professional Organizations

American Veterinary Medical Association
 North American Veterinary Technician Association
 American Association of Feline Veterinarians
 World Small Animal Veterinary Association

Job Market/Outlook



Responsibilities

- Provide daily tactical support to assist veterinarians in health monitoring and diagnostics
- Prepare surgery suites and equipment as well as the animal patient for surgery or examinations
- Feed and weigh animals in assigned care
- Handle and restrain animals to and from veterinary facilities
- Perform animal teeth cleanings
- Administer medications and collect samples such as blood and urine for testing
- Ensure that livestock or animals in assigned care are fed, cleaned, groomed and exercised
- Conduct laboratory work including microbiology, sample serum preparation and supply management
- Maintain medical records of animals
- Keep a sanitary and sterile environment in examination rooms, kennels, cages and/or pens
- Clean and sterilize medical tools and equipment



VETERINARY PATHOLOGIST

Veterinary pathologists are doctors of veterinary medicine who diagnose diseases by examining animal tissue and body fluids. Anatomical veterinary pathologists diagnose disease based on examination of organs, tissues and bodies. Clinical veterinary pathologists base their diagnosis on analysis of urine or blood.

Education & Training

Doctorate of Veterinary Medicine as well as additional certification

Recommended High School Courses

Agriculture education, English, animal science, statistics, algebra, genetics, biology and chemistry

Typical Employers

Animal health and pharmaceutical companies as well as government agencies

Suggested Professional Organizations

American College of Veterinary Pathologists
American Veterinary Medical Association

Job Market/Outlook



Responsibilities

- Complete postmortem exams on small and large animals
- Oversee preparation of tissue for testing
- Complete testing of blood and tissue samples
- Discusses study results with clients. This may include developing a plan for further testing
- Analyze results of laboratory tests and studies
- Works in conjunction with Associates and/or clients in the development of study design
- Determine animal's cause of death and diagnosis disease
- Practice and promote ethical laboratory procedures
- Conduct studies in compliance with FDA and other national and international regulatory agencies
- Interact with and advise lab personnel in proper specimen handling and processing techniques
- Contribute to the development of drugs and animal health products
- Conduct research studies
- Advise government agencies on the spread and progression of animal diseases
- Maintain proficiency and develop clinical diagnostic skills



VETERINARY TECHNICIAN

Veterinary Technicians are responsible for the well-being of animals. They work hand-in-hand with veterinarians providing the essential medical procedures to ensure that animals are healthy.

Education & Training

Associate's or Bachelor's degree in veterinary technology, veterinary medicine, or animal science

Recommended High School Courses

Agricultural education, animal science, biology, chemistry, anatomy, physics, and mathematics

Typical Employers

Veterinary clinics, university research farms, diagnostic laboratories, zoos, animal control facilities and wildlife preserves

Suggested Professional Organizations

American Veterinary Medical Association
American Association for Laboratory Animal Science
North American Veterinary Technician Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Provide health care for pets, livestock, zoo, sporting and or laboratory animals
- Examine animals to determine nature of illness or injury
- Perform laboratory tests such as urinalysis and blood counts
- Expose and develop x rays and radiographs
- Treat injuries for pets and or farm animals
- Assist veterinarian in treatments and surgeries
- Advise animal owners of animal care and feeding
- Responsible for ensuring sanitary measures before, during and after all procedures
- Operate medical equipment
- Stock and maintain medicines and supplies
- Euthanize animals when necessary
- Provide prevention care to maintain animal health
- Communicate with the veterinarian about the progress of animal treatments and recovery
- Document for each specific animal treated



ZOOLOGIST

A zoologist studies the behavior of animals and wildlife. They may also study the diseases and genetics of animals.

Education & Training

Bachelor's or Master's degree in zoology or biology

Recommended High School Courses

Agriculture education, biology, anatomy, animal science, natural resources, and mathematics

Typical Employers

Zoos, wildlife centers and parks, aquariums, conservation groups, animal pharmaceutical companies, research firms, governmental agencies, and universities

Suggested Professional Organizations

Zoological Association of America
 Association of Zoos and Aquariums
 International Society of Zoological Sciences

Job Market/Outlook



Poor

Good

Excellent

Responsibilities

- Monitor the health of animal subjects
- Create plans or strategies to help animals recover from illness, injury or habitat change
- Analyze and collect potential pollutants from animal habitats; solve environmental problems that affect subject animals' health
- Identify harmful diseases threatening animals
- Conduct research activities and experiments around animal health and behavior
- Regularly utilize lab equipment and collect specimens to study
- Dissect and perform autopsies on deceased animals; ensure proper preservation
- Maintain records of research and studies
- Work with veterinarians to administer medication and perform surgeries and births
- Occasionally conduct animal education courses or workshops, or create exhibits
- If in a caretaker role, prepare food for animals; groom and clean animals and their habitat or enclosure
- If in a rehabilitator role, care for ill or injured animals and release back into natural habitat once recovered



ENVIRONMENTAL SERVICES

BIOSECURITY MONITOR
CLIMATE CHANGE ANALYST
ECOLOGIST
ENERGY SALES SPECIALIST
ENVIRONMENTAL COMPLIANCE OFFICER
ENVIRONMENTAL ENGINEER
ENVIRONMENTAL SCIENCE
& PROTECTION TECHNICIAN
ENVIRONMENTAL SCIENTIST & SPECIALIST
FISHERIES TECHNICIAN
GAME WARDEN
HYDROPONICS PRODUCER
MARINE BIOLOGIST
MINE ENGINEER
NEMATOLOGIST
NUTRIENT MANAGEMENT / WASTE MANAGEMENT SPECIALIST
OCCUPATIONAL HEALTH & SAFETY MANAGER
PEST CONTROL ADVISER
PROPANE SALES & DELIVERY
SANITATION COORDINATOR
TOXICOLOGIST
WATER TREATMENT TECHNICIAN
WILDLIFE BIOLOGIST
WIND TURBINE TECHNICIAN



BIOSECURITY MONITOR

Biosecurity monitors undertake the full range of biosecurity inspection duties. They are especially concerned with controlling pests and the spread of disease to animals, plants or the environment.

Education & Training

Bachelor's or Master's degree in environmental science, plant science, entomology, or ecology

Recommended High School Courses

Agricultural education, biology, physics, chemistry, natural resources, geography, and mathematics

Typical Employers

Government agencies, private companies that provide pest and disease management services, or you may be self-employed

Suggested Professional Organizations

Association of Environmental Engineering and Science
World Association of Soil and Water Conservation
Ecological Society of America

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Inspect and monitor cargo, animals, plants, land, water and products for pests
- Remove and destroy pests or arrange for them to be destroyed by pest control technicians
- Screen documents and imports to determine biosecurity status
- Deliver animal and plant biosecurity surveillance activities to ensure quick identification of new and emerging biosecurity threats
- Investigate chemical and contaminant incidents
- Sample agricultural produce, animal feeds and fertilizers for monitoring
- Educate the public about animal and plant pests and how to control them
- Remain in compliance with biosecurity legislation
- Prepare reports or charges against those non-compliant with biosecurity laws



CLIMATE CHANGE ANALYST

Climate Change Analysts look at research and data about our planet's climate. A career in this field can include looking at temperatures, polar ice caps, ocean conditions, and greenhouse gases.

Education & Training

Bachelor's or Master's degree in environmental science, climatology, hydrology, meteorology or other related science

Recommended High School Courses

Agriculture education, math, statistics, computer science, physics, government and economics

Typical Employers

Government agencies as well as some non-profit organizations and corporations

Suggested Professional Organizations

American Geophysical Union
American Meteorological Society
Ecology Society of America

Job Market/Outlook



Responsibilities

- Study climate conditions over a period of time
- Review papers and publications that are related to climate
- Write grant proposals in order to further research on climate change and environmental stewardship
- Follow local, state and federal legislation and discussion regarding energy and climate change
- Utilize mathematical models and data to predict future climate
- Collaborate with scientist who are gating climate data
- Determine how to use data and predictions to make recommendations for environmental practices
- Propose new policies in regards to alternative fuels, transportation and other factors related to climate change
- Communicate findings on climate change to the public
- Develop educational and outreach programs on climate change
- Use predictions made to lobby for or against legislation



ECOLOGIST

Ecologists study the relationships of organisms and their environment. In addition to their research, they gather data and analyze it for importance. They study environmental problems and determine what caused them and how to improve the situation.

Education & Training

Bachelor's degree in biological sciences, botany or ecology

Recommended High School Courses

Agricultural education, biology, chemistry, environmental science, mathematics and computer sciences

Typical Employers

Government agencies, universities, research institutions, environmental engineering firms and zoos

Suggested Professional Organizations

Global Water
Local environmental groups
Local Soil, Water Conservation Boards

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Administer field studies to gain information on test subjects
- Analyze collected data through specific software systems
- Conduct environmental impact assessments
- Stay current on environmental laws and regulations
- Construction observation related to ecological receptors
- Wetland determination/delineation and associated reporting
- Survey areas and identify species to record their existence in an area
- Use a GPS for capturing field data
- GIS experience in analyzing, evaluating, and preparing information
- Assess populations of animals to ensure species numbers are not low
- Write wetland delineation reports, function assessments, mitigation plans, and environmental compliance/permitting documents
- Environmental inspection/monitoring of construction projects
- Coordination with various governmental agencies
- Provide educational programs to the public on how to protect species of plants and animals in their area



ENERGY SALES SPECIALIST

Energy sales specialists are responsible for generating sales of fuel in the assigned territory through a variety of methods including target marketing, competitive analysis, and providing value-added energy products, services, and recommendations.

Education & Training

Associate's or Bachelor's degree in agriculture business, marketing, accounting, or other business-related field

Recommended High School Courses

Agriculture education, earth science, biology, chemistry, and mathematics

Typical Employers

Cooperatives, wind and solar energy construction and equipment companies

Suggested Professional Organizations

Retail Energy Supply Association
North American Board of Certified
Energy Practitioners

Job Market/Outlook



Responsibilities

- Maintain a prospect list and conduct sales calls on existing and potential fuel prospects
- Organize training for sales staff
- Record sales or delivery information
- Aid in developing price lists, innovative sales programs, sales prospects and customer incentives
- Disseminate sales programs, inventory, and product information to the professional sales force and customers
- Monitor, coordinate and lead sales activities, product needs, and service requirements
- Ensure the credit worthiness of customers, promoting the use of credit programs as a sales tool and helping provide the required information to establish credit
- Be knowledgeable of company programs, billing procedures, and monthly statement process
- Provide customer service by using all resources available including contracting, fuel and oil testing, specific recommendations and other programs needed
- Develop territory and competitive analysis to maintain current knowledge of the market place and the competition
- Establish a route system in delivery territory, deliver petroleum products according to customer requirements
- Communicate marketing programs and distribute sales promotion materials to customers and prospects
- Collect accounts as needed according to credit policy
- Follow up on customer complaints and seeks solutions in a timely manner



ENVIRONMENTAL COMPLIANCE OFFICER

An Environmental Compliance Officer is responsible for making sure environmental laws for water, gas, energy, oil, etc. are implemented and carried through.

Education & Training

Bachelor's or Master's degree in engineering, soil science, biology, environmental or physical science

Recommended High School Courses

Agricultural education, earth science, biology, botany, chemistry, biology and mathematics

Typical Employers

Government agencies, universities, research institutions, environmental engineering firms and zoos

Suggested Professional Organizations

Global Water
Local environmental groups
Local Soil, Water Conservation Boards

Job Market/Outlook



Responsibilities

- Provide technical assistance for environmental health regulations, environmental management systems, and projects.
- Perform environmental compliance audits and implement follow-up corrective actions to ensure compliance with federal, state, and local regulations.
- Implement environmental management systems and programs for company or clients
- Develop plans, permits, and procedures for air quality, hazardous waste, spill prevention, storm water, and wastewater
- Manage multiple projects within scope/budget/schedule expectations and ensure quality standard on project deliverables
- Prepare technical proposals and participate in business development
- Must be familiar with United States Environmental Protection Agency and local environmental regulations and understanding of environmental permit application processes
- Utilize geo-statistical software to create databases and spreadsheets of collected data



ENVIRONMENTAL ENGINEER

An Environmental engineer is responsible for researching problems within the environment and creating solutions for areas like water and air pollution and waste management.

Education & Training

Bachelor's degree in agricultural, civil, environmental or chemical engineering

Recommended High School Courses

Agriculture education, earth science, biology, botany, chemistry, and mathematics

Typical Employers

Plant research companies, food science companies, governmental organizations, universities and environmental organizations

Suggested Professional Organizations

Association of Environmental Engineering and Science Professors
American Academy of Environmental Engineers

Job Market/Outlook



Responsibilities

- Develop recommendations and regulations to prevent future issues with environmental pollution
- Using scientific data, research and analyze naturally occurring environmental weather patterns to make recommendations for preserving habits
- Provide technical support in day-to-day operations of food, ethanol, oil and feed production
- Ensure compliance with environmental regulations
- Create company environmental management system and protocols
- Read and analyze maps, drawings, blueprints, aerial photographs, soil composition, terrain, and other topographical and geological data
- Implement company-wide priorities for waste minimization and environmental stewardship
- Train fellow employees on environmental compliance practices and requirements

ENVIRONMENTAL SCIENCE AND PROTECTION TECHNICIAN

An Environmental Science and Protection Technician is responsible for implementing environmental monitoring. This can be done through field and lab tests. Environmental Technicians most commonly help and support the lead environmental scientist.

Education & Training

Associate's or Bachelor's degree in natural resources, soil science, biology, or a related science field

Recommended High School Courses

Agricultural education, earth science, biology, botany, chemistry, biology and mathematics

Typical Employers

Seed companies, crop protection companies, universities, government agencies, consulting firms, research laboratories, museums, field stations, parks and recreation areas

Suggested Professional Organizations

Ecological Society of America
American Society of Plant Biologist
World Association of Soil and Water Conservation

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Conduct field sampling of the air, water and soil
- Carry out hazardous goods and waste handling methods
- Develop emergency planning and spill response methods
- Enforcement of environmental law and ethics including recycling and waste minimization
- Taking inventory and quantifying sources of locally-generated pollution
- Preparing reports of lab results for internal and external use
- Classify products and compare test results with standard tables
- Order supplies needed for daily laboratory processes and activities
- Sterilize appropriate laboratory equipment
- Prepare graphs, charts and reports from test results
- Ability to operate laboratory equipment independently
- Perform quality control analysis including tests and inspections of products and processes
- Make recommendations to control or eliminate unsafe conditions at workplaces or public facilities
- Inspect sanitary conditions at public facilities and private property



ENVIRONMENTAL SCIENTIST AND SPECIALIST

Environmental Scientist and Specialist provide the means to comply with company programs and regulatory requirements through land and nutrient management facilities.

Education & Training

Bachelor's degree in agricultural, civil, environmental or chemical engineering

Recommended High School Courses

Agriculture education, earth science, biology, botany, natural resources, chemistry, and mathematics

Typical Employers

Research firms, governmental organizations, schools/universities and environmental organizations

Suggested Professional Organizations

Ecological Society of America
 American Society of Plant Biologist
 American Society of Microbiology

Job Market/Outlook



Responsibilities

- Study living organisms and their relationship to their environment
- Investigate the growth and characteristics of microscopic organisms such as bacteria, algae, or fungi
- Use biotechnology to advance knowledge of cell reproduction and disease in plants
- Direct nutrient analysis and establish testing systems for fertilizer products including on-site field tests and quality control
- Improve and develop products, lead research and development efforts to expand product lines
- Conduct tests to sample environmental products for the appearance of microscopic organisms
- Act as a liaison with other departments on microbiological and sanitation issues
- Manage ecological studies to assess the environmental fate of plant biotechnology traits and evaluate potential effects on soil organisms and microbial processes
- Research problems dealing with life processes and living organisms
- Conduct product development to preserve and repair the natural environment
- Work in teams, interacting with engineers, scientists of other disciplines, business managers, and technicians
- Analyze scientific data, and perform quality control checks
- Conduct various field research activities
- Characterize plants for agronomic traits and animals for development traits



FISHERIES TECHNICIAN

A fisheries technician oversees and assists in the daily work to be completed at a fishery. They ensure fish are well and fed and are responsible for general maintenance around the facility.

Education & Training

Bachelor's degree in aquaculture, biology, chemistry, statistics, or agriculture

Recommended High School Courses

Agricultural education, biology, chemistry, statistics, natural resources, earth science, and mathematics

Typical Employers

Privately-owned fisheries and some government agencies

Suggested Professional Organizations

American Fisheries Society
National Aquaculture Organization
The World Aquaculture Society

Job Market/Outlook



Responsibilities

- Assist biologists and technicians of higher level in various natural resource management or research activities, including use, maintenance and calibration of scientific and technical equipment
- Assist in habitat enhancement and management
- Operate high-pressure spray pumps, outboard motors, air boats, mud boats, vehicles, tractors, and other equipment
- Provide technical support and assistance to professional personnel engaged in fish production and freshwater mussel propagation at a disease-free hatchery
- Prepare diets for fish
- Collect fish broodstock
- Sort and spawn fish
- Clean aquaculture equipment and tanks
- Record keeping



GAME WARDEN

Game wardens work at the state or federal level, enforcing laws related to hunting and fishing.

Education & Training

Bachelor's degree in environmental science, natural resources, or wildlife management

Recommended High School Courses

Agriculture education, earth science, biology, botany, natural resources, and mathematics

Typical Employers

State or national parks, preserves, and ranges

Suggested Professional Organizations

State Game Warden Associations
North American Wildlife Enforcement
Officers Association
Wildlife Conservation Society

Job Market/Outlook



Responsibilities

- Patrol assigned region or area for violators in relation to hunting and fishing laws
- Apprehend violators and issue fines or citations
- Arrest offenders and testify against them in court
- Investigate reported conservation violations
- Confiscate illegal or harmful items
- Assist with wildlife conservation efforts
- Catalog evidence of suspected offenses
- Assist with hunting and fishing education and licensure
- Closely communicate with other law enforcement professionals as well as park/range staff
- May be tasked with creating wildlife conservation programs and presentations for the public
- Some game wardens may work with neighboring companies regarding environmental protocols



HYDROPONICS PRODUCER

Hydroponics producers grow crops without soil, but using a water solution that is rich in nutrients, typically in greenhouses.

Education & Training

High school degree with farming or gardening experience

Recommended High School Courses

Agricultural education, biology, horticulture, botany, mathematics, and business and computer courses

Typical Employers

Specialty food companies, or you may be self-employed

Suggested Professional Organizations

US Hydroponic Association
The Hydroponic Society of America

Job Market/Outlook



Responsibilities

- Choose plants to be planted for each growing season that can be grown cost effectively hydroponically
- Develop a system and time schedule for planting vegetables, herbs and other plants
- Oversee maintenance of hydroponic equipment and greenhouse, ordering of necessary equipment and seeds, and maintained accurate records and propagation journals.
- Foster and grow our greenhouse business, develop business relationships with local chefs, and supply locally grown vegetables, herbs and micro herbs
- Determine what nutrients are needed by the plants being produced
- Find ways to make hydroponic systems more efficient
- Find ways to market produce throughout the year
- Test and maintain water quality for growing
- Project and compile an annual budget and potential income report for the greenhouse



MARINE BIOLOGIST

Marine biologists study aquatic organisms and their habitats.

Education & Training

Master's or Bachelor's degree in marine biology or a closely related field

Recommended High School Courses

Agriculture education, biology, earth science, natural resources, and mathematics

Typical Employers

Aquaculture production farms, government agencies, universities, zoos, aquariums, and research firms

Suggested Professional Organizations

MarineBio Conservation Society
Society for Conservation Biology
American Institute of Biological Sciences
National Association of Marine Laboratories

Job Market/Outlook



Responsibilities

- Design controlled laboratory and natural field experiments to meet objectives
- Observe marine wildlife and organisms in their natural habitats
- Inventory specific populations over periods of time
- Collect water, mineral and plant samples to test in a laboratory setting
- Measure water conditions to determine the value of life for aquatic organisms
- Dissect and preserve marine life as well as samples for current and future studies
- Study aquatic life diseases and create plans to control outbreaks
- Monitor environmental pollution and create plans to notify government officials
- Utilize various laboratory equipment and tools as well as computer software programs
- Oversee activity and duties of assisting marine technicians
- Follow up with employer and invested third parties with research findings
- Write and publish journals or reports on research findings
- Oversee the care and maintenance of aquatic animals in captivity or raised for research purposes
- Serve as an expert regarding marine conservation and aquaculture practices



MINE ENGINEER

A mine engineer, or mining engineer, provides detailed mine planning and engineering to a mine operations site, typically for phosphorus, potash, or iron ore.

Education & Training

Bachelor's degree in mining engineering, geomatics, geology, or civil engineering

Recommended High School Courses

Agriculture education, natural resources, industrial technology, physics, chemistry, advanced mathematics

Typical Employers

Natural resources, chemical, or energy companies or the government

Suggested Professional Organizations

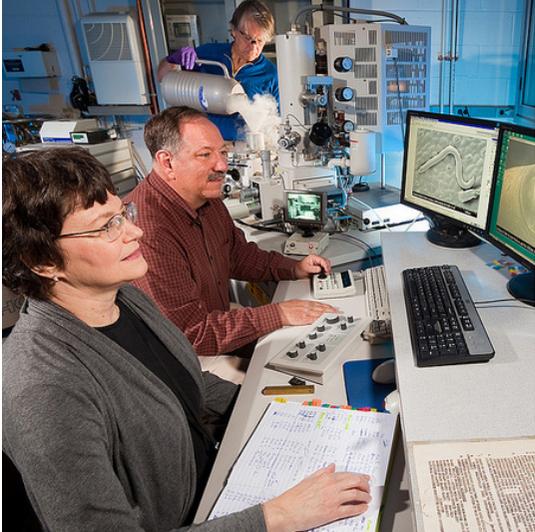
Society for Mining, Metallurgy, and Exploration Inc.
American Institute of Mining, Metallurgical, and Petroleum Engineers

Job Market/Outlook



Responsibilities

- Develop and implement short range surface and underground mine plans
- Prepare detailed maps, cross sections, or other drawings from geologic, topographic, cost, production, and other data
- Provide drilling and blasting engineering along with engineering management and support for projects as assigned
- Provide production, maintenance, equipment, and unit costs
- Work closely with mining staff to conduct and monitor mining, blending and transport
- Survey land for mining operations
- Assist in the optimization of the mining process
- Determine cost estimates for the development of mining properties
- Identify and implement cost-saving measures
- Ensure that any contract complies with company and governmental policy
- Assist geologists with mapping geological disturbances and anomalies in affected mining rooms
- Maintain accurate records and maps
- Assist and cooperate with governmental inspections and corporate audits
- Uphold environmental health and safety policies



NEMATOLOGIST

A nematologist specifically studies nematodes and their interaction with plants. Nematodes are microscopic round worms that can transmit diseases and/or attack soil, water and insects.

Education & Training

Bachelor's degree in biology, entomology, or ecology

Recommended High School Courses

Agriculture education, horticulture, biology, chemistry, natural resources, and mathematics

Typical Employers

Universities, agricultural seed and chemical companies, and government agencies

Suggested Professional Organizations

Soil Science Society of America
Entomological Association of America

Job Market/Outlook



Responsibilities

- Develop methods and apparatus for securing representative soil samples containing nematodes, and for isolating, mounting, counting, and identifying specimens
- Investigate and develop pest management and control measures, such as chemical, hot water and steam treatments, soil fumigation, biological crop rotations, and cultural practices
- Develop microbial nematicide products including various types of soil applications and seed treatments that will measure efficacy against nematodes
- Determine the mode of action of our nematicides – effects on eggs, egg laying, juveniles, adults, etc. Direct or indirect effects, prevention of gall formation or feeding, and others
- Monitor literature and maintain academic and industry contacts
- Contribute to writing of patents, grants and collaborative research agreements
- Maintain an accurate and up-to-date, witnessed written account of experimental protocols and results
- Maintain a high level of scientific skills and knowledge of new technologies and research
- Supervise lab assistants and interns
- Provide expertise and research learnings about nematodes to farmers
- Look at potential nematode resistant genes that could possibly be incorporated into crops



NUTRIENT MANAGEMENT / WASTE MANAGEMENT SPECIALIST

A Nutrient Management/Waste Management Specialist is responsible for creating adequate means for the removal and treatment of animal and food waste from the environment.

Education & Training

Bachelor's degree in agricultural engineering or agronomy

Recommended High School Courses

Agricultural education, earth science, biology, botany, chemistry, and mathematics

Typical Employers

Food animal production companies, crop/chemical companies, and government agencies

Suggested Professional Organizations

American Society of Agricultural and Biological Engineers
American Society of Agronomy
Crop Science Society of America

Job Market/Outlook



Responsibilities

- Prepare and maintain environmental settings and regulatory compliance
- Conduct clean up following natural disasters
- Knowledge of hazardous materials and handling of those materials for clean up
- Operate heavy machinery
- Monitor processes that remove or destroy harmful materials, chemicals, and microorganisms from the water or land
- Research environmentally friendly cleaning processes
- Read meters and gauges to make sure that plant/lab equipment is working properly
- Analyze fertilizer value of applied manure, and explain site specific issues from nutrient management plans
- Manage multiple clients' soil test and fertility needs, and scouting fields for custom chemical applications and recommendations



OCCUPATIONAL HEALTH AND SAFETY MANAGER

An Occupational Health & Safety Manager is a management role responsible for the policy, procedures and measurement of occupational health and safety in the workplace.

Education & Training

Associate's or Bachelor's degree in human health, engineering, chemistry, or environmental health sciences

Recommended High School Courses

Agriculture education, anatomy, biology, mathematics, chemistry, and physics

Typical Employers

Any agricultural company with processing or manufacturing jobs

Suggested Professional Organizations

National Association of Safety Professionals
National Safety Council

Job Market/Outlook



Responsibilities

- Establish and promote maintenance of safe and healthy working conditions in a business through formulating general safety, fire prevention and health policies and measures
- Devise and coordinate safety programs that will increase proficiency in safe practices and promote safety consciousness
- Assist line management personnel in meeting their obligations under the relevant Occupational Health & Safety legislation, such as ongoing safety education, hazard identification and elimination
- Coordinate ongoing training for safety and environmental awareness at all levels of the workforce and regularly verify that tasks are correctly executed
- Coordinate training for Emergency Response Teams set up in workplaces
- Inspect the workplace regularly in cooperation with client agencies to audit safety and environmental procedures, and report findings to line management and client agencies as appropriate
- Investigate accidents, prepare and maintain required reports. Identify countermeasure to prevent re-occurrence
- Provide new hire orientation outlining the company's high expectations regarding safety rules and regulations
- Promote a proactive safety culture focused on incident prevention and regulatory compliance
- Organize and participate in safety committee activities
- Develop specific safety objectives and create actions plans to meet those objectives
- Maintain, review and report safety performance, identifying opportunities for improvement along with implementing preventative and corrective actions as required



PEST CONTROL ADVISER

Pest control advisers are responsible for scouting crops and identifying pests that can affect a farmer's harvest. Based on their observations they then make recommendations on treatment and suggest products or other methods to control or prevent problems.

Education & Training

Bachelor's degree in agriculture field such as agronomy or entomology

Recommended High School Courses

Agriculture education, biology, chemistry, natural resources, and mathematics

Typical Employers

Chemical companies, large grower operations, pest control companies, or you may be self-employed

Suggested Professional Organizations

National Agriculture Aviators Association
National Alliance of Independent Crop Consultants
American Society of Agricultural Consultants
National Pest Management Association

Job Market/Outlook



Responsibilities

- Inspect farmer's fields for pests that can impact yield
- Identify pests that are present and the damage that they are causing
- Make recommendations on treatment plans based on findings
- Sells company products and services
- Maintains sales programs within assigned territory/accounts
- Monitors competitive activity and trends
- May be required to keep records and prepare reports on sales activities
- Continue to learn new product features, benefits, and usage
- Responsible to continue education on marketing techniques, products and services
- Provides training to employees, farmers and technicians as needed
- Work with farmers to conduct field trials in your territory
- Determine cost analysis in order to determine the most economical solutions
- Develop fertilizer formulations based on pesticide application
- Publishes and distributes periodic summaries of agronomic observations and research to customers
- Maintains and builds customer contracts
- Speak at industry events on topics that are of interest to growers



PROPANE SALES AND DELIVERY

A job with propane sales and delivery requires a professional to sell and deliver propane to farms and businesses using propane in their production process.

Education & Training

High school diploma and a Class B CDL with hazmat and tanker endorsements

Recommended High School Courses

Agriculture education, industrial technology, mathematics, business courses, and chemistry

Typical Employers

Energy companies and cooperatives

Suggested Professional Organizations

National Propane Gas Association
Western Propane Gas Association

Job Market/Outlook



Responsibilities

- Actively contact customers and prospects to market propane
- Responsible for payment collections and credit administration
- Deliver product to customer in a timely, efficient and safe manner
- Assist with customer service and energy operations
- Work with facility team to build unity and help accomplish company goals
- Assist with inventory control and team safety
- Follow all guidelines and regulations for hauling propane
- Maintain logs with each shipment, completing daily invoices and reports
- Perform visual inspection of truck before leaving premises and complete maintenance report on all deficiencies
- Report all accidents, traffic violations, and damage to vehicles
- Complete daily maintenance report and notify supervisor of any needed repairs
- Maintain cleanliness of your truck both inside and out
- Ensure on time loading and unloading and communicate with vendors if delays occur
- Provide excellent customer service, treating all customers in a friendly and courteous manner



SANITATION COORDINATOR

Sanitation Coordinators are responsible for all activities involved in maintaining the cleanliness of their assigned production area. Sanitation is a critical role in a well-developed food safety program and the coordinator will also have an active role in preventing unsanitary situations in the workplace.

Education & Training

High school diploma or an Associate's degree in business operations, food safety, or agribusiness

Recommended High School Courses

Agriculture education, animal science, mathematics, Spanish, biology, and chemistry

Typical Employers

Food processing facilities

Suggested Professional Organizations

Association of Food and Drug Officials
International Association for Food Protection

Job Market/Outlook



Responsibilities

- Direct and coordinate all daily sanitation activities within the processing plant as well as the grounds surrounding the processing plant
- Review insect monitoring records and trends, investigate any issues and recommend/complete corrective actions
- Work in conjunction with departments on daily and weekly sanitation tasks
- Facilitate corrective actions related to pest prevention and sanitation
- Facilitate Spills and leaks policy
- Develop, implement, validate and make adjustments to master sanitation schedules
- Provide initial and annual training on proper sanitation practices
- Perform zonal inspections each week to cover the entire facility once per month searching for opportunities pertaining to sanitation and sanitary design
- Assist in the cleaning of all infrastructure, weigh feeders and all parts of equipment
- Monitor and assure maintenance of sanitation equipment
- Interacts with third party auditors to facilitate Food Safety audits within the plant
- Focus on sanitation optimization and effectiveness as well as project design and verification



TOXICOLOGIST

A toxicologist studies chemicals and their effects on living beings and the environment. The goal of a toxicologist is to maintain a good standard of health for the earth and all living things.

Education & Training

Master's or Doctorate degree in biology or chemistry

Recommended High School Courses

Agriculture education, English, algebra, statistics, genetics, biology, chemistry, and physics

Typical Employers

Biotechnology companies, academia, animal pharmaceutical companies, and government agencies

Suggested Professional Organizations

Society of Toxicology
American Veterinary Medical Association
American Clinical Laboratory Association

Job Market/Outlook



Responsibilities

- Comply, analyze and interpret field as well as laboratory toxic substances
- Oversee drug and product safety and health risks during all phases of development
- Attain toxicological, chemical and biological data plus reports conclusions
- Develop and implement investigative toxicology studies
- Conducts chemical, physical and toxicological properties analysis of chemical substances and evaluate associated hazards
- Critically review, evaluate, and interpret current scientific literature, research data and investigative reports, medical findings and reports
- Develop rational and criteria for analyzing chemical hazards
- Identify probable toxic substance components presence in emissions, discharges and waste streams
- Conduct exposure and risk assessments
- Support to develop environmental supervising programs for all toxic substances
- Review and analyze test methods protocols to verify validity and adequacy of use for entire application to evaluate different toxic substance issues
- Maintain and prepare records, reports plus correspondence pertinent to work
- Be able to provide expert advice and recommendations orally and in writing



WATER TREATMENT TECHNICIAN

Water Treatment Technicians perform daily monitoring of agricultural plant functions, which includes accessing the daily demands and making appropriate adjustments to meet those demands.

Education & Training

Associate's degree in agriculture, environmental science, or natural resources; must also be certified with a Wastewater Operator Certification

Recommended High School Courses

Agriculture education, biology, physics, chemistry, natural resources, English and mathematics

Typical Employers

A range of agricultural companies, processing plants, chemical plants, large animal production farms, grain elevators, or government agencies

Suggested Professional Organizations

American Water Resources Association
World Association of Soil and Water Conservation
National Groundwater Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Accountable for the day to day operations of the waste water treatment and recovery facility
- Meticulously execute process sampling to accurately gauge and monitor levels
- Monitor wastewater operations
- Analyze instantaneous and historical data to decide and act on needed process/operational adjustments (demand, chemical dosage, process adjustments)
- Assist operating management in the installation and maintenance of environmental compliance measures required under Federal, State, and local regulations
- Assist management in interpreting and applying technical regulatory requirements on production operations
- Log all operational data and produce frequent reports
- Promptly troubleshoot process, instrumentation, data, and mechanical problems
- Perform basic maintenance, repair, and calibration
- Respond to any related emergencies
- Work closely with adjacent farming operation to insure land application of treated waste water is complaint
- Monitor cost control measures for environmental compliance
- Remain up to date on new developments in regulatory changes in environmental requirements
- Communicate effectively with plant management regarding all waste treatment and water recovery activities



WILDLIFE BIOLOGIST

A wildlife biologist, or a fisheries biologist, studies and oversees the protection and management of an assigned population of one or several species of animals.

Education & Training

Bachelor's or Master's degree in wildlife biology, biology, ecology, environmental science, wildlife management, natural resources, or related area

Recommended High School Courses

Agriculture education, natural resources, biology, animal science, computer courses, mathematics

Typical Employers

Government agencies, zoos, conservation groups, preserves, state and national parks, environmental organizations

Suggested Professional Organizations

The Wildlife Society
Society for Conservation & Biology

Job Market/Outlook



Responsibilities

- Design and implement wildlife data collection programs
- Monitor wildlife movement and activities
- Plan and design research projects to study the ecology of the wildlife assigned
- Prepare management plans for wildlife programs in assigned region
- Collect data through ground and aerial surveys, animal capture and handling, and radio-telemetry work to understand behavioral patterns, population, habitat usage, and breeding
- Assess and improve wildlife habitats
- Produce quality successional wildlife habitat for species to adapt to over time
- Manage predator and invasive plant control and removal
- Review environmental assessment reports and impact statements affecting area wildlife populations
- Analyze wildlife population data
- Provide public hunting access when appropriate and permitted for select species
- Provide advice to local private land owners experiencing crop or livestock issues associated with wildlife
- Develop funding and grant proposals for habitat acquisition, enhancement, and management
- Prepare budgets for research projects
- Assist with range/park management when appropriate
- Perform outreach and education activities for the public
- Maintain accurate, up-to-date records



WIND TURBINE TECHNICIAN

Wind turbine technicians (also known as “windtechs”) are responsible for the installation, maintenance and repair of wind turbines.

Education & Training

Associate's degree in applied sciences such as wind energy technology

Recommended High School Courses

Agriculture education, natural resources, physics, and computer courses

Typical Employers

The states that generate the most wind power are Texas, California, Oklahoma, Illinois, Kansas, Minnesota, Iowa, Oregon, Colorado, Washington, North Dakota, and Wyoming

Suggested Professional Organizations

American Wind Energy Association
National Wind Coordinating Collaborative
Windustry

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Conduct basic cleaning and maintenance of wind turbines and the areas surrounding them
- Remain safety-oriented
- Properly maintain fleet vehicles
- Maintain documentation of service performed
- Change filters and perform other scheduled maintenance
- Troubleshoot problems that occur
- Climb several hundred feet for maintenance and cleaning
- Remain abreast of the latest wind turbine technologies and regulations
- Work well with a team
- Perform diagnostic electrical analysis
- Communicate with landowners and supervisors as needed
- Conduct safety analysis of potential electrical and mechanical hazards
- Remain flexible as problems may occur in the evenings or on weekends



FOOD SCIENCE

EVISCERATION PROCESSOR
FERMENTATION SCIENTIST
FLAVOR TECHNOLOGIST
FOOD CHAIN OUTREACH COORDINATOR
FOOD PRODUCTION SUPERVISOR
FOOD SAFETY SPECIALIST
FOOD SAFETY / QUALITY ASSURANCE MANAGER
FOOD STYLIST
FOOD TECHNOLOGIST
FREEZER / REFRIGERATION SPECIALIST
NUTRITIONIST / DIETICIAN
PACKAGING ENGINEER
PRICING COORDINATOR
PROCESS ENGINEER
PRODUCE BUYER
PRODUCE INSPECTOR
PRODUCT DEVELOPMENT FOOD SCIENTIST
R&D TECHNICIAN
SLAUGHTER PROCESSOR - DEBONING
SLAUGHTER PROCESSOR - GENERAL OPERATOR
SLAUGHTER PROCESSOR - HANGER / LOADER
SLAUGHTER PROCESSOR - PACKING / SCALES
SLAUGHTER PROCESSOR - TRIMMING / CUTTING
STORAGE & HYGIENE COORDINATOR



EVISCKERATION PROCESSOR

Evisceration processors remove the internal organs from carcasses during meat processing.

Education & Training

High school diploma

Recommended High School Courses

Agricultural education, animal science, mathematics, English, foreign language, biology and chemistry

Typical Employers

Meat processing plants

Suggested Professional Organizations

Poultry Science Association
 World's Poultry Science Association
 National Meat Association
 Association of Meat Inspectors
 State level associations and federations

Job Market/Outlook



Responsibilities

- Wash out carcasses in the wash cabinet, as well as by hand
- Cut and salvage assigned components of the animal
- Responsible for keeping work area as clean as possible throughout the shift
- Frequently rotates positions within the Salvage Line with other co-workers
- Inspect carcasses for quality
- Receive all carcasses that were culled during processing
- Keep processing line shackles full at all times
- In poultry: remove lingering feathers
- Work directly with the USDA inspector



FERMENTATION SCIENTIST

Fermentation scientists are food scientists who study microorganisms in the fermentation process and how they relate to food and medicines. They research, analyze and develop new uses for fermentation.

Education & Training

Master's degree in microbiology, biochemistry or related field

Recommended High School Courses

Agriculture education, biology, mathematics, business and computer courses

Typical Employers

Animal pharmaceutical companies and food production companies

Suggested Professional Organizations

Institute for Food Technologists
Institute of Food Science and Technology

Job Market/Outlook



Responsibilities

- Oversee fermentation pilot plant and recovery, shake flask development, mutation screening programs, and strain development programs
- Conduct microbiology research to improve present strains that are utilized in production
- Develop programs for contamination reduction and increasing fermenter up time
- Conceive, plan, develop, and evaluate technical and business projects in the areas of fermentation and microbiology
- Empower the fermentation technology team to improve the overall reliability and productivity of the fermentation process
- Partner with production (and other support functions) to troubleshoot, identify and implement productivity improvements for the production process
- Effectively organize, interpret, and present data to peers, cross functional teams, senior leadership, and colleagues
- Provide leadership and oversee the activities of the fermentation technology staff (microbiologists, research associates, support staff) and other areas as assigned
- Prepare, review, and provide guidance for the preparation of documents to meet all quality, regulatory and compliance requirements
- Interface with the appropriate regulatory and compliance agencies (i.e. FDA), as needed
- Manage department budget and control expenses. Identify, implement and monitor cost reduction programs
- Ensure compliance with all safety, environmental and corporate quality
- Conduct review of literature, making recommendations for application to current process issues



FLAVOR TECHNOLOGIST

Flavor technologists develop and manufacture flavoring used in food and drink products.

Education & Training

Bachelor's degree in food science, nutrition, chemistry or related field

Recommended High School Courses

Agricultural education, mathematics, biology, chemistry and computer courses

Typical Employers

Food companies developing new food products

Suggested Professional Organizations

Institute of Food Technologists
Flavor and Extract Manufacturers Association

Job Market/Outlook



Responsibilities

- Conduct experiments and produce sample products, as well as designs the processes for making products with a consistent flavor, color and texture in large quantities
- Modify the flavor concentrates of existing products to achieve consistent flavor profile of the finished product
- Conduct internal sensory evaluations to determine quality of flavors, both new and existing
- Quickly select flavors and pull from stock for standard sample requests
- Apply flavors to basic applications and collect flavor performance results for flavors that don't have data
- Build a library of flavors with knowledge of many different applications
- Ensure that the portfolio flavors have application data
- Select the best flavor for the application
- Provide quick service to applications and our customers
- Coordinate with multiple departments to ensure flavor data integrity
- Work directly with the sample department on resamples and standard samples for quick turnaround time
- Provide basic application on flavors without data across many different applications
- Communicate with the regulatory department to make certain documentation needs are met



FOOD CHAIN OUTREACH COORDINATOR

A professional working in food chain outreach is responsible for strategizing collaborative relationships with food companies (retail, foodservice, and stakeholder organizations) to secure positions of choice and access within animal production.

Education & Training

Bachelor's degree in agribusiness or business

Recommended High School Courses

Agricultural education, business and computer courses, accounting, mathematics

Typical Employers

Large food companies that sell and position their own products to major retailers

Suggested Professional Organizations

Supply Chain Management Association
Council of Supply Chain Management Professionals
Western Association of Food Chains

Job Market/Outlook



Responsibilities

- Position products and platforms with targeted accounts
- Apply knowledge of retail and food service industries to develop and implement a market access strategy
- Implement strategic account management processes within food chain accounts
- Build advocacy among influencer groups and food chain trade associations
- Cultivate strong relationships with retailers and foodservice companies
- Assist in development of strategies, tactics, and outcomes with marketing teams
- Coordinate business processes across sales teams to ensure alignment and goals
- Assess market conditions that may impact business practices and relations
- Assist in budgeting



FOOD PRODUCTION SUPERVISOR

Food Production Supervisors oversee either entire assembly lines or one entity. They are held accountable for the production of outputs and operating activities for food products. Food Production Supervisors also are always striving to meet their goals to obtain maximum efficiency at a low cost within specified standards.

Education & Training

Bachelor's degree in food science, food engineering, business, or industrial engineering

Recommended High School Courses

Agriculture education, biology, chemistry, and mathematics

Typical Employers

Food production and food ingredient companies

Suggested Professional Organizations

Food Processing Suppliers Association
 American Council for Food Safety and Quality
 Food Ingredient Distribution association
 Institute of Packaging Professionals

Job Market/Outlook



Responsibilities

- Responsible for establishing and executing policies, procedures, and programs that assure products are developed, manufactured, and marketed with superior quality in compliance with in-house specifications and all applicable legal and regulatory agencies
- Manage and coordinate a company-wide regulatory guidance, training and compliance effort
- Develop and maintain audit schedules to ensure all suppliers are evaluated to timescales according to designated risk status
- Develop corrective/preventative (continuous quality improvement) action plans
- Responsible for the microbiological and analytical disposition of all raw materials and products harvested and packed in the plant
- Assist in the development of raw material specifications
- Help to develop and monitor a program of consistent product presentation to support the brand and corporate image
- Lead and facilitate customer inspection of product and facilities
- Troubleshoot quality and safety issues with growers
- Review and check plant sanitation
- Act as the primary liaison with all third party audit bodies
- Develop and maintain a successful staff through selection, training, leadership, and motivation
- Manage daily and weekly product evaluations and report findings to management
- Responsible for maintaining relevant technical expertise and continually establishing an up-to-date awareness of evolving quality control and pack style changes



FOOD SAFETY SPECIALIST

Food Safety Specialists are responsible for meeting food safety standards. They oversee that foods are processed, packaged, and prepared according to those specific standards. The standards can be implemented by their company or regulatory organizations.

Education & Training

Bachelor's degree in food science, chemistry, microbiology, or environmental health

Recommended High School Courses

Agricultural education, biology, chemistry and mathematics

Typical Employers

Food production companies and government inspection agencies

Suggested Professional Organizations

American Society for Microbiology
 American Council for Food Safety and Quality
 Institute of Food Technologists
 National Coalition for Food and Agricultural Research

Job Market/Outlook



Responsibilities

- Review tests and analysis completed by company
- Prepare reports on each company, restaurant or business visited
- Compute formulas, percentages or production specific factors using chemical and mathematical procedures
- Recommend changes with marketers and processors if conditions are not up to standard regulations
- Investigate compliances
- Sample and identify, if any, bacterial or non-desirable excess material
- Prepare graphs, charts and reports from test results
- Observe employees and daily procedures to assure quality control standards are met
- Oversee and inspect procedures performed by each operating unit and team
- Meet with company management and maintain relationship
- Perform quality control analysis including tests and inspections of products and processes
- Train and effectively communicate food safety policies to all company employees and growers
- Accompany customers and 3rd party auditors on field audits, inspections, and quality monitoring
- Attend annual customer meetings, industry events, and continuing education classes



FOOD SAFETY / QUALITY ASSURANCE MANAGER

Food Safety/Quality Assurance Managers abide by regulatory authority compliance for food companies products. They do so by implementing policies, strategies, and methodology testing.

Education & Training

Bachelor's degree in microbiology, food science, or chemical engineering

Recommended High School Courses

Agriculture education, biology, chemistry, and mathematics

Typical Employers

Food production companies, food chemical supply companies, and government inspection agencies

Suggested Professional Organizations

Produce Marketing Association
American Council for Food Safety and Quality
American Association of Meat Processors

Job Market/Outlook



Responsibilities

- Responsible for the quality control aspects of raw materials and finished products
- Prepares reports on each test performed for measuring quality, quantity and composition
- Computes formulas, percentages or production specific factors using chemical and mathematical procedures
- Assist in setting quality standards and ensure that production is maintained at such standards
- Sample and identify, if any, bacterial or non-desirable excess material
- Prepare graphs, charts and reports from test results
- Responsible for maintaining the long-term continuity of production and service quality
- Completes tests required for food product packaging
- Keep records of all tests that have been carried out
- Perform quality control analysis including tests and inspections of products and processes
- Maintain the corporate quality manual and quality records
- Review and report the principle causes of quality loss and non-conformance
- Ensure all check sheets are correctly completed and all non-compliance found have had the correct action taken and signed off
- Arrange, coordinate and participate in external quality audits



FOOD STYLIST

A food stylist designs, prepares and styles food for photography or on-air demonstration.

Education & Training

Associate's degree in culinary arts, baking arts, nutrition or a related field

Recommended High School Courses

Agricultural education, home economics, family consumer sciences, and art

Typical Employers

Food companies and manufacturers, restaurant chains, meat and produce advocacy organizations, or you may be self-employed

Suggested Professional Organizations

International Association of Culinary Professionals
American Culinary Federation

Job Market/Outlook



Responsibilities

- Stylize food items for photography and videography
- Go through a recipe step by step for on-air or video food demonstration
- Maintain and clean test kitchen or demonstration area as well as cooking equipment and utensils
- Consult with marketing and food production staff as to which foods or recipes should be photographed or presented
- Purchase food and recipe items needed for presentation
- Utilize props such as silverware, plates and fabric to stylize the food
- May at times conduct live demonstrations at industry or private events; organize supplies and ingredients needed to do so



FOOD TECHNOLOGIST

Food technologists oversee all aspects of product development, reviewing and approving nutritional data, writing product specifications and enforcing USDA labeling regulations on new and modified food products.

Education & Training

Bachelor's or Master's degree in food science or in a related field

Recommended High School Courses

Agriculture education, computer courses, mathematics, biology and family and consumer sciences

Typical Employers

Food companies that market and develop food products

Suggested Professional Organizations

Institute of Food Technologists
Institute of Food Science and Technology

Job Market/Outlook



Responsibilities

- Collaborate with food production staff for quality, safety, labeling, production, handling, and distribution of food products
- Ensure that food-processing areas comply with government regulations and meet standards for sanitation and waste management
- Support new product development and/or processes based on consumer feedback
- Research products, markets, and technology to improve existing brand/product offering.
- Ensure quality and safety of food products, finding substitutes for harmful ingredients
- Adhere to federal compliance requirements
- Develop samples/prototypes of new products
- Modify existing products to create more marketable products
- Develop specifications for product production labeling
- Compile cost analysis information.
- Maintain accurate records to ensure smooth start-up for new product production processes



FREEZER / REFRIGERATION SPECIALIST

Freezer/Refrigeration specialists direct, implement, audit and evaluate the maintenance, installation, and repair of cooling and refrigeration systems in the manufacturing and processing sectors. They play a very important role in food safety.

Education & Training

Associate's degree with refrigeration training

Recommended High School Courses

Agricultural education, computer courses, and mathematics

Typical Employers

Meat and food processing plants

Suggested Professional Organizations

Association of Ammonia Refrigeration
National Frozen and Refrigerated Foods Association
Refrigerating Engineers & Technicians Association

Job Market/Outlook



Responsibilities

- Perform safe handling of refrigeration chemicals
- Supervise the removal and placement of carcasses in cold storage rooms
- Supervise the packing of meat and counts packs before freezing
- Supervise the packing of frozen blocks into cartons
- Ensure maintenance of machinery required for the freezing of meat products
- Work closely and communicate effectively with supervisors to accomplish repair and maintenance and operation efficiency, including present and potential work problems with suggestions for new or improved designs or procedures
- Knowledgeable of electrical testing equipment and basic hand and power tools
- Ensure compliance with all company, federal, state and local regulations



NUTRITIONIST / DIETICIAN

Nutritionist/Dietitians are the point of contact for individuals that want to be advised on eating programs, healthy food selection, and the alteration of diets to achieve their nutrition and diet needs.

Education & Training

Bachelor's degree in dietetics, food science, or nutrition

Recommended High School Courses

Agriculture education, family and consumer sciences, chemistry and mathematics

Typical Employers

Food production and food ingredient companies, restaurants, school, community groups, and government agencies

Suggested Professional Organizations

American Dietetic Association
 American Nutrition Association
 National Association of Nutrition Professionals

Job Market/Outlook



Responsibilities

- Complete initial patient nutrition related screenings and assessments
- Provide nutritional recommendations to patients and family members
- Coordinate planning, implementation and evaluation of individual nutrition programs
- Utilize safe and protective equipment
- Work with family physician and other medical staff to ensure quality patient care
- Council family members relating to nutritional concerns
- Modify menu for specialized diets for specific patients
- Answer patient questions after program is in place
- Provide education to other health care professionals in a workplace environment
- Research and keep up to date with new studies and nutritional recommendations for health conditions and diseases



PACKAGING ENGINEER

Packaging Engineers design packaging materials for food, animal health care, and other agricultural products such as chemicals, pesticides, and seed.

Education & Training

Bachelor's degree in packing science, engineering, logistics, or food science

Recommended High School Courses

Agricultural education, physics, computer courses, biology and mathematics

Typical Employers

Food, chemical, and seed production companies

Suggested Professional Organizations

Flexible Packaging Association
Institute of Packaging Professionals
National Food Processors Association

Job Market/Outlook



Responsibilities

- Utilize computer and mechanical design tools to create packaging products
- Evaluate current packaging and create cost improvement strategies for both existing and new package designs
- Review preliminary production samples, and provide feedback to vendors on improvements
- Communicate and coordinate with internal creative graphic designers, industrial designers, product engineers, global and regional marketing stakeholders, creative agencies and vendors
- Knowledge of packaging and shipping test methods to assure packaging performance meets shipping stresses
- Leverage fundamental engineering, math, computer skills in the development of practical solutions to technical problems
- Execute packaging experiments and plant trials
- Be knowledgeable of packaging equipment/machinery capabilities and actively participates in equipment selection process and evaluation
- Write packaging and/or raw material portion of new or revises existing finished product specifications
- Knowledge of food packaging principles, food industry quality and food safety requirements, ingredient performance and interactions with equipment, statistical process control, critical control points and new product scale up dynamics
- Inspect packages to determine if packaging meets customer specifications
- Ensure that finished product quality, food safety, and overall sanitation procedures and practices are meeting specification or standards
- Find ways to improve efficiency in the packaging process



PRICING COORDINATOR

A role that acts as a conduit between commodity traders, commodity marketers and company administration.

Education & Training

Associate's or Bachelor's degree in agricultural business, finance, or accounting

Recommended High School Courses

Agriculture education, Spanish, mathematics, and personal finance

Typical Employers

Any organization that sells a product or service to drive pricing decisions and monitor sales

Suggested Professional Organizations

Professional Pricing Society
 National FFA Alumni Association
 North American Export Grain Association
 American Farm Bureau Federation

Job Market/Outlook



Responsibilities

- Ensure that accurate pricing for goods and services is provided to purchasing and sales staff
- Lead design and management of price tests as well as customer segmentation to tailor pricing actions based on expected behavior of pricing segments
- Provide daily summaries of products purchased and sold
- Manage third party vendor relationships for competitor monitoring and consumer research
- Work with other teams (ex. Marketing, sales, sourcing etc.) to ensure that business needs for pricing and cost communication are met
- Ensure that the systems required for data support are checked and confirmed daily
- Provide feedback to merchants and sales managers regarding competitor activity
- Continually review feedback for selling and purchasing opportunities
- Review costs to lessen price discrepancies



PROCESS ENGINEER

Process engineers study the production and manufacturing of a product to look at factors like efficiency, quality and safety. These engineers may also help measure sustainability and profitability.

Education & Training

Bachelor's degree in chemical engineering, manufacturing or industrial engineering

Recommended High School Courses

Agricultural education, computer courses, mathematics, and physics

Typical Employers

Food processing and farm equipment plants

Suggested Professional Organizations

National Society of Professional Engineers
 Association for Process Safety Research
 Institute of Food Technologists

Job Market/Outlook



Responsibilities

- Provide day-to-day observance and support of manufacturing operations
- Oversee and enforce safety, quality, efficiency, and cost reduction throughout the business
- Conduct audits of safety protocol to ensure workers are safe
- Take overall responsibility for the safe design and safe operation of the equipment within the area
- Assist regulatory agencies during audits and assessments of facilities and techniques
- Provide engineering expertise to leadership
- Provide technical ownership of equipment and processes
- Monitor systems to verify and optimize performance
- Lead troubleshooting efforts to resolve process and operational problems
- Find ways to implement customer process requests
- Evaluate business functions for impact on qualified state of equipment/processes and utilize appropriate tools/processes as necessary (change control, hold, etc.)
- Responsible for system/component classification and maintenance strategy for equipment
- Find improvement opportunities (procedural changes, upgrades, projects, etc.) associated with processes you oversee
- Compare system performance statistics with other operations to determine areas of opportunity for collaboration and improvement
- Conduct economic analysis of improvement projects



PRODUCE BUYER

A produce buyer purchases produce to be made into other products or resale in a retail environment.

Education & Training

Bachelor's degree in agriculture business, marketing, supply chain management, horticulture, or other business related field

Recommended High School Courses

Agriculture education, mathematics, statistics and business courses

Typical Employers

Restaurant chains, grocery stores, food service providers or food production companies

Suggested Professional Organizations

Supply Chain Management Association
Council of Supply Chain Management Professionals
American Purchasing Society
Produce Marketing Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Manage sourcing strategy, including contract and negotiation decisions, to improve quality and profitability
- Negotiate raw product contracts with growers and brokers based on quality parameters
- Create custom market and sourcing reports for distribution internally and externally
- Be the company expert in matters related to raw product quality, market trends and the science of perishable inventory management
- Travel to grower fields to monitor progress of contracted crops
- Effectively communicate with suppliers to ensure timely deliveries, excellent product quality, continuous improvement for cost reductions and improving lead times
- Facilitate the development of new suppliers in collaboration with quality assurance in order to help them to reach the level of excellence required by company standards
- Evaluate and select suppliers based on their ability to supply product in accordance with the organization's requirements like quality, contract compliance, and accuracy among others
- Work with other parts of the company to determine volume needs or consumer preference



PRODUCE INSPECTOR

A produce inspector is responsible for physically inspecting fresh produce during the growth and harvest process. Produce inspectors will also grade the product in accordance to the USDA guidelines.

Education & Training

Bachelor's degree in agriculture business, marketing, supply chain management, horticulture, or other business related field

Recommended High School Courses

Agricultural education, mathematics, statistics, Spanish, and business courses

Typical Employers

Government agencies, produce supply companies, or restaurants

Suggested Professional Organizations

United Fresh Produce Association
Produce Marketing Association
National Restaurant Association

Job Market/Outlook



Responsibilities

- Inspect produce in the field and as it arrives to its destination
- Using USDA and customer specification, grade product for quality, condition, weights, and size
- Determine the condition of the produce
- Make suggestions on the shelf life of the produce and suggest when it should be used or sold by depending upon the intention on the use of the product
- Make recommendations on the use for different varieties
- Ensure produce is kept at proper temperature
- Understand the use of the tools needed for quality inspections to include sizers, scales, calipers, and other measuring devices
- Collaborate with USDA Produce Inspectors for needed quality federal inspections to ensure resolution of issue(s)



PRODUCT DEVELOPMENT FOOD SCIENTIST

Product Development Food Scientists research and revamp the process of canning, freezing, storing, and packaging of food.

Education & Training

Bachelor's degree in agriculture business, marketing, supply chain management, horticulture, or other business related field

Recommended High School Courses

Agriculture education, biology, chemistry, and mathematics

Typical Employers

Food production companies, government inspection agencies, colleges and universities

Suggested Professional Organizations

American Meat Science Association
American Council for Food Safety and Quality
Institute of Food Technologist
National Coalition for Food and Agricultural Research

Job Market/Outlook



Responsibilities

- Design, develop and test processes and processing equipment for food processing factories
- Improve quality of equipment and increase production of food products
- Create new methods and processes to preserve food and increase food manufacturing efficiency
- Source equipment for company usage
- Repair production processes that are not working properly
- Evaluate and record costs of processes and equipment
- Work with quality assurance teams to maintain food product standards
- Present and discuss processes and equipment findings with company management
- Teach and train new employees about processes and equipment
- Identify and correct quality problems
- Monitor production process to observe new opportunities
- Ensure operations are safe and effective



R&D TECHNICIAN

A R&D Technician is responsible for assisting a researcher or research team with product development projects. R&D Technicians provide support for researchers/research associates on developmental product assignments.

Education & Training

Associate's or Bachelor's degree in chemistry, biology, food science, or food technology

Recommended High School Courses

Agricultural education, biology, chemistry, and mathematics

Typical Employers

Food production companies, food chemical supply companies, and government agencies

Suggested Professional Organizations

Produce Marketing Association
 American Council for Food Safety and Quality
 Institute of Food Technologists
 Research Chefs Association

Job Market/Outlook



Responsibilities

- Ensure accurate sample preparation (weigh, measure, data record keeping)
- Operate lab/kitchen and plant equipment
- Maintain culinary presentation tools
- Develop and maintain recipes
- Compute formulas, percentages or production specific factors using chemical and mathematical procedures
- Assist with scale up processes of prototype products into full production
- Support commercialization of products by working with the Marketing & Sales and within the framework of the stage-gate process
- Perform wet chemistry analysis (pH, salt, Aw, moisture, fat, protein and Ash) on finished product
- Provide assistance with microbiological testing of environmental swabs, raw materials, and finished products
- Contribute to product development and the establishment and implementation of processing activities, including safety, in the areas of aeration, depositing, and freeze drying



SLAUGHTER PROCESSOR: DEBONING

In the process of slaughtering a deboning career involves slaughtering beef, sheep, goat, fish, pork and/or poultry by boning or deboning meat to meet compliance standards and targets.

Education & Training

High school diploma; Associate's degree in meat science or other advanced training may be preferred

Recommended High School Courses

Agriculture education, mathematics, culinary courses anatomy, and computer courses

Typical Employers

Food and animal processing facilities and companies

Suggested Professional Organizations

American Association of Meat Processors
American Council for Food Safety and Quality
Association of Meat Inspectors

Job Market/Outlook



Responsibilities

- Knowledge of animal anatomy
- Cut and trim meat to prepare for packing
- Inspect meat products for defects, bruises or blemishes and remove them along with any excess fat
- Remove parts, such as skin, feathers, scales or bones, from carcass
- Adhere to safety procedures and policies to slaughter animals
- Prepare carcasses for further processing by removing bones using knives, cleavers, meat saws, bandsaws or other equipment
- Check products to ensure they are up to standards
- Monitor machines and equipment, and adjust if necessary
- Maintain and clean machines used in meat preparing process
- Check products to ensure they are up to standards
- Monitor machines and equipment, and adjust if necessary
- Maintain and clean machines used in meat preparing process



SLAUGHTER PROCESSOR: GENERAL OPERATOR

In the process of slaughtering a general operator processes the slaughtering of beef, sheep, goat, fish, pork and poultry to meet site compliance standards and targets.

Education & Training

High school diploma; Associate's degree in meat science or other advanced training may be preferred

Recommended High School Courses

Agricultural education, biology, culinary courses, anatomy, and mathematics

Typical Employers

Food and animal processing facilities and companies

Suggested Professional Organizations

American Association of Meat Processors
American Council for Food Safety and Quality
Association of Meat Inspectors

Job Market/Outlook



Responsibilities

- Knowledge of animal anatomy and cuts of meat
- Adhere to safety procedures and policies to slaughter animals
- Prepare carcasses for cutting, e.g. by cleaning and removing parts (organs, skin, feathers, bones, etc.)
- Cut carcasses for further processing
- Separate meat and by-products
- Inspect meat products for defects, bruises or blemishes and remove them along with any excess fat
- Process prime parts into cuts that are ready for retail use, e.g. using knives, cleavers, meat saws, and saws or other equipment
- Pack final products
- Check products to ensure they are up to USDA standards
- Monitor machines and equipment, and adjust if necessary
- Maintain and clean machines used in meat preparing process
- In some roles this may involve supervisory responsibilities including guiding, directing, and supporting operators on line



SLAUGHTER PROCESSOR: HANGING / LOADING

In the process of slaughtering a hanger/loader will hang or load carcass/meat for processing slaughtered beef, sheep, goat, fish, pork and/or poultry.

Education & Training

High school diploma; Associate's degree in meat science or other advanced training may be preferred

Recommended High School Courses

Agriculture education, mathematics, culinary courses anatomy, and computer courses

Typical Employers

Food and animal processing facilities and companies

Suggested Professional Organizations

American Association of Meat Processors
American Council for Food Safety and Quality
Association of Meat Inspectors

Job Market/Outlook



Responsibilities

- Knowledge of animal anatomy and cuts of meat
- Adhere to safety procedures and policies to slaughter animals
- Lift, hang, shackle and align carcasses or meat portions for further processing on operating line
- Check products to ensure they are up to standards
- Monitor machines and equipment, and adjust if necessary
- Maintain and clean machines used in meat preparing process
- Handle and pick up live animals of various sizes and weights both manually and with the use of equipment



SLAUGHTER PROCESSOR: PACKING / SCALES

In the process of slaughtering a person who works in packing/scales will manually or with the use of machinery to package, weigh and sort processed slaughtered beef, sheep, goat, fish, pork and/or poultry to meet compliance standards and targets.

Education & Training

High school diploma; Associate's degree in meat science or other advanced training may be preferred

Recommended High School Courses

Agricultural education, biology, culinary courses, anatomy, and mathematics

Typical Employers

Food and animal processing facilities and companies

Suggested Professional Organizations

American Association of Meat Processors
American Council for Food Safety and Quality
Association of Meat Inspectors

Job Market/Outlook



Responsibilities

- Knowledge of animal anatomy and cuts of meat
- Adhere to safety procedures and policies to slaughter animals
- Weigh processed meat using scales
- Package or bag processed meat using equipment
- Label and sort packaged meat for sale
- Check products to ensure they are up to standards
- Monitor machines and equipment, and adjust if necessary
- Maintain and clean machines used in meat preparing process



SLAUGHTER PROCESSOR: TRIMMING / CUTTING

In the process of slaughtering a person who works in trimming/cutting will process slaughtered beef, sheep, goat, pork and/or poultry by cutting carcass/meat to meet compliance standards and targets.

Education & Training

High school diploma; Associate's degree in meat science or other advanced training may be preferred

Recommended High School Courses

Agriculture education, mathematics, culinary courses anatomy, and computer courses

Typical Employers

Food and animal processing facilities and companies

Suggested Professional Organizations

American Association of Meat Processors
American Council for Food Safety and Quality
Association of Meat Inspectors

Job Market/Outlook



Responsibilities

- Knowledge of animal anatomy and cuts of meat
- Adhere to safety procedures and policies to slaughter animals
- Cut carcasses for further processing
- Separate meat and by-products
- Inspect meat products for defects, bruises or blemishes and remove them along with any excess fat
- Process prime parts into cuts that are ready for retail use, e.g. using knives, cleavers, meat saws, and saws or other equipment
- Check products to ensure they are up to standards
- Monitor machines and equipment, and adjust if necessary
- Maintain and clean machines used in meat preparing process



STORAGE & HYGIENE COORDINATOR

Storage and hygiene coordinators implement the scheduling and treatment or fumigation of grain and other products.

Education & Training

High school diploma, Associate's degree, or advanced training in pest control

Recommended High School Courses

Agricultural education, biology, mathematics, business and computer courses

Typical Employers

Grain facilities, exporters, or other facilities where food or food-related goods are stored

Suggested Professional Organizations

American Industrial Hygiene Association
National Pest Management Association

Job Market/Outlook



Responsibilities

- Inspect properties, identify problems, determine treatments and provide estimates of costs for replacement
- Mix chemicals to specified concentrations and confirm usage on treatment of raw materials
- Operate generators, compressors, manual and electric pumps to inject or spray liquid and gaseous pesticides and herbicides
- Fumigate storage spaces, houses or office furnishing and clothing
- Dust infested areas with appropriate powder or lay baits
- Apply pesticides or herbicides in the pre-treatment of building sites
- Carry out simple maintenance practices to prevent pests entering buildings, such as bird-proofing roofs and filling cracks and crevices
- Maintain equipment in safe, efficient working order
- Maintain work records of each property inspected, the pest or weed problem, chemicals used and amount of time spent at each location



NATURAL RESOURCES

AQUACULTURE HATCHERY MANAGER
AQUACULTURIST
BIOLOGICAL TECHNICIAN
BIOREFINING SPECIALIST
CONSERVATIONIST
CONSERVATION OFFICER
ETHANOL ENGINEER
FORESTER
GEOLOGIST
HYDROLOGIST
IRRIGATION SPECIALIST
LOGGER
RESTORATION SPECIALIST
SALTWATER HUSBANDRY TECHNICIAN
SAWMILL OPERATOR
WILDLAND FIREFIGHTER / FIRE TOWER WATCHMAN
WIND SUBSTATION TECHNICIAN



AQUACULTURE HATCHERY MANAGER

Hatchery Managers over see all aspects of an aquaculture hatchery including the management of personnel, fish, infrastructure and equipment.

Education & Training

Associate's or Bachelor's degree in fisheries science, aquaculture, hatchery management, or hatchery maintenance

Recommended High School Courses

Agricultural education, animal science, mathematics, English, biology, natural resources, and chemistry

Typical Employers

Large commercial fisheries as well as government environmental agencies

Suggested Professional Organizations

American Fisheries Society
National Aquaculture Association

Job Market/Outlook



Responsibilities

- Track fish life cycles to determine the proper time for harvesting or release
- Look for disease and treat as needed
- Find ways to trap and breed in an environmentally friendly and economical way
- Oversee water quality assurance/quality control program
- Maintain current knowledge of industry trends and information regarding hatchery equipment and operations
- Develop and track hatchery budget
- Manage fish care, maintenance, packing and transfer activities
- Hires and trains hatchery staff and supervises employees
- Maintains records and prepares reports on hatchery operation, ensures inventories, equipment, and capital improvements are properly maintained, coordinates hatchery operation with other department functions, provides input on new hatchery designs
- Ensures worker safety requirements are met
- Works with nutritionists to develops feeding rations and schedules needed for specified growth rates for a variety of aquatic species
- Meets with federal and state officials to establish priorities for fish production and coordinate research projects; makes presentations to interested groups and technical committees;
- Conducts hatchery tours, explains operations and answers questions on fish production



AQUACULTURIST

Aquaculturists understand the growth, development and production of aquatic animals. Aquaculturists work to bring a variety healthy fish, lobsters, crabs etc. to our dinner table from aquatic environments.

Education & Training

Bachelor's or Master's degree in fisheries, biological science, or aquaculture

Recommended High School Courses

Agriculture education, biology, natural resources, and chemistry

Typical Employers

Commercial fisheries, biological research companies, parks, aquariums, or government agencies

Suggested Professional Organizations

National Aquaculture Association
 World Aquaculture Society
 Global Aquaculture Alliance
 American Fisheries Society

Job Market/Outlook



Responsibilities

- Assist with all aspects of fish husbandry including feeding, fish grading, fish movement, water quality monitoring and fish inventory control
- Grow fish and shellfish as cash crops or for release into freshwater or saltwater
- Supervise and train aquaculture and fish hatchery support workers
- Collect and record growth, production, and environmental data
- Conduct and supervise stock examinations to identify diseases or parasites
- Sort different types of breeding stock in order
- Handle incubation and short-term rearing of fish in net pens or small ponds
- Conduct routine maintenance of your facility and equipment
- Oversee operation and maintenance of freshwater and/or seawater aquaculture systems
- Provide insight into planning facilities and construction of new aquaculture systems
- Manage automated building and equipment control systems
- Provides technical support for various projects with researchers and universities
- Assist those interested in aquaculture in the development of commercially viable aquaculture systems and processes
- Design, supervise and implement biological studies on aquatic resources
- Assess fish population in various bodies of water
- Compile, analyze and interpret biological data and compile technical reports.
- Identify and treat diseases found in fish populations
- Manage fish inventory and production in a hatchery
- Administer and execute policies relating to operations, train, supervise and assist hatchery workers
- Provide leadership for delivering education, training and information to a variety of audiences that may farmers, educators, agency personnel and citizens
- Work to find ways to improve spawning, setting, growth rates and disease prevention in hatcheries



BIOLOGICAL TECHNICIAN

Biological technicians are responsible for helping and supporting conservationists and environmental scientists in laboratory research on the life cycles of living organisms.

Education & Training

Associate's or Bachelor's degree in natural resources, soil science, environmental science, biology, horticulture, or a related field

Recommended High School Courses

Agricultural education, earth science, chemistry, physics, biology, botany, natural resources, horticulture and mathematics

Typical Employers

Agricultural research firms, government agencies, environmental and conservation organizations, food processing organizations, and universities

Suggested Professional Organizations

American Institute of Biological Sciences
American Society for Biochemistry and Molecular Biology

Job Market/Outlook



Responsibilities

- Conduct field sampling of the air, water and soil, crops, fruits, vegetables and/or ornamentals
- Evaluate samples for methods to improve yield, quality, adaptation to mechanization, climate, and pest
- Control exotic invasive plants through the use of chemical, mechanical, manual and biological methods
- Taking inventory and quantifying sources of locally-generated pollution
- Preparing reports of lab results for internal and external use
- Classify products and compare test results with standard tables
- Order supplies needed for daily laboratory processes and activities
- Use standard pesticide application and biological control field and safety equipment as required
- Examine samples and identify, if any, bacterial or non-desirable excess material
- Prepare graphs, charts and reports from test results
- Ability to operate laboratory equipment independently
- Perform quality control analysis including tests and inspections of products and processes
- May assist conservationists/conservation officers in special or emergency situations as needed (prescribed fire, search and rescue)



BIOREFINING SPECIALIST

Biorefining specialists work to convert biomass into fuels, power and chemicals to create more sustainable solutions to fuel our planet.

Education & Training

Bachelor's degree in chemical or electrical engineering

Recommended High School Courses

Agriculture education, computer courses, chemistry, natural resources, and mathematics

Typical Employers

Ethanol and other alternative energy companies

Suggested Professional Organizations

American Coalition for Ethanol
Renewable Fuels Association
National Biodiesel Board

Job Market/Outlook



Responsibilities

- Keep track of dried distillers grains, ethanol, corn oil, wet cake feed and distiller's syrup into trucks and rail cars brought in and out of plant
- Responsible for the operation of all plant processing equipment and performing routine maintenance in a highly automated chemical facility
- Oversee maintenance and cleaning of all equipment associated with the biorefining processes
- Maintain knowledge of the process flow, computerized equipment
- Maintain plant Occupational Health and Safety Administration (OSHA) guidelines
- Be aware of hazards associated with biorefining and ensure employees are properly trained in safety techniques and procedures
- Develop and execute efficient operating procedures
- Ensure quality of product being produced
- Identify needs to maintain production levels
- Meet with plant engineers regularly to ensure plant processing equipment is running properly and to look for ways to improve production
- Understand and execute standard operating procedures and is expected to ensure proper response during normal and abnormal operating situations
- Most biorefining plants operate 24 hours, 7 days a week; must be willing to work unexpected days or hours as problems arise
- Collect data for production reports



CONSERVATIONIST

A conservationist is responsible for improving, protecting, and managing earth's natural resources. To do so, they work closely with private landowners, federal, state, and local governments. Conservationists also frequently meet with farmers to consult them on the best practices for their land and how to increase their productivity while keeping the environment safe.

Education & Training

Bachelor's or Master's degree in natural resources, crop science, soil science, biology, horticulture, plant physiology or environmental science

Recommended High School Courses

Agricultural education, earth science, chemistry, biology, horticulture, and mathematics

Typical Employers

Research firms, government agencies, environmental or conservation organizations, or universities

Suggested Professional Organizations

World Association of Soil and Water Conservation
Soil Science Society of America
American Society of Agronomy
National Arbor Day Foundation

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Research or study conservation management practices to provide sustained production of forage, livestock, and wildlife
- Develop technical standards and specifications used to manage, protect and improve the natural resources of conservation
- Maintain soil stability and vegetation for non-grazing uses, such as wildlife habitats and outdoor recreation
- Manage forage resources through fire, herbicide use, or re-vegetation to maintain a sustainable yield from the land
- Plan and direct construction and maintenance of conservation improvements such as water shed research and soil-erosion control structures
- Study forage plants and their growth requirements to determine varieties best suited to particular area
- Utilization of equipment for monitoring conservation structure and navigation
- Develop new and improved instruments and techniques for activities such as reseeding
- Measure and assess vegetation resources for biological assessment companies, environmental impact statements, and conservation monitoring programs
- Offer advice regarding water management, forage production methods and control of brush



CONSERVATION OFFICER

A Conservation Officer is responsible for natural resources. They strive to secure and protect these areas and strategically work with conservationists to ensure these resources are thriving.

Education & Training

Bachelor's degree in natural resources, crop science, soil science, biology, horticulture, or related field; training in law enforcement is also beneficial

Recommended High School Courses

Agriculture education, earth science, chemistry, biology, horticulture, and mathematics

Typical Employers

Research firms, government agencies, environmental and conservation organizations

Suggested Professional Organizations

World Association of Soil and Water Conservation
Soil Science Society of America
American Society of Agronomy
National Arbor Day Foundation

Job Market/Outlook



Responsibilities

- Assist with research projects or studies to conserve management practices to provide sustained production of forage, livestock, and wildlife
- Follow technical standards and specifications used to manage, protect and improve the natural resources of conservation
- In park settings patrol backcountry areas and other secure sites, provide emergency services, manage wildlife/human interactions on the roadways or in campgrounds, and encourage visitors to develop a sense of stewardship for park resources
- Participate in management of forage resources through fire, herbicide use, or re-vegetation to maintain a sustainable yield from the land
- Construct and maintain water shed and soil-erosion structures
- Utilization of equipment for monitoring conservation structure and navigation
- Provide public education for visitors to conversation site
- Participate in possible human or animal search and rescue activities
- Offer advice regarding water management, forage production methods and control of brush



ETHANOL ENGINEER

In ethanol plant, an engineer is responsible for working closely with the management team to maximize efficiencies of plant operations and implement process improvement projects. Ethanol engineers can help an ethanol plant with cost-saving projects, such as energy reclaim/reduction, yield optimization and chemical usage reduction.

Education & Training

Bachelor's in chemical or electrical engineering

Recommended High School Courses

Agricultural education, biology, chemistry, writing, natural resources, and computer courses

Typical Employers

Ethanol plants, bio-energy firms, and other biorefineries

Suggested Professional Organizations

American Coalition for Ethanol
Renewable Fuels Association
National Biodiesel Board

Job Market/Outlook



Responsibilities

- Troubleshoot problems as they arise
- Identify process needs to maintain production levels
- Ensure compliance of environmental and health & safety needs of team members
- Because ethanol plants typically operate 24/7, be available in case of a breakdown or emergency
- Work closely with the plant manager and general manager to maximize efficiencies of plant operations
- Look for ways to optimize plant run time but mechanically and with personnel
- Identify process needs to maintain production levels
- Analyze plant data and develop reports based on plant operations
- Network with other engineers at other sites in order to share best practices and to solve problems
- Assist in the development and execution of projects
- Develop budgets for improvements and additions to plant
- Monitor infrastructure and machinery for maintenance needs
- Research new technology to improve processes at the plant
- Look for ways to increase product quality
- Ensure plant meets environmental and safety protocol



FORESTER

A forester is a professional in charge of caring for, planting and managing trees or forests. They are involved in a range of activities including restoration, conservation, timber harvest, and managing protected wooded areas.

Education & Training

Bachelor's degree in forest management, natural resources, fisheries, or conservation

Recommended High School Courses

Agriculture education, biology, horticulture, natural resources, mathematics, and computer courses

Typical Employers

Timber companies, state parks, government agencies, or you may be self-employed

Suggested Professional Organizations

Society of American Foresters
 Association of Consulting Foresters
 National Association of State Foresters
 Forest Resources Association

Job Market/Outlook



Responsibilities

- Conduct technical forestry work including: timber marking, volume estimation, technical assistance for use of forest, sale of forest products
- Collect forest data
- Establish and measure permanent forest sample plots
- Prepare stands for contract tree planting
- Prepare contracts for harvesting forest products and other contract services
- Mark and investigate trees that are ready to be harvested
- Interpret aerial photographs of plots
- Coordinate and conduct felled-tree volume studies
- In instances of burning, evaluate areas to be burned prior to and after burning
- Maintain burning records and evaluations
- Use forest measurement instruments and electronics
- Perform pre-inspection prior to tree-trimming work
- Inspect trees for hazardous potential
- Assist in wildfire prevention
- Respond to wildfire emergencies



GEOLOGIST

A geologist studies the earth's crust, minerals, rocks, precious metals and gems, and fossils.

Education & Training

Bachelor's or Master's degree in geology, geophysics, or a related field

Recommended High School Courses

Agricultural education, chemistry, physics, earth science, biology, natural resource, advanced mathematics, and computer courses

Typical Employers

Research firms, environmental businesses, government agencies, and universities

Suggested Professional Organizations

The Geological Society of America
 Association of Environmental & Engineering Geologists
 American Association of Petroleum Geologists
 American Institute of Professional Geologists

Job Market/Outlook



Responsibilities

- Study characteristics of the earth, rock or minerals including magnetic fields and composition
- Utilize various equipment such as magnetometers, seismographs and gravimeters
- Prepare maps, charts and publications related to findings
- Plan and execute minerals program activities and tests
- Ensure the proper conservation of minerals and other earth matter
- Aid in the exploration and recovery of minerals, metals, oil, natural gas and water deposits
- May be charged with investigating geologic hazards or limitations in engineering and construction projects
- Locate water resources underground
- Remain up to date on new geological findings and technology



HYDROLOGIST

Hydrologists oversee and implement the examination of water that is either above or below the earth's surface through physical characteristics, distribution, and circulation.

Education & Training

Bachelor's degree in biology, earth science, geology, chemistry, or environmental sciences/engineering

Recommended High School Courses

Agriculture education, biology, chemistry, earth science, physics, natural resources, and mathematics

Typical Employers

Research firms, environmental consulting companies, conservation authorities, government agencies, and universities

Suggested Professional Organizations

American Water Resources Association
 International Association for Environmental Hydrology
 National Groundwater Association
 American Water Resources Association

Job Market/Outlook



Responsibilities

- Research and understand the movement of water in the environment and its impacts on the environment
- Supervision of field activities/research trials
- Oversee groundwater flow and transport modeling in the environment
- Assessment of natural attenuation processes in soil and groundwater
- Perform environmental consulting
- Design dams, ponds, piping and pumping systems, as well as sewage system for rainfall
- Study water contamination, how it takes place and prevention
- Predict changes in climates and ecosystems
- Supervise technicians assisting with your research or field work
- Prepare reports and documents with findings and recommendations
- Advise clients on ways they can preserve their water sources



IRRIGATION SPECIALIST

Irrigation specialists are responsible for the sales, programming, operating and maintenance of irrigation systems to help producers produce a more beautiful crop.

Education & Training

High school diploma or Associate's degree in turf grass management, ag engineering, or landscape architecture

Recommended High School Courses

Agricultural education, biology, natural resources, business, and Spanish

Typical Employers

Landscaping companies, produce companies, golf courses, or irrigation systems companies

Suggested Professional Organizations

Irrigation Association
Professional Landcare Network

Job Market/Outlook



Responsibilities

- Provide system recommendations to fit the needs of the customer: golf course, farmer's field, landscaping etc.
- Coordinate watering schedules with Farm Manager and Agronomist
- Troubleshoot any problems that may arise with system
- Order and install parts
- Prepare ground for installation of irrigation lines
- Understand plants being watered to best determine water rates
- Design and read blue prints in order to lay out or locate irrigation valves and wiring
- Install pipes, wiring and valves
- Understand and implement computerized irrigation systems including remote monitoring/control systems
- Provide general oversight of labor crew
- Must have welding experience/certification



LOGGER

Loggers work in the timber industry, cutting down trees and processing them into logs.

Education & Training

High school diploma

Recommended High School Courses

Agriculture education, mathematics, natural resources, and computer courses

Typical Employers

Lumber or timber companies as well as forest associations and groups

Suggested Professional Organizations

State Loggers Associations
 State Forestry Associations
 Tree Care Industry Association

Job Market/Outlook



Responsibilities

- Cut down trees using chain saws and other specialty logging equipment
- Remove excess limbs and branches
- Determine how much lumber a tree will yield by measurement and scale
- Trim logs into specific lengths at the cutting site
- Chain logs to tractors or other machines that will tow logs to a loading site
- May be required to operate tractor or other towing machine
- May be required to climb trees for inspection, trimming, or to attach cable rigging for harvest
- Guide logs when necessary over obstacles
- Inspect and maintain equipment for optimal safety



RESTORATION SPECIALIST

To be a Restoration Specialist it is vital to research the link that connects the environment and organisms in differentiated situations. They will then make a recommendation on how to improve and replenish ecosystems. Restoration Specialists closely watch over the application of their recommendations and provide support when needed.

Education & Training

Bachelor's degree in biology, horticulture, chemistry, or environmental science

Recommended High School Courses

Agricultural education, earth science, biology, horticulture, chemistry, and mathematics

Typical Employers

Universities, government agencies, consulting firms, research laboratories, museums, field stations, parks, and recreation areas

Suggested Professional Organizations

Ecological Society of America
 American Society of Plant Biologist
 Society for Range Management
 World Association of Soil and Water Conservation

Job Market/Outlook



Responsibilities

- Investigate the growth and characteristics of microscopic organisms such as bacteria, algae, or fungi
- Research cell reproduction and human disease
- Manage research of how organisms react to processes in the environment
- Study the relationships among organisms and between organisms in their ecosystem
- Examine the effects of population size, pollutants, rainfall, temperature and altitude
- Collect, study, and report data on the quality of air, food, soil, and water
- Planning, initiation, coordination, data analysis, report preparation and scientific execution of plant ecological assessment experiments
- Research situations caused by man-made practices and their impact on natural habitats
- Develop biological control strategies to combat pest insects, weeds and pollutants on natural vegetation and wildlife
- Use computer simulations to model problems and evaluate solutions
- Prepare written reports and recommendations
- Ensure operations comply with government regulations and monitor the production of products



SALTWATER HUSBANDRY TECHNICIAN

A saltwater husbandry technician is responsible for general farm operations including feeding and care of fish grown in a saltwater habit.

Education & Training

Bachelor's or Master's degree in ecology, marine biology, animal nutrition, zoology, or aquaculture

Recommended High School Courses

Agriculture education, mathematics, chemistry, biology, and natural resources

Typical Employers

Fisheries, aquariums, zoos, and government agencies

Suggested Professional Organizations

American Fisheries Society
National Aquaculture Organization
The World Aquaculture Society

Job Market/Outlook



Responsibilities

- Operation and basic maintenance of auto feeders, boats and equipment in the marine environment
- Familiarity of the concepts of fish growth and stock management
- Operate and maintain a variety of tools, including plumbing and scuba equipment
- Collects bottom gravel samples and analyzes for silt, size fractions, etc.
- Performs laboratory analysis of water quality samples
- Measures amount and quantity of spawning areas
- Prepare diets for fish
- Test and maintain saltwater levels to promote optimal growth of fish produced in saltwater environment
- Keeps records of all data and develops these into statistical reports
- Schedules, services, calibrate repairs, and installs sampling instrumentation



SAWMILL OPERATOR

A sawmill operator is responsible for daily production, quality control, safety, and daily operation of a sawmill and management of its employees.

Education & Training

High school diploma

Recommended High School Courses

Agriculture education, natural resources, industrial technology, business and computer courses, mathematics

Typical Employers

Lumber/timber companies, lumber product manufacturers

Suggested Professional Organizations

National Hardwood Lumber Association
Timber Products Manufacturers Association

Job Market/Outlook



Responsibilities

- Operate sawmill to saw logs into rough sawn lumber and dimensional lumber
- Install and maintain all sawmill/planer machinery and equipment
- Utilize woodworking tools like hand-held router, table saw, band saw, miter saw, sander, etc. when necessary
- Train machine operators and employees of the sawmill
- Perform preventative maintenance of mill including repair planning
- Operate a loader and/or forklift to lift and load logs, cants, and boards onto trailers
- Ensure quality assurance of lumber product output
- Stack and palletize materials
- Grade lumber
- Maintain safe operations by adhering to safety procedures and regulations and utilizing safety equipment
- Troubleshoot equipment that is not functioning properly
- Clean and organize sawmill regularly



WILDLAND FIREFIGHTER / FIRE TOWER WATCHMAN

Wildland firefighters combat and prevent forest or prairie fires. Forest Fire Tower Watchmen reside in fire towers to observe a particular area for fires and then notify the proper authorities.

Education & Training

High school diploma; Bachelor's degree in fire science or natural resources recommended

Recommended High School Courses

Agriculture education, natural resources, biology, chemistry, physical education, mathematics

Typical Employers

Fire departments, wildland firefighting agencies, fire safety organizations, preserves and parks, and other conservation or natural resources organizations

Suggested Professional Organizations

International Association for Fire Safety Science
Forest Fire Lookout Association
International Association of Wildland Fire

Job Market/Outlook



Responsibilities

- Serve as a firefighter or engine operator during wildfire suppression
- If serving as a fire tower watchman or in a dispatch role, contact appropriate emergency personnel to control and extinguish fires
- Provide rescue and alert emergency medical assistance to persons or animals injured in fire
- Conduct maintenance on fire engines, tractors, mowers, chainsaws and other tools
- Participate in fire break preparation, which includes the removal of rocks, trimming of trees, and mowing to more easily stop the spread of wildfire
- Maintain preparedness throughout fire season including readiness of gear and equipment
- Process and interpret weather information to determine burning likelihood
- Assist with fire training orientation
- Record and maintain fire logs
- Perform fire station housekeeping as needed



WIND SUBSTATION TECHNICIAN

A Wind Substation Technician performs installation, maintenance and testing of wind-energy collection sites where the power from the turbines is gathered.

Education & Training

Technical, Associate's, or Bachelor's degree in wind or electrical technology

Recommended High School Courses

Agricultural education, industrial technology, English, computer courses, statistics, algebra, and mathematics

Typical Employers

Electrical companies, cooperatives, and private energy firms

Suggested Professional Organizations

American Wind Energy Association
Utility Wind Integration Group
Windustry

Job Market/Outlook



Responsibilities

- Perform inspections of wind turbines and equipment associated with wind energy
- Document work performed in either a written or computer logging system
- Conduct all work in a safe manner
- Interpret schematics to repair mechanical, electrical and/or hydraulic problems
- Conduct voltage testing of electrical power equipment
- Monitor project schedule as far as construction of new turbines and maintenance
- Ensure compliance with corporate policies and programs
- Responsible for substation maintenance and upkeep
- Understanding of medium and high voltage electrical systems
- Be familiar with the control and metering systems
- Understand fire protection systems and provide or schedule service as needed
- Understand and utilize detailed technical information to solve complex problems
- Act promptly in reporting to the Site Manager any facility/equipment deficiencies in case of damages and/or emergency situations



PLANT SCIENCE

AERIAL APPLICATOR / AG PILOT
AGRONOMIST
AGRONOMY SALES & MANAGEMENT
ANALYTICAL CHEMIST
ARBORIST
ATHLETIC TURF MANAGER
BIOINFORMATICS SCIENTIST
BIostatistician
CROP ADVISOR
CROP SCOUT
CROP SYSTEMS SPECIALIST
CUSTOM APPLICATOR
ENTOMOLOGIST
EXTENSION FACULTY
FLORIST
FORMULATION CHEMIST
GOLF COURSE SUPERINTENDENT
GREENHOUSE MANAGER
HORTICULTURIST
LABORATORY TECHNICIAN

LANDSCAPE DESIGNER / ARCHITECT
LANDSCAPE TECHNICIAN
MICROBIOLOGIST
MOLECULAR BIOLOGIST
PLANT BIOLOGIST
PLANT BREEDER
PLANT GENETICIST
PLANT PATHOLOGIST
PLANT SCIENTIST / FIELD AGRONOMIST
REGULATORY SCIENTIST
RESEARCH ASSOCIATE
RESEARCH & DEVELOPMENT MANAGER
RESEARCH STATION MANAGER
RESEARCH TECHNICIAN
ROW CROP PRODUCER / FARMER
SEED PRODUCTION AGRONOMIST
SEED PRODUCTION TECHNICIAN
SOIL SCIENTIST
VITICULTURIST
WEED SCIENTIST



AERIAL APPLICATOR / AG PILOT

Agricultural pilots fly small planes at low altitudes in order to apply pesticides, fertilizers or fungicides on fields. It is an efficient way to spread these applications as it reduces the number of times a farmer has to drive over the field, reducing soil compaction.

Education & Training

Complete agricultural pilot training; obtain licensure through the Federal Aviation Administration (FAA) as well as complete required flying hours and medical examinations

Recommended High School Courses

Agricultural education, plant science, chemistry, business courses, and mathematics

Typical Employers

Agricultural retailers or you may be self-employed

Suggested Professional Organizations

National Agricultural Aviation Association
Aircraft Owners and Pilots Association
United States Pilots Association

Job Market/Outlook



Responsibilities

- Apply essential pesticides, fertilizer or fungicides to crops
- Assist firefighters in the containment and extinguishing of forest fires
- Mix and add chemicals to be applied into the plane
- Work to keep airplane and equipment properly maintained
- Record applications and report back to grower
- Keep track of applications and invoice growers for services performed
- Consider air speed, wind and weather to determine if conditions are appropriate for application and flying
- Mentor and help train new pilots
- Maintain certifications and licenses required for flying and chemical application
- Scout fields for problems that may be a danger to aerial application like electrical wires or structures
- Get to know farmers and landowners in the area in order to build clientele



AGRONOMIST

An agronomist provides agronomic knowledge and leadership to growers in their assigned market while performing job duties such as field scouting, soil management and market analysis.

Education & Training

Bachelor's or Master's degree in agronomy or related field; may also obtain Certified Crop Advisor (CCA) certification

Recommended High School Courses

Agriculture education, biology, chemistry, plant science, horticulture, computer courses, and mathematics

Typical Employers

Medium to large-scale farms, crop and seed production companies, crop protection companies, government agencies, research firms, or universities

Suggested Professional Organizations

American Society of Agronomy
Crop Science Society of America

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Ensure accurate knowledge or reliable referrals to make recommendations to growers to achieve efficient crop production
- Soil sample fields including multiple depth sampling, sampling by geo-reference and multiple site sampling in the event of changes in soil texture
- Manage field trials, plant physiology and irrigation practices
- Scout customer fields for weed, insects, disease and nutrition issues
- Ensure that application of seeding, fertility and pesticide occurs when weather conditions are optimal
- Gather, compile, analyze and interpret test results and prepare progress reports
- Analyze crop claim issues as necessary
- Document field evaluation of seed, chemical, specialty products and fertilizers
- Provide agronomic training for staff responsible for sales and marketing
- Assist with agronomic budgeting and cost monitoring
- Interact with suppliers, applicators and agronomy laboratories
- Remain up to date on crop nutrition and protection technology



AGRONOMY SALES AND MANAGEMENT

Agronomy Sales and Management are responsible for providing support and knowledge of their agronomic products to customers. Their main goal is to sell those products either to retail or wholesale outlets. They also oversee new staff and train them in while being responsible for their own territorial sales.

Education & Training

Bachelor's degree in agronomy, crop science, soil science, biology, or related field

Recommended High School Courses

Agricultural education, earth science, plant science, chemistry, physics, biology, and mathematics

Typical Employers

Seed companies, crop protection companies, and cooperatives

Suggested Professional Organizations

Soil Science Society of America
National Alliance of Independent Crop Consultants
American Society of Agronomy
Crop Science Society of America

Job Market/Outlook



Responsibilities

- Provide seed and fertilizer advice in relation to research and production of crops directly to the farmer
- Provide advice regarding crop husbandry and crop rotation
- Responsible for making agronomic related decisions regarding production activities
- Develop and implement long term agronomic plans and practices to support organization/farm plans and budgets to maintain maximum production
- Develop and implement regional agronomic marketing plans to support organization plans and budget
- Responsible for marketing specific products and agronomic services to clients such as fertilizer, chemicals and/or seed
- Develop and maintain close customer relations with key clients by providing professional agronomic service and advice
- Arrange and coordinate various technical and marketing activities, these may include field days, farmer meetings, demonstration trials and trial sites
- Maintain industry awareness regarding technical developments via networking, personal development and training
- Organize or act as the liaison between the company and farmers to organize trial programs and assist with analyzing and reporting results



ANALYTICAL CHEMIST

Analytical chemists study chemical compounds to determine what they are composed of and how they interact with other substances. For this reason, analytical chemists play an important role in looking at chemistry and how it might affect the environment, food, or how medicines may interact with other medicines or the body of an organism.

Education & Training

Bachelor's or Master's degree in chemistry, laboratory science, or a related field

Recommended High School Courses

Agriculture education, biology, chemistry, writing, plant science, physics, and computer courses

Typical Employers

Agricultural companies that develop chemical and pharmaceutical solutions for farmers

Suggested Professional Organizations

American Chemical Society
 Association of Analytical Chemists
 Weed Science Society of America

Job Market/Outlook



Responsibilities

- Provide solutions to support formulation, active ingredient and packaging development
- Conduct product chemistry studies that meet worldwide regulatory requirements which helps bring new products to market
- Provide analytical support to the supply chain through reliable data, efficient analytical methods and effective problem-solving
- Support product registrations by providing priority analysis, methodology and expertise to regulatory authorities around the world in order to gain approval for products
- Represent analytical sciences at team meetings and provide analytical support
- Design and conduct laboratory experiments including analytical method development, validation and transfer
- Perform analytical methods necessary for the characterization of products
- Design, set up, and conduct stability studies
- Properly document and report lab results
- Troubleshoot and refine analytical processes
- Identify new analytical techniques to improve efficiency in testing
- Communication of results of studies and trials to leadership and to outside audiences as needed
- Work with other scientists across disciplines including synthetic chemistry, formulation development, quality assurance, discovery, and manufacturing
- Assist in the preparation and writing of regulatory filings
- Provide testimony to government agencies as needed



ARBORIST

An Arborist is responsible for the well-being of trees. They implement planting, growing, maintaining, and removal of trees. They can also be the point of contact for selling trees.

Education & Training

Bachelor's degree in arboriculture, urban forestry, environmental conservation, plant science, horticulture, biology or a related field

Recommended High School Courses

Agricultural education, biology, horticulture, plant science, ecology, earth science, and geography

Typical Employers

Greenhouses, nurseries, logging firms, landscaping companies, government agencies, residential communities, and paper and packaging companies

Suggested Professional Organizations

Tree Care Industry Association
American Nursery and Landscape Association
Tree Care Industry Association

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Climb trees to trim and or remove trees
- Collect data on the size, age, and health of trees
- Identify and determine health of tree species and prescribe needed care
- Identify detrimental insects or plant disease and eliminate them
- Operate a variety of mechanical equipment
- Prepare estimates for clients and potential customers
- If certified or under the supervision of a certified applicator will apply chemicals
- Successfully manage and protect forests in various stages of health



ATHLETIC TURF MANAGER

Athletic turf managers are responsible for producing and maintaining sporting grounds. They ensure the turf and surrounds are looking pristine.

Education & Training

Associate's or Bachelor's degree in turfgrass management

Recommended High School Courses

Agriculture education, mathematics, Spanish, biology, chemistry, and environmental science

Typical Employers

Universities, golf courses, municipal stadiums, and professional sporting teams

Suggested Professional Organizations

National Turfgrass Federation
Golf Course Superintendent's Association
Sports Turf Managers Association

Job Market/Outlook



Responsibilities

- Develop and implement plans for the successful maintenance of all athletic fields and grounds
- Plan, oversee, and project-manage major athletic grounds and fields renovation projects, as assigned; schedule, facilitate, oversee, and quality control reconstruction activities, including the work of external contractors
- Oversee assigned personnel, which includes assigning work, work allocation, training and problem resolution; evaluating performance and making recommendations for personnel actions
- Develop and manages budgets related to athletic fields and grounds
- Purchase, maintain, and manage inventory of athletic field maintenance equipment and supplies
- Supervise the conversion and protection of athletic fields during special events
- Restore fields damaged by weather, use, or other conditions to a level commensurate with that expected athletic grounds
- Manage and reviews irrigation systems performance and initiates changes when necessary
- Be in attendance during sporting events to supervise field use



BIOINFORMATICS SCIENTIST

Bioinformatics scientists use technology and computer science to study and find solutions in the area of biology. They use databases of genetic information to find ways to identify and treat human, animal and plant diseases and other issues.

Education & Training

Master's degree in genomics, bioinformatics, computational biology, or a related field

Recommended High School Courses

Agricultural education, chemistry, biology, physics, mathematics, and computer courses

Typical Employers

Human health, biotechnology, and crop science companies

Suggested Professional Organizations

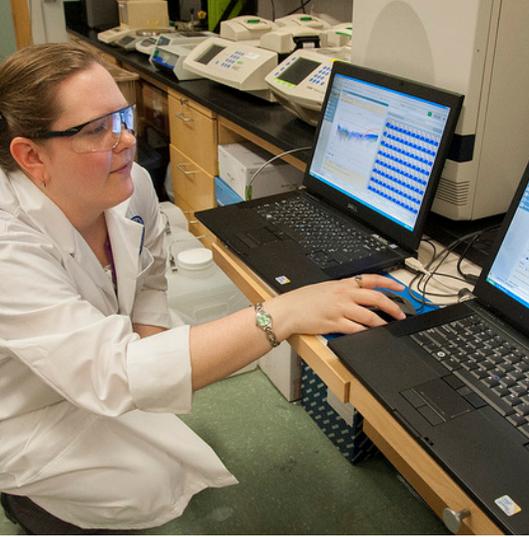
American Society for Clinical Laboratory Science
Laboratory Safety Institute
The Bioinformatics Institute

Job Market/Outlook



Responsibilities

- Identify and develop software tools for efficient data integration and for mining diverse types of biological data
- Collaborate closely with scientists from a variety of disciplines, including microbiologists, computer scientists, and plant biologists to identify opportunities for accelerating product development
- Build innovative frameworks for data integration and automated data mining
- Develop reusable libraries and implement best coding practices to build and continually improve the company's computational capabilities and workflows
- Apply computer tools to transform genomics data into higher yielding crops and pest control solutions
- Share modern computational methods and bioinformatics solutions within the company and outside if not proprietary
- Work closely with end users to identify, analyze, and solve bioinformatics resourcing and application
- Translate data into competitive knowledge by providing a relevant and innovative bioinformatics analysis to meet the needs of crop genetics and other scientists within breeding & trait development
- Propose and implement novel bioinformatics analysis strategies adapted to analytical needs
- Report progress in relation to objectives, critical milestones to program leaders
- Ensure compliance with all existing safety standards in the area of responsibility taking into account laws, regulations and directives and evaluate potential risks of the research activities



BIostatistician

Biostatisticians use mathematics and statistics to find ways to solve scientific problems. They assist in developing statistical techniques and use their expertise to design studies and analyze data. Biostatisticians may work with the environment, human or animal health.

Education & Training

Master's or Doctorate degree in statistics, biostatistics, mathematics, or statistical genetics

Recommended High School Courses

Agriculture education, mathematics, biology, chemistry, anatomy, and computer courses

Typical Employers

Animal pharmaceutical companies, biotechnology companies, research firms, and universities

Suggested Professional Organizations

American Association of Pharmaceutical Scientists
 American Institute of Biological Sciences
 American Society for Biochemistry and Molecular Biology

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Help formulate scientific questions
- Design and conduct clinical studies
- Implement and review trials and studies
- Determine statistical sampling techniques
- Coordinate data collection procedures
- Review case reports and forms to ensure protocol objectives are met and that project standards are maintained
- Conduct retrospective database analysis in order to determine effectiveness of past treatments
- Write reports explaining the results of studies conducted
- Determine if scientific questions can be answered with data available or if new research should be conducted
- Write grant proposals
- Determine factors in a problem and how much risk would be involved in possible solutions
- Use quantitative methods to analyze data from studies
- Determine best ways to deploy resources when a problem arises
- Develop new study methods, designs and procedures



CROP ADVISOR

Crop advisors are knowledgeable about plants and soil. They maintain a close relationship with their client and scout their fields for problems that may arise during the growing season. They make recommendations on things ranging from seed to fertilizer and from pest management to disease treatment.

Education & Training

Bachelor's degree in agronomy, soil, plant, or crop science; Certified Crop Advisor certification preferable

Recommended High School Courses

Agricultural education, biology, mathematics, statistics, and accounting

Typical Employers

Agricultural retailers or consulting firms

Suggested Professional Organizations

American Society of Agronomy
Crop Science Society of America
Soil Science Society of America
Weed Science Society of America

Job Market/Outlook

Poor

Good

Excellent

Responsibilities

- Keep agronomic and financial records of customer accounts
- Scout crops for pests and diseases that may arise during various parts of the growing season
- Build relationships with growers that you service
- Collaborate with other advisors in your area in order to understand disease and pest outbreaks in the area
- Work with marketing manager to develop marketing plans and pricing strategies
- Make recommendations to growers on actions that may need to be taken when problems arise
- Provide training to growers in your area
- Identify potential weed problems and offer suggestions on products
- Utilize knowledge and understanding of weeds and herbicide modes of action to determine best suitable treatment.
- Suggest crops and seeds to be used in the next growing season
- Supervise chemical and fertilizer applications



CROP SCOUT

A crop scout inspects farmers' fields and records weed, insect, disease and other observations. This is an important role to help farmers make timely, informed and economical field crop decisions.

Education & Training

High school diploma as well as crop scout training

Recommended High School Courses

Agriculture education, mathematics, English, biology, chemistry, and natural resources

Typical Employers

Crop consultants, ag retailers, seed and chemical companies, or you may be self-employed

Suggested Professional Organizations

American Society of Agronomy
Crop Science Society of America
Weed Science Society of America

Job Market/Outlook



Responsibilities

- Walk fields of customers often in order to look for potential robbers of yield
- Identify weeds that are growing in fields when they are preferably less than 3 inches tall, make recommendations on herbicide or mechanical control methods
- Locate and identify pests that may impact yield, make recommendations on control methods based on experience
- Conduct root digs in order to look for corn root worm and other root eating pests
- Perform yield estimates throughout the growing season to provide customer with an estimate of what yields will look like
- Use knowledge of growth stages in crops in order to predict potential problems during that stage of the growing season
- Identify and potentially diagnose crop diseases or pest infestation
- Communicate with the farmer or other individuals your findings
- Make recommendations based on your finding
- Remain up to date on the latest chemistry and technologies (such as drones or apps)



CROP SYSTEMS SPECIALIST

A crops systems specialist works to improve how a business or company manages and utilizes data of the seed or crop production process.

Education & Training

Bachelor's degree in agricultural engineering, chemical engineering, agribusiness, or a related field

Recommended High School Courses

Agricultural education, biology, plant science, business and computer courses, and mathematics

Typical Employers

Seed and crop production companies and businesses

Suggested Professional Organizations

American Society of Agricultural and
Biological Engineers
Crop Science Society of America

Job Market/Outlook



Responsibilities

- Coordinate various data collection initiatives including in-field data and plant performance-based metrics
- Present various data types to aid in strategic decision-making
- Work with various teams (agronomy, seed production, IT, etc.) in assessing and implementing future system solutions
- Simplify various data streams for use in visualization and decision-making
- Support and make modifications and improvements in systems currently utilized by the team
- Ensure enhancements and fixes to data systems are coordinated, consistent and not disruptive to the systems used by other parts of the business
- Formulate, implement and enforce proper data collection policies and procedures
- Help develop standard practices for data entry and management to be used across sites
- Support sites in development and continuous improvement of consistent, documented processes that support the business as needs evolve
- Train and educate the business and sites on data collection tools and equipment



CUSTOM APPLICATOR

A Custom Applicator makes sure that spray equipment is working properly and applies pesticides or fertilizer in fields.

Education & Training

High school diploma or Associate's degree in agriculture or plant science

Recommended High School Courses

Agriculture education, biology, chemistry, mathematics, business, and plant science

Typical Employers

Seed companies, crop protection companies, cooperatives, large farms, or you may be self-employed

Suggested Professional Organizations

Crop Science Society of America
Weed Science Society of America

Job Market/Outlook



Responsibilities

- Operate and maintain all equipment and vehicles (sprayers, spreaders, trucks, etc.)
- Mixing, loading and application of pesticides/fertilizers
- Apply pesticides and fertilizers at applicable rates to the appropriate fields
- Handle and deliver bulk and packaged chemicals
- Perform daily vehicle inspections
- Clean and maintain equipment
- Maintain application/spray records
- Manage customer service relations
- Organize and coordinate application timetable with customers
- Knowledgeable with seed, chemical and fertilizer to make informed decisions
- Re-certify spraying technician license and safety training every two years



ENTOMOLOGIST

Entomologists are responsible for researching the growth, nutrition, behavior, and how insects interact with plants. They are considered scientists and their main focus lies on the study and research of insects.

Education & Training

Doctorate degree in entomology, biology, or zoology

Recommended High School Courses

Agricultural education, biology, plant science, earth science, chemistry, horticulture, and mathematics

Typical Employers

Conservation organizations, universities, or you may be self-employed

Suggested Professional Organizations

American Entomological Society
Entomological Society of America

Job Market/Outlook



Responsibilities

- Monitor insect feeding behavior, insect physiology, plant-insect interactions, insect feeding biology
- Visit farm and other research trial plots to collect insect samples
- Weigh, formulate and apply experimental and commercial insecticides to pest targets and their habitats
- Prepare and deliver documented proposals and reports for establish research trials
- Design and implementation of research plans to support the selection of new insecticide products
- Manage trial establishment and collection of data
- Budget for research work and provide management reporting in regard to trial/research progress



EXTENSION FACULTY

Extension faculty work at the university level, conducting research and providing programming on their specialty area, some may have a small undergraduate teaching assignment but it is not the primary function of their role.

Education & Training

Master's or doctorate degree in preferred extension field

Recommended High School Courses

Agriculture education, mathematics, English, biology, home economics, chemistry, and business and computer courses

Typical Employers

Land-grant universities and laboratories

Suggested Professional Organizations

National Association of Extension 4-H Agents
National Association of County Agricultural Agents
Organizations affiliated with your area of expertise (livestock, horticulture, etc.)

Job Market/Outlook



Responsibilities

- Conduct research-based educational in area of expertise
- Manage budget as it relates to research initiatives
- Investigate, develop and refine value-added content to a variety of delivery platforms
- Support extension educational programming in the state
- Evaluate and report the impact of programs
- Provide assistance in developing youth programming and education on topic of expertise
- Actively seek out agriculture and natural resource needs in the counties informing leadership and specialists of those opportunities and then develop and carry out appropriate responses to meet needs
- Develop volunteer networks and support strategies required to sustain programs
- Teach courses at state land-grant universities
- Conduct research that will be helpful to those in your state and produce resources based on your work



FLORIST

Florists are artists; they design and create arrangements of flowers for us to enjoy. Some arrangements are in vases, bouquets, sprays, or larger displays for a party or showcase.

Education & Training

High school diploma or Associate's degree in business management, floral design, or plant landscaping

Recommended High School Courses

Agricultural education, biology, horticulture, plant science, art, business courses, and home economics

Typical Employers

Floral shops, event planning organizations, or you may be self-employed

Suggested Professional Organizations

Society of American Florists
American Institute of Floral Designers
Creative Floral Arrangers of the Americas

Job Market/Outlook



Responsibilities

- Design wedding or event flowers
- Manage bookings of events
- Deliver arrangements to residences, churches, funeral homes, weddings etc.
- Provide quotes for various sizes and designs
- Have knowledge of flowers to be able to recommend and suggest varieties for different arrangements
- Take online and phone orders
- Care for plants that are in stock
- Appropriately greet and assist walk-in customers
- Work to maintain cleanliness of the shop and maintain its appearance
- Organize and clean the cooler
- Must be able to work weekends as that is when many events utilizing flower arrangements are typically held



FORMULATION CHEMIST

Formulation chemist design and develop new crop protection products, and supporting existing products that meet the needs of farmers.

Education & Training

Master's or doctorate degree in chemistry

Recommended High School Courses

Agriculture education, mathematics, chemistry, statistics, algebra, genetics, biology, and physics

Typical Employers

Universities, animal pharmaceutical companies, biotechnology firms, alternative energy and crop protection companies

Suggested Professional Organizations

American Chemical Society
Association of Formulation Chemists

Job Market/Outlook



Responsibilities

- Plan, organize and conduct experiments to optimize the biological, marketing, regulatory, and production performance of products
- Plan and control / carry out laboratory work to develop, understand and test new and improved manufacturing processes in order to meet agreed targets
- Deliver critical information to leadership and fellow researchers
- Plan and conduct laboratory support work to assist in the solution of manufacturing process problems and opportunities so that results can be implemented
- Take an active part in scale-up and plant introduction of newly developed products
- Develop and design new testing methods to ensure customer satisfaction with products under all kinds of conditions in the marketplace
- Oversee product stewardship responsibilities for selected existing products
- Benchmark competitors as a motivator to strive for innovative solutions for competitive advantage
- Submit patents if needed for developed formulations
- Organize, schedule and execute projects in accordance with company priorities
- Help newly developed products move through the regulatory process



GOLF COURSE SUPERINTENDENT

Golf Course Superintendents are responsible for overseeing golf course management, maintenance, and operations.

Education & Training

Associate's or Bachelor's degree in turfgrass management, horticulture, or agronomy

Recommended High School Courses

Agricultural education, biology, horticulture, plant science, chemistry, business courses, and mathematics

Typical Employers

Private and public golf courses and country clubs

Suggested Professional Organizations

Golf Course Superintendents Association of America
Midwest Association of Golf Course Superintendents

Job Market/Outlook



Responsibilities

- Grow, maintain and manicure varieties of turf grasses
- Conduct routine inspection of equipment and vehicle to ensure productivity and safety of the facility
- Work closely with maintenance superintendents in executing horticultural schedules
- Oversee treatment and make adjustments as needed for future applications to ensure continued quality of turf and ornamentals
- Manage and document chemical, pesticide and fertilizer use in accordance with regulations
- Implement the agronomic plan for the golf course
- Oversee laborers and other technicians in carrying out farm practices
- Coordinate logistics of harvest, delivery, and transportation of product
- Manage full-time and seasonal employees
- Report to golf course management/board of directors/members on a daily/weekly basis



GREENHOUSE MANAGER

Greenhouse managers are responsible for the daily operations involved with running a greenhouse or nursery. Depending upon the structure of the business you may work with the public or with possibly in a business to business arrangement. Greenhouses can be used for commercial plant purposes or in food production.

Education & Training

Associate's or Bachelor's degree in horticulture

Recommended High School Courses

Agriculture education, biology, horticulture, and mathematics

Typical Employers

Independent greenhouses, company-owned greenhouses and nurseries, or you may be self-employed

Suggested Professional Organizations

Nursery Growers Association
State Vegetable Growers Association
Bedding Plant Growers Association

Job Market/Outlook



Responsibilities

- Oversee inventory of plants
- Plan species to be planted in conjunction with holidays, climate, time of year.
- Provide supervision over greenhouse workers
- Be knowledgeable about the stages of plant life and diseases that may occur
- Preform harvest plants or their fruits
- Make recommendations on fertilizer and potting mediums
- Effectively manage greenhouse equipment and computer controls
- Explore ways to improve processes for more efficient growth and harvest yields
- Maintain breeding records
- Forecast demand to determine plant populations
- Ensure that operation is compliant with environmental regulations



HORTICULTURIST

A Horticulturist is responsible for increasing yield, improving vigor, size, and taste of plants. They also coordinate research programs for selective crops. Horticulturalists must have extensive knowledge about trees, flowers, vegetables, nuts, bushes, and fruits.

Education & Training

High school diploma or Associate's degree in horticulture

Recommended High School Courses

Agricultural education, biology, horticulture, plant science, chemistry, business courses, and mathematics

Typical Employers

Plant and food production companies, research firms, homeowners, and municipalities

Suggested Professional Organizations

Committee for Sustainable Agriculture
Soil Science Society of America

Job Market/Outlook



Responsibilities

- Oversee the production and care of plants, fruits and vegetables
- Manage crop scheduling for timing of appropriate planting and harvesting
- Perform propagation, irrigation, and pest management of plants
- Control plant growth regulation through mixing and testing fertilizers, and monitor injectors in greenhouses
- Responsible for greenhouse environment management and maintenance of plant material in assigned greenhouses
- Direct labor in the functions of crop management
- Operate equipment such as vans, tractors and sprayers
- Oversee seasonal staff and production labor



LABORATORY TECHNICIAN

Technical testing role that collects, prepares samples, carries out experiments, makes measurements with scientific equipment, records results and presents results for critical analysis.

Education & Training

Bachelor's degree in laboratory science, biology, or chemistry

Recommended High School Courses

Agriculture education, anatomy, biology, mathematics, English, chemistry, and physics

Typical Employers

Laboratories in universities, government agencies, or various companies including seed, chemical, biotechnology, or animal health

Suggested Professional Organizations

Association for Clinical Laboratory Science
The Association of Laboratory Technicians

Job Market/Outlook



Responsibilities

- Clean, maintain and set up equipment for use in experiments
- Collect, classify and preserve specimens and samples
- Perform diagnostic and other scientific tests on specimens, such as animal and plant tissues, food and water for chemical or cellular or other constituents, bacterial content and chemical contamination
- Carry out experimental procedures, such as taking animal blood samples, testing seed and experimental plants, analyzing soil and monitoring processes, such as fermentation
- Perform routine mathematical calculations and prepare graphs
- Use computers and computer-interfaced equipment
- Carry out routine quality assurance checks on production line samples and materials
- Assist in the writing of lab reports



LANDSCAPE DESIGNER / ARCHITECT

Landscape Designers are responsible for creating, presenting, and overseeing the development of landscapes for individuals and companies. They also provide maintenance services and landscaping designs.

Education & Training

Associate's or Bachelor's degree in landscape design or architecture, horticulture, turfgrass, plant science, biology, or a related field

Recommended High School Courses

Agricultural education, biology, horticulture, geography, mathematics, business courses, geometry, and art

Typical Employers

Greenhouses, nurseries, government agencies, golf courses, athletic venues, homeowners, universities, and event venues; may also be self-employed

Suggested Professional Organizations

American Nursery and Landscape Association
Professional Landscape Designers

Job Market/Outlook



Responsibilities

- Create garden designs on paper and in the field using perennials, annual color, edibles, containers, and outdoor furniture
- Analyze natural and man-made elements of the area including soil, slope, drainage and natural vegetation, lighting and other construction projects
- Utilize geospatial technology to analyze landscaping plans
- Manage installation crews
- Meet with clients and manage client accounts
- Negotiate and coordinate contracts with clientele and vendors
- Responsible for budgets and plans



LANDSCAPE TECHNICIAN

A Landscape Technician is in charge of growing and maintaining plants on properties. They also manage and redesign a variety of plants and the construction of hardscapes.

Education & Training

Associate's or Bachelor's degree in landscape design, horticulture, turfgrass, plant science, soil science, or related field

Recommended High School Courses

Agriculture education, biology, horticulture, earth science, geography, mathematics, and geometry

Typical Employers

Greenhouses, nurseries, government agencies, golf courses, athletic venues, homeowners, universities, and event venues; may also be self-employed

Suggested Professional Organizations

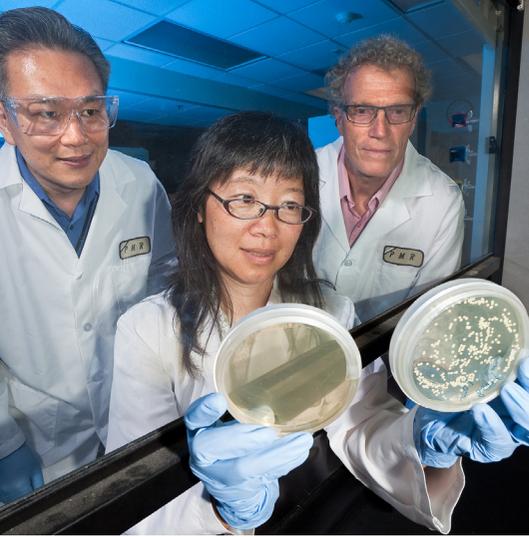
American Nursery and Landscape Association
Professional Landscape Designers

Job Market/Outlook



Responsibilities

- Grow, maintain and transplant flowers, shrubs and trees
- Maintenance and installation of sprinkler systems
- Construct walkways, walls and small foot bridges
- Follows plans and specifications, inspects and directs the planting of landscape material associated with improvement, beautification, and erosion control
- Create and adhere to various watering and feeding schedules
- Plan new growth planting patterns in distinct seasonal changes
- Identify detrimental insects or plant disease and eliminate them
- Ability to adhere to a predetermined budget
- Operate a variety of mechanical equipment
- If certified or under the supervision of a certified applicator will apply chemicals



MICROBIOLOGIST

Microbiologists study microorganisms that are found in various environments. They examine bacteria, fungi viruses and other parasites to see how they grow and interact with the environment in which they are located.

Education & Training

Doctorate degree in microbiology

Recommended High School Courses

Agricultural education, biology, animal science, chemistry, physics, mathematics, and writing

Typical Employers

Universities, research firms, government agencies, pharmaceutical or animal health companies

Suggested Professional Organizations

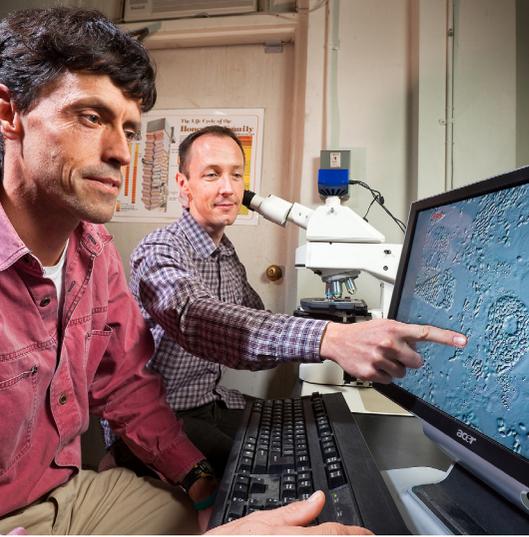
American Society for Microbiology
 US Animal Agriculture Alliance
 American Society for Clinical Laboratory Science
 Laboratory Safety Institute

Job Market/Outlook



Responsibilities

- Isolate and make cultures of bacteria and other microorganisms in order to look at growth of samples
- Conduct tests on food and water samples in order to detect harmful microorganism and work to identify the source of pollution
- Provide laboratory services for human and animal health providers in order to help determine illness and treatment options
- Research trends in disease outbreaks in order to determine the best method to control spread
- Prepare reports and recommendations based on research results
- Observe microorganisms reaction to chemicals and other stimuli
- Monitor and identify microorganisms
- Develop new technologies and processes
- Assist in planning to prevent the spread of disease
- Plan and implement new clinical trials
- Oversee the work of laboratory staff
- Provide scientific advice and consultation
- Review product release data



MOLECULAR BIOLOGIST

Molecular biologist examine plant, animal or human genetics and the variation and relationships between them. Molecular biologist can work with DNA and RNA from humans, plants, animals and other organisms while using their knowledge of chemistry, physiology, genetics, physics and biology in their work.

Education & Training

Master's or doctorate degree in a life science with a concentration in molecular biology

Recommended High School Courses

Agriculture education, biology, chemistry, physics, and mathematics

Typical Employers

Government agencies, hospitals, universities, research firms, and pharmaceutical companies

Suggested Professional Organizations

American Association for the Advancement of Science
 American Society for Biochemistry and Molecular Biology
 American Society for Cell Biology

Job Market/Outlook



Responsibilities

- Develop new methods to diagnose and treat diseases
- Detect and identify environmental pollutants
- Serve as a scientific advisor or representative for business, government or education
- Look at genetic variations and gene expression in different species to determine how things are passed from one generation to another
- Genetically engineer new crops
- Conduct continued testing of new crops or other products
- Test the effectiveness of drugs used for treating different diseases and gene growth
- Examine the sequence of DNA to look for differences that may mean a likeliness to have a disease or cause to be resistant to the disease
- Supervise and direct the work of laboratory technicians
- Report findings through writing or presentations
- Compiles data on research conducted
- Grow bacteria in order to determine product effectiveness
- Design and execute experiments
- Translate research into technologies that consumers can use or benefit from
- Extract DNA and RNA from cells and tissues



PLANT BIOLOGIST

A plant biologist specializes in topics such as plant breeding or genetics; they conduct and support research of plant production.

Education & Training

Bachelor's or Master's degree in botany, horticulture, plant pathology, weed science, or agronomy; a pesticide applicator's license would be helpful as well

Recommended High School Courses

Agricultural education, biology, chemistry, foreign language, and mathematics

Typical Employers

Biotechnology companies, universities, research firms, and government agencies

Suggested Professional Organizations

American Society of Plant Biologists
Botanical Society of America

Job Market/Outlook



Responsibilities

- Develop, conduct, evaluate, and report various field research programs in his or her designated field station location
- Perform tasks required for each research trial, including site selection, planting of test crops, calibration of spray equipment, making pesticide and fertilizer applications, collecting crop and soil samples, and conducting evaluations of crops and pests
- Ability to organize and work independently while sharing information with team members
- Study the effects of pollution on plants and find ways to protect them
- Produce plants from tissue cultures
- Identify new species plants
- Monitor, diagnose and treat insect, disease or physiological and cultural conditions
- Manage, organize and analyze field data
- Manage daily lab activities including; supply organization, general lab and equipment, growth-chamber monitoring, laminar flow hood and autoclave use and maintenance
- Active participation in location safety program and leadership for pathology lab safety



PLANT BREEDER

A Plant Breeder is responsible for the research of seed characteristics and strives to improve the seed characteristics that are of the best quality for the plant. They work towards finding the best possible trait that is desirable for yield, maturity, quality, size, and can be resistant to drought, frost, and pests in certain plants. Plant breeders should have extensive knowledge in molecular technologies, statistics, plant growth, and genetics so that they can ensure that they will create the best possible plants for crossing.

Education & Training

Bachelor's, Master's, or PhD in crop science, plant genetics, or agronomy

Recommended High School Courses

Agriculture education, biology, chemistry, physics, mathematics, business and computer courses

Typical Employers

Seed and biotechnology companies, government agencies, cooperatives, and universities

Suggested Professional Organizations

Committee for Sustainable Agriculture
Crop Science Society of America
Weed Science Society of America
American Society of Agronomy

Job Market/Outlook



Responsibilities

- Develop and manage a breeding program/ plant/seed breeding schedule and associated activities required to achieve program objectives
- Develop and maintain links between the company and technology support providers to achieve agreed program objectives
- Maintain and forecast a budget for breeding activities
- Technical interaction with marketers and end-users of the company's products
- Technical interaction with relevant authorities and institutions
- Develop a plant breeding team succession plan
- Supervise plant breeding team
- Develop and maintain key industry links
- Ability to undertake the manual operations required for the support of the production of seed and/or crops
- Utilize new technologies such as a Global Positioning System



PLANT GENETICIST

Plant geneticist conduct research to understand, improve or create new varieties of plants or crops. Looking at a plant's DNA they can examine ways to improve shape, size, production level, pesticide and disease tolerance.

Education & Training

Bachelor's or Master's degree in biology, botany, or biochemistry

Recommended High School Courses

Agricultural education, chemistry, biology, and mathematics

Typical Employers

Seed and chemical companies, universities, crop non-profit organizations, and research firms

Suggested Professional Organizations

American Society of Plant Biologists
Global Plant Council
American Society of Agronomy

Job Market/Outlook



Responsibilities

- Write research plans and objectives
- Create budgets for research projects and seek funding (typically in a university setting)
- Cross breed plants to breed new subjects for trials and to build up a seed bank
- Record data on plants in trials
- Identify genes that are responsible for certain plant features and functions
- Stay up to date on research being done elsewhere through journals and periodicals
- Tend to trials grown both in greenhouses and fields
- Maintain thorough records of research conducted
- Look for ways to genetically engineer crops that are higher yielding, healthier, disease and pest resistant or a number of other characteristics
- In a college or university setting may be asked to teach graduate and undergraduate courses related to plant genetics, plant breeding etc.
- Serve as a liaison and spokesperson for government and industry as needed
- Supervise the work of field and laboratory workers
- Prepare and publish reports on research conducted



PLANT PATHOLOGIST

Plant pathologists study the health of plants. They work to identify diseases, pests and other health problems a plant may experience.

Education & Training

Master's or doctorate degree in botany, horticulture, plant pathology, or biology

Recommended High School Courses

Agriculture education, biology, chemistry, mathematics, and natural resources

Typical Employers

Seed research and biotechnology companies, government agencies, and universities

Suggested Professional Organizations

American Society of Plant Biologists
American Phytopathological Society

Job Market/Outlook



Responsibilities

- Tissue sampling and other routine tasks associated with experiments
- Mechanical inoculation of virus, bacteria, fungi, oomycete, nematode and other pathogens in field, greenhouse and growth chambers
- Bio-assays with insects/vectors
- Perform routine data collection from a various sized research projects and entry into enterprise systems
- Prepare clear, accurate, and concise reports of results, and communicate to customer or colleague stakeholders
- Perform or direct simple to complex molecular lab work
- Perform complex data analysis using parametric and non-parametric statistical models
- Lead a cross-functional team in innovating, developing and enabling new phenotyping, diagnostic, and other assays for existing and new problems
- Network internally to innovate and enable new tests
- Network externally to assess state of the art and evaluate new research opportunities
- Propose and lead external collaborations directed toward goals
- Ability to innovate to design and implement new screening methods & platforms for existing or emerging diseases
- Review literature and stay up to date on latest technologies



PLANT SCIENTIST / FIELD AGRONOMIST

Plant Scientists/Field Agronomists plan, budget, establish, perform and document research trials and projects as they relate to agronomic crops. Plant Scientists/Field Agronomists are responsible for coordinating, budgeting, executing, performing, and reporting on agronomic crop research trials.

Education & Training

Master's or Doctorate degree in plant breeding, biotechnology, plant pathology, agronomy, crop science, soil science, or related field

Recommended High School Courses

Agricultural education, earth science, biology, horticulture, chemistry, plant science and mathematics

Typical Employers

Seed companies, crop protection companies, research firms, government agencies, environmental organizations, and universities

Suggested Professional Organizations

Soil Science Society of America
National Alliance of Independent Crop Consultants
American Society of Agronomy

Job Market/Outlook



Responsibilities

- Responsible for making agronomic related decisions regarding production activities
- Develop, conduct and evaluate tolerance for species at seedling stage of growth
- Understand the farmland (ground conditions, farming challenges, pest issues)
- Evaluate products, collect data on performance in different locations, and make recommendations to management on new releases, and position hybrids in their most favorable environment
- Relay agronomy information to Sales Reps, DMs, dealers and key accounts through written materials, presentations, and one on one
- Regularly communicate with relevant industry sectors and educational institutions to initiate well targeted research projects
- Investigates the feasibility of applying a wide variety of scientific principles and concepts to potential inventions, products and problems
- Prepare documented proposals and successfully establish research trials
- Manage trial establishment and collection of data
- Budget for research work and provide management reporting in regard to trial/research progress



REGULATORY SCIENTIST

A regulatory scientist is responsible for the management and strategy of a product through the regulatory process. They are responsible for conducting studies and then communicating their findings to regulatory agencies both in the US and in other countries to ensure the safety of crops, chemistry and other products consumers use.

Education & Training

Bachelor's degree in plant biology, genetics, biochemistry or related field; education in agricultural law would also be beneficial

Recommended High School Courses

Agriculture education, animal science, chemistry, biology, and mathematics

Typical Employers

Companies and organizations that do biotechnology and breeding research as well as universities and government agencies

Suggested Professional Organizations

Regulatory Affairs Professional Society
American Agricultural Law Association

Job Market/Outlook



Responsibilities

- Conduct molecular biology studies needed to complete dossiers for crop approvals
- Plan and execute screening and characterization studies needed in order to obtain regulatory approval
- Communicate with regulatory agencies in the United States and abroad
- Provide detailed reports on study results to regulatory agencies
- Overcome technical issues that may arise with studies conducted
- Develop policies and lead program implementation in order to be compliant with regulations
- Plan and conduct grower trainings on product usage and disposal
- Design and conduct studies in order to assure product safety and effectiveness
- Develop biochemical tests to identify and quantify proteins associated with biotechnology traits
- Use bioinformatics to determine the next generation of DNA sequencing data
- Keep thorough records of data gathered
- Ensure studies go along with guidelines used to determine validity
- Develop and track budget for studies conducted



RESEARCH ASSOCIATE

Research Associates work under the watch of principal investors and are responsible for correlating, implementing, and documenting research trials and assignments.

Education & Training

Bachelor's or Master's degree in plant breeding, agronomy, crop science, soil science, or biology

Recommended High School Courses

Agricultural education, earth science, biology, botany, chemistry, and mathematics

Typical Employers

Seed companies, crop protection companies, research firms, governmental agencies, environmental organizations, and universities

Suggested Professional Organizations

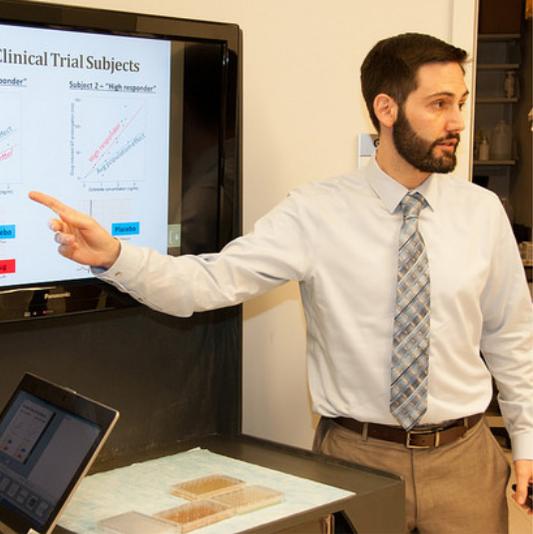
Soil Science Society of America
 American Society of Agronomy
 Crop Science Society of America
 American Society of Plant Biologist

Job Market/Outlook



Responsibilities

- Assist on research project teams and as assigned by research management
- Work within agreed budget and reporting deadlines as planned and coordinated by the Research Manager
- Manage trial establishment and collection of data as designed and requested by management
- Meet the company requirements for trial planning and operation of research projects
- Provide management reporting and analysis in regard to trial/research progress
- Utilize state-of-art technologies to complete research projects as they relate to a particular product



RESEARCH AND DEVELOPMENT MANAGER

Oversee research activities and develop knowledge-based products for a company.

Education & Training

Master's degree in the field in which you are applying your knowledge

Recommended High School Courses

Agriculture education, mathematics, biology, chemistry, business and computer courses

Typical Employers

Any company that is developing and testing new products to sell

Suggested Professional Organizations

Product Development and Management Association
National Association of Plant Breeders
American Association for Laboratory Animal Science

Job Market/Outlook



Responsibilities

- Develop research programs incorporating current developments to improve existing products and study potential of new products
- Oversee all aspects of research program and experiments
- Report to senior management on company product technical issues as well as technical developments within the market
- Present at industry conferences on research topics of interest
- Establish and maintain testing procedures for assessing raw materials, in both process and finished products
- Manage trial or testing programs for products/services through the management of staff and assignment of staff and utilization of resources
- Manage or mentor a team of research staff
- Budgeting and cost forecasting of technical development or research programs



RESEARCH STATION MANAGER

Leadership role for the management of research station operations such as animal agriculture, plant breeding, research, crop/seed production, and product development.

Education & Training

Bachelor's degree in agriculture, horticulture, crop science or soil science or animal science

Recommended High School Courses

Agricultural education, mathematics, biology, chemistry, Spanish, business and computer courses

Typical Employers

Land-grant universities and various companies with research farms or facilities

Suggested Professional Organizations

Crop Science Society of America
 American Society of Animal Science
 Soil Science Society of America
 National FFA Alumni Association

Job Market/Outlook



Responsibilities

- Manage all daily aspects of research station operations
- Provide procedures for the collection, classification, and preservation of specimens and samples
- Set policy for experimental procedures, testing, analysis, and monitoring processes
- Supervise research trials and projects in an effort to achieve validated research data
- Prepare annual forecasts, budgets, and other business plans
- Control costs in line with budget expectations
- Ensure compliance to safety and environmental regulations
- Responsible for facility and equipment maintenance and repair
- Supervise, train and schedule staff
- Plan space for research plots and experiments
- Host events for farmer, consumers and government officials for education and promotion purposes
- Ensure maintenance of equipment and facilities in support of all programs
- Ensure maintenance of all research equipment, planting, harvesting and seed cleaning



RESEARCH TECHNICIAN

A research technician typically works in a laboratory assisting scientist conduct their research. In agriculture this could especially require work outside the lab potentially traveling to fields or farms.

Education & Training

Bachelor's degree in laboratory technology or degrees that are in the focus area of research

Recommended High School Courses

Agriculture education, animal science, chemistry, biology, and mathematics

Typical Employers

Universities as well as general research, seed, animal health or pharmaceutical companies

Suggested Professional Organizations

American Clinical Laboratory Association
 American Society of Agronomy
 Society of Clinical Research Associates
 American Society for Clinical Pathologists

Job Market/Outlook



Responsibilities

- Operate and maintain lab equipment; may include heavy equipment
- Ensure lab is properly stocked with materials needed to conduct research
- Assist lead scientist in monitoring experiences and documenting observations
- Record data from experiments and input data into software programs that may be used
- Draft progress reports
- Assist in the cleaning and sanitation of the lab
- Monitor lab expenses
- Assist in the seeding and harvesting of crops (may involve operating farm machinery)
- Identify pests or diseases that may be present in a crop or animal
- Provide treatment for disease or infestation through medication, herbicides, pesticides
- Participate in research planning sessions to better understand work being done
- Assist in the creation of presentations for meetings or other events



ROW CROP PRODUCER / FARMER

A row crop producer or farmer plants and harvests traditional row crops such as corn, soybeans, wheat, cotton, potatoes, canola, sunflowers, flax, sugar beets, field pea, etc. independently or for a large farm or company.

Education & Training

High school diploma required; Associate's or Bachelor's degree in a relevant field such as agribusiness or agriculture would be beneficial as would a CDL

Recommended High School Courses

Agriculture education, agricultural mechanics, plant science, biology, business courses, mathematics

Typical Employers

Self-employed or large farms and agricultural companies that produce crops or crop products

Suggested Professional Organizations

American Farm Bureau Federation
National Farmers Organization

Job Market/Outlook



Responsibilities

- Purchase seed from area dealer or company prior to beginning planting season in the spring
- Perform tillage tasks in both spring and fall seasons
- Operate farm equipment such as tractors, sprayers, loaders, discs, cultivators, planters, grain carts, and harvesters
- Scout and inspect crops for need of pesticides, fungicides, or herbicides; spray as needed
- Manage fertility levels and treat with appropriate product
- Harvest crops once ready in fall
- Perform routine and minor maintenance on equipment; prepare equipment for busy seasons
- Manage grain and harvest inventory
- Sell harvested product
- Haul grain to elevators and/or processing plants via grain cart or semi-truck
- If in a business or leadership role, manage bills and paperwork and maintain accurate records



SEED PRODUCTION AGRONOMIST

Seed production agronomists are responsible for the management and execution of all phases of seed production. They are different from field agronomists in that they work specifically toward the creation of high quality seeds.

Education & Training

Bachelor's or Master's degree in agronomy or a related field

Recommended High School Courses

Agricultural education, biology, chemistry, computer courses, and mathematics

Typical Employers

Medium to large-scale seed producers

Suggested Professional Organizations

American Society of Agronomy
Crop Science Society of America
Weed Science Society of America
American Society of Plant Biologist

Job Market/Outlook



Responsibilities

- Contract required production acres with seed growers to maximize yield, minimize freight costs and deliver seed meeting quality specifications
- Develop and maintain a grower evaluation system to drive increased yields and quality
- Understand seed species and varieties, seed quality standards, and crop delivery requirements
- Develop and implement programs regarding agronomic issues in production fields
- Conduct and manage field productions of seed as required
- Perform and coordinate seed logistics activities to ensure accurate records and movement of seed
- Complete administrative duties such as signing grower contracts, collecting and inputting data for reports, pricing, and managing disposition of harvest
- Remain current with latest production technology to support seed growers
- Maintain relationships with growers, contractors and the local farming community
- Satisfy internal production standards within quality, timeliness and financial objectives
- Propose improvements to the field operations production program



SEED PRODUCTION TECHNICIAN

Seed Production Technicians provide support to growers by helping them with operations of seed equipment, planting, and seed scouting. They are responsible for the coordination of planning, strategizing, and production of certain seeds for individual companies. Seed Production Technicians can also be seen sorting, processing, and completing numerous other duties in seed warehouses.

Education & Training

Bachelor's degree in agronomy, plants science, biology or related field; Certified Crop Advisor certification is beneficial

Recommended High School Courses

Agriculture education, biology, chemistry, earth science, plant science, business, and mathematics

Typical Employers

Seed production companies, biotechnology companies, government agencies, universities, cooperatives, and research firms

Suggested Professional Organizations

Soil Science Society of America
National Alliance of Independent Crop Consultants
American Society of Agronomy

Job Market/Outlook



Responsibilities

- Responsible for each of the company's seed production areas
- Staff management of production staff in each location, providing direction to each farm manager
- Negotiate and coordinate contracts for other organizations that are organizing contract growers
- Negotiate and coordinate contracts for contract processors to process, bag and delivery seed
- Identify new production areas, ensuring production supply all year round
- Produce high quality seed in budgeted quantities for domestic, and possibly international markets
- Oversee the parent seed function ensuring budgeted levels of parent seed are maintained
- Responsible for divisional budgets and plans



SOIL SCIENTIST

Soil scientists analyze characteristics of soil, the different soil types, and research the ability to survive in differentiated conditions. They also are responsible for the study of soil structure, properties, chemical compensations and the different stages of transformations that soil goes through.

Education & Training

Bachelor's or Master's degree in chemistry, crop science, soil science, biology or a related field

Recommended High School Courses

Agricultural education, earth science, chemistry, biology, mathematics, and physics

Typical Employers

Conservation organizations or universities

Suggested Professional Organizations

Soil Science Society of America
National Alliance of Independent Crop Consultants
American Society of Agronomy
Committee for Sustainable Agriculture

Job Market/Outlook



Responsibilities

- Research or study soil characteristics, map soil types, and investigate responses of soils to known management practices to determine use capabilities of soils and effects of alternative practices on soil productivity
- Provide advice on rural or urban land use
- Perform chemical analysis on micro-organism content of soil to determine microbial reactions and chemical mineralogical relationship to plant growth
- Investigate responses of specific soil types to soil management practices, such as fertilization, crop rotation, and industrial waste control
- Conducts experiments on farms or experimental stations to determine best soil types for different plants
- Initiate and implement research & development programs for soil research
- Prepare documented proposals and successfully establish research trials
- Regularly communicate with relevant industry sectors and initiate well targeted research projects
- Meet the company requirements for trial planning and operation of research projects
- Manage trial establishment and collection of data
- Budget for research work and provide management reporting in regard to trial/research progress



VITICULTURIST

Viticulturists research and implement their findings to better help grape vines produce grapes that are of high quality and amount that is required for making wine.

Education & Training

Bachelor's or Master's degree in viticulture, enology, or horticulture

Recommended High School Courses

Agriculture education, biology, chemistry, physics, and mathematics

Typical Employers

Wine farms or estates, wine production companies, government agencies, universities, or you may be self-employed

Suggested Professional Organizations

American Society for Enology and Viticulture
Winegrape Growers of America

Job Market/Outlook



Responsibilities

- Production of grapes under a wide variety of natural conditions including preparation of the land, planting, trellising, pruning, monitoring and controlling of pests and diseases, fertilizing, irrigation and canopy management
- Potential to manage both table and wine grapes
- Understand optimum ripeness (fruit development and characteristics) and proper harvesting of grapes
- Design and implement pest and disease control programs following pest management practices and a sustainable farming approach
- Use plant, climate and soil moisture monitoring equipment for scheduling irrigation and modeling grapevine shape/phrenology
- Diagnose and solve viticulture problems
- Collect, organize and report viticulture data to support farming and marketing decisions
- Possibly direct and supervise staff
- Provide feedback and guidance to wine farmers/vineyard managers to yield the best results
- Direct contact with the winemaker to communicate grape characteristics needed to begin the winemaking process



WEED SCIENTIST

Weed scientists play an important role in managing vegetation. This may include identifying weeds and learning how to combat them or determining how herbicides interact with plants.

Education & Training

Master's or doctorate degree in weed science, ecology, plant physiology, agronomy, or soil science

Recommended High School Courses

Agricultural education, biology, chemistry, environmental science, computer classes, and public speaking

Typical Employers

Universities, extension, agricultural chemical companies, nonprofits, private research companies, or you may be self-employed as a consultant

Suggested Professional Organizations

Weed Science Society of America
American Society of Agronomy
International Weed Science Society

Job Market/Outlook

Responsibilities

- Conduct research to diagnose problems in the field or establish weed management systems for private crop management or consulting companies
- Identify weeds for farmers, golf courses, and homeowners
- Offer suggestions on weed control methods to landowners both through chemicals, cover crops and mechanical means
- Develops weed control products
- Recommend or sell weed control products
- Work to find chemical formulations that are effective in killing resistant weeds
- Study environmental and human health impact of chemicals that could be used
- Plant crop trials both in fields and greenhouses to use for research
- Oversee lab staff/ field laborers
- Organize and analyze research data
- Submit research to journals and scholarly papers
- Present presentations at conferences and to farmers on research findings and new techniques and formulations
- Provide insight to government agencies for policy development

Poor

Good

Excellent

A family of four is walking away from the camera through a golden field towards a rustic wooden barn in the distance. The scene is bathed in the warm light of a sunset or sunrise, with long shadows and a clear sky. The family consists of a man in a plaid shirt, a woman in a light sweater, and two children. The barn is a simple, weathered structure with a gabled roof.

PURSUING AGRICULTURE

Now that you have a grasp on all the unique possibilities in agriculture, how can you pursue them? Similar to the many career opportunities available in agriculture, there are just as many educational opportunities to pursue. In this section, learn about the different educational pathways you may follow whether it be achieving a skilled trade certificate or a doctorate degree. In addition to the many educational programs available in agriculture in America, there are also many professional organizations that are based in agricultural studies and education. Explore your options, learn how to network with professionals, and you may find yourself enjoying career longevity like two individuals profiled in this section. Your journey starts here, and it starts now.



PURSUING AGRICULTURAL EDUCATION

By Bonnie Johnson, AgCareers.com

Agriculture is like any other industry, it takes a diverse skill set of employees to power the day-to-day operations. There are rewarding and fulfilling careers in agriculture that require an advanced degree or very specialized training. Likewise, there are also opportunities for those with a high school education or an apprenticeship certificate.

AgCareers.com collects data on the educational requirements requested by employers in their job postings. For positions where the education level is specified, half require a bachelor's degree or higher. It is important to note that more than 30% of all jobs posted on AgCareers.com do not list a specific minimum education level. Unspecified positions accept a wide range of educational levels based on experience.

Candidates should recognize the difference between required versus preferred qualifications listed on job postings; oftentimes employers offer flexibility in preferred educational qualifications.

High School Diploma:

Almost all positions posted on AgCareers.com require a GED or high school diploma even if it is not stated in the job description. There are some critical careers in

agriculture that can be obtained without pursuing an advanced degree beyond high school. Several positions, such as sales representatives, may prefer applicants with a college degree but will accept equivalent relevant experience.

A certificate or specialized training program may help you to be more successful in a career, but many companies will assist financially with on-the-job training for their employees.

Examples of a few positions available for high school graduates: Equipment Operator, Data Processor, Animal Care Worker, Custom Applicator, General Laborer, Production Associate, Fabricator, Pen Rider, Customer Service, Lab Technician, Logger.

Skilled Trade & Apprenticeship Certificate:

There is growing demand nationwide for skilled and technical professionals. Job descriptions in this segment may express a preference for post high school education, or note specific technical training such as a welding diploma, CDL license, accounting certificate, pest control advisor (PCA) license, journeyman license, forklift license, certified industrial refrigeration operator (CIRO), etc.

These certifications are available from vocational/technical schools, extension and outreach programs, government agencies, and private academies.

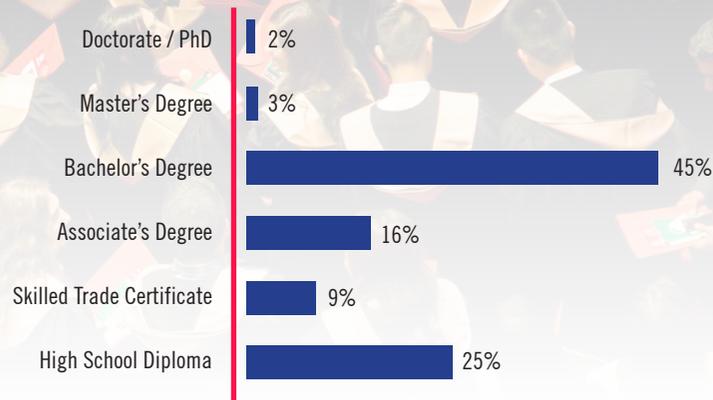
Examples of positions available for skilled/technical certificate holders: Electrician, Truck Driver, Bookkeeper, Mechanic, Maintenance Supervisor, Refrigeration Technician, Millwright, Equipment Manager, Field Operations, Clerk, Welder, Carpenter, Auctioneer.

Associate's / 2-Year Degree:

Community, junior and technical colleges offer associate degree programs that will typically be completed in two years, along with options for agricultural transfer programs. Associate's degrees relevant to the agriculture industry may include Diesel Technology, Accounting, Computer Technology, Turf Management, Process Technology, Mechatronics, Human Resources, Environmental Science, Biology, Agriculture Geospatial, Natural Resources, etc.

Jobs opportunities for two-year/diploma holders: Parts Manager, IT Technician, Dispatcher, Production Manager, HR Specialist, Quality Control Specialist, Administrative Assistant, Program Technician, HACCP Superintendent, Hatchery Supervisor, Research Assistant and more.

Employers' Educational Requirements



Bachelor's Degree:

The largest segment (45%) of jobs posted on AgCareers.com requires a bachelor's degree from a college or university. Degrees may be awarded from the College of Agriculture or directly related to ag, such as Ag Business, Natural Resources, Food Science, Agronomy, Animal Science, Horticulture, or Agricultural Education, or from programs indirectly related to agriculture including (but not limited to) Logistics, Microbiology, Engineering, Public Relations, Computer Science, or Economics.

Examples of positions for bachelor's degree holders: Research Associate, Engineer, Data Analyst, Agronomist, Branding Manager, Controller, Merchandiser, Quality Assurance Superintendent, Conservation Officer, Regional Sales Manager, Agriculture Teacher, Greenhouse Manager, Director of Farm Operations, Category Specialist.

Master's Degree:

Although only 5% of positions posted on AgCareers.com require an advanced degree, education beyond a bachelor's will often give candidates an advantage in the job search process. Master's degrees in Animal Production, Business Administration, Food Safety, Public

Health, Ag Biosecurity, Plant Breeding, Community Development, Ag Economics, Integrated Resource Management, and Crop Science are a few of the advanced degrees routinely found in agriculture.

Job opportunities for master's degree holders: Supply Planner, Senior Analyst, Global Development, Extension Faculty, Plant Breeder, Project Manager, Formulation Scientist, Technical Manager, Safety & Health Manager, Business Development and more.

Ph.D. / Doctorate:

Ph.D.'s in numerous fields such as biometrics, genetics, animal health, chemistry, entomology, pharmaceutical sciences, statistics, plant pathology and more are needed to fill roles in agriculture.

Opportunities for other doctor's in agriculture might include D.V.M., Doctors of Veterinary Medicine, and Juris Doctorates.

Examples of a few positions available to doctorates: Principal Scientist, Veterinarian, Toxicologist, University Professor, Nutritionist, Geneticist, Global Statistics, Entomologist, Agricultural Lawyer, and Research Manager. Several post-doctoral scientists and graduate scholar opportunities can be found in agriculture as well.

Further Exploration

The right education jump-starts a great career in agriculture. AgCareers.com features hundreds of colleges, universities, and schools in the United States and Canada that offer courses, certificates, diplomas, and degrees in agriculture. Check out the AgCareers.com Agriculture Education Directory for additional details. Educational advancement opportunities in agriculture may also be found through the AgCareers.com University Partners program.

With thousands of positions posted on AgCareers.com each month, there are a wide array of opportunities available for candidates with all levels of educational training.

It's highly recommended that you visit **AgCareers.com's Education Directory** to explore agricultural education programs throughout the United States and Canada. **Click to start exploring now.**

GET ASSOCIATED

AgCareers.com recommends the following professional associations to gain a broader understanding of agriculture and to network. However, remember to explore other organizations and clubs more specific to your career path.



AFA's mission is to build bridges for young leaders to foster engagement and innovation in food and agriculture. Founded in 1996 by R. Crosby Kemper and other agribusiness leaders, AFA offers leader and career development training to young professionals and college students pursuing careers in agriculture and food.



Alpha Zeta is a professional fraternity of men and women whose educational objectives and/or careers fall within the broadly defined field of agriculture.



The National FFA Organization (formerly Future Farmers of America) envisions a future in which all agricultural education students will discover their passion in life and build on that insight to chart the course for their educations, career and personal future.



The National Society for Minorities in Agriculture, Natural Resources and Related Sciences is a national society that welcomes membership of people of all racial and ethnic group participation in agricultural and related sciences careers.



Created in 2005 as a nonprofit, 501(c)(3) charitable organization, the Center for Growing Talent by PMA is growing the produce and floral industry's future by delivering education programs and networking events that attract, develop and retain top talent to secure a strong workforce for the global produce and floral industry.



Agricultural education teaches students about agriculture, food and natural resources. Through these subjects, agricultural educators teach students a wide variety of skills, including science, math, communications, leadership, management and technology. Currently there is a national shortage of agricultural educators: there will be hundreds of unfilled positions across the United States this year, simply because not enough students are choosing to be agricultural educators.



The National Agri-Marketing Association (NAMA) is the nation's largest professional association for professionals in marketing and agribusiness. Want to make connections in the agri-marketing industry? Stay current on the latest trends? Then NAMA is for you. NAMA can help you gain a fresh outlook on the world of agri-marketing and your place in it. Meet colleagues in marketing, advertising, public relations, media and more.



NETWORKING WORKS

By Nancy Barcus, Chief Operations Officer for Agriculture Future of America (AFA)

The agriculture and food industry is an exciting and challenging place to have a career. It's an industry where people of all backgrounds and perspectives are needed. If you don't have a background in agriculture or even for those of you who only know one type of agriculture, here are some ways to broaden your understanding of the career options available.

First, consider getting a part-time job or volunteering with organizations that serve an area you're interested in to get some real-world experience. Organizations with volunteer opportunities could include pet shelters, community gardens, hunger-relief organizations or policy discussions in your area. Part time employment could be found with agricultural or food services like garden centers, veterinary clinics or retail stores. These types of experiences will help you refine your interests and gain a better understanding of agriculture and food in your area. You will also see how favorite school subjects are applied to this industry. If employment isn't an option, ask a professional if you can job shadow them for a day. As a student, you have lots of creative options to ask for more information and begin to meet people. For a professional, it's hard to tell a motivated young person no, especially when it involves a learning opportunity.

With less than 2% of the Americans directly involved in food production, it's a small world! Therefore, building and maintaining a strong network can help you find a career in food and agriculture tremendously. When you're meeting new people, ask lots of questions. Provide thoughts on where the future of agriculture and food can grow and improve. Networking should be defined as exchange of information and cultivation of productive

You should always think about those you've met and how you can continue to foster relationships with them.

relationships for employment AND business. Once you've found a job, networking doesn't stop. It can then be a helpful way to extend your business, find new clients or partner for better results.

The organization I work for - Agriculture Future of America (AFA) - builds bridges for young leaders to foster engagement and innovation in food and agriculture. At the core, AFA is an avenue for young people interested

in agriculture to create a strong network. AFA brings together young leaders passionate about a career in food and agriculture with those currently leading the industry. This allows for relationship building and career exploration amongst peers and with leaders.

I encourage you to think about networking not as a place and time-based activity. It should be weaved into your life. You should always think about those you've met and how you can continue to foster relationships with them. Your goal should not be to have an exorbitant number of LinkedIn connections but rather to feel that you're having meaningful conversation and, eventually, offering value back to those in your network.

Bringing value to your network could include a friendly note to say you're thinking about them and wondering what's new in their world. It could also be sending a link to an article or resource you thought they might be interested in. If you're bringing value to your network, you will be active in each other's life in such a way that when an opportunity to collaborate on business arises or you're interested in exploring job opportunities close to them, you've not always been asking for their help. You've been bringing value to them in advance. They'll see you as a contributor to their success, not just someone only interested in their own career.

LONGEVITY IN AGRICULTURE

Hear from two seasoned pro's in agriculture about their career longevity and what they have found most rewarding.



Though Dr. Dwight Armstrong is now retired, he has experienced a long and prosperous career as former CEO of the National FFA Organization.

"When that opportunity came up, it was like a full circle from how I started with FFA and agricultural education to being able to serve as CEO of the National FFA Organization and Foundation," Dwight said.

Beginning his career as an associate professor at North Carolina State University, Dwight enjoyed teaching and research as well as extension work in the areas of swine nutrition and management. From there, he worked for an animal nutrition company in Ohio in several high-ranking positions before helping to sell the business to a global company from the Netherlands. After leaving the company and beginning his own consulting business, FFA came calling.

"The rewarding part is working with the people," Dwight said. "You've got the people you work with, the people you're providing service to, and the people who are benefiting from what you're providing. It doesn't matter whether you're a teacher at the university, or you're selling a product, or you're doing research, or you're making decisions. I got a lot of fulfillment of seeing other people benefit and grow and experience opportunities."

Remaining humble, Dwight revealed that the most rewarding part of his career with FFA was seeing young people from all over the United States benefit from agricultural teachers.

"I was there, providing a service, but ag teachers were making it happen," Dwight said. "It's rewarding to see others succeed alongside you."

When asked about his advice for young professionals interested in pursuing high-level positions, Dwight answered to never accomplish anything alone.

"It always takes a team," Dwight said. "You don't have to be the expert at everything. Surround yourself with people that are experts. They make you look good! They do their jobs, and things grow and succeed."

Additionally, Dwight advised to remain true to where you come from.

"Your roots and your experiences along the way, the people who have influenced you, those are all bringing together who you are and how you manage, how you treat people, how you interact, what your priorities are," Dwight said. "Never forget your roots."



Mary Stalberger began her career as an agronomist and wound up as a Sales Development Manager for CHS, Inc.

"I did an internship with one of CHS' country operations locations," Mary said. "From there, I was hired on as an agronomist. We really worked to grow new business in the cooperative spirit: helping our owners grow, developing new business."

Mary worked in an agronomist position for twelve years developing business and her own repertoire. Proving her ability to garner business, Mary was hired within the same business as a district sales manager, helping others to build their own sales cultures.

Four years ago, Mary was hired at CHS, Inc.'s headquarters in Inver Grove Heights, Minnesota as Sales Development Manager for all of CHS' country operations.

"My role as Sales Development Manager is two-fold: helping all of our country business operations to build through sales culture and how to interact," Mary said. "It's really about sales training and product training. The second part of my job is leading a group called the Key Agronomy Specialists. We really found a need to prospect for growth, so we look for prospects to push business-to-business units we already have."

When asked about climbing the "career ladder," Mary explained that it did not feel like a ladder at all.

"It felt very natural. As agriculture has changed, it's been a challenge to learn how to adapt with the changes and current markets. I wouldn't say I was ever challenged by that. I found it rewarding."

While CHS, Inc.'s Country Operations operates in eighteen states and throughout Canada, Mary finds that many of her customers face the same obstacles including interacting with talent and keeping people passionate and motivated, which Mary says is key for any professional.

"Truly identify what's in it for you," Mary said. "You have to find a reward for yourself."



TO FEED A *HUNGRY* WORLD

By Dr. Ken Foster, Professor - Department of Agricultural Economics, Purdue University



You've probably heard that there may be as many as 9 billion people inhabiting the earth by 2050. What doesn't get as much attention is the growth of incomes around the world. On average, people are earning more money, particularly in traditionally poorer parts of the world such as China, south Asia, and Africa. What does this have to do with food? Inhabitants of these parts of the world will spend more of their extra income to buy food, and this will impact the job market in food and agriculture.

Thirty-five years seems like a long way off to many of you, but to put it into perspective, it has "only" been 35 years since I graduated from Purdue University with a degree in agriculture. If you are a student today, 2050 will arrive long before you are even close to retirement. Even more so, businesses and governments are already

responding to this future challenge today by setting goals to double food production in the next few decades while minimizing environmental consequences.

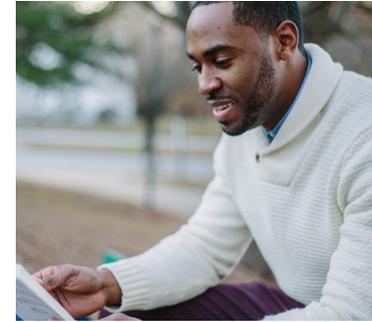
For the college graduate, I see four categories of employment in the future. The first are decision makers. This encompasses everyone from the manager of a business to those who support her decisions through analytics and strategy expertise. In 2015, Dr. Allan Goecker, the assistant dean emeritus of Purdue University's College of Agriculture was lead author on a USDA National Institute for Food and Agriculture publication titled "Employment Opportunities for College Graduates in Food, Agriculture, Renewable Natural Resources, and the Environment, United States, 2015–2020." They estimated that nearly 58,000 jobs will be created annually in the USA involving food, agriculture, and natural resources between 2015 and 2020. Of those jobs, they projected about 46 percent will be in management and business. Among this category I include farmers. Farming today is an occupation that integrates business management, science based knowledge, advanced technology, and

increasing data analytics. A university degree is key to be a successful "decision maker" in the food and agribusiness area. Frankly, I hear from employers often that it is useful to have dual majors or at least a minor so that one's training is in integrating the complexities of biology, technology, and economics that differentiate food, agriculture, and natural resource careers from those in other industries.

The second area is that of technological experts. This is the category of employment that encompasses Science, Technology, Engineering, and Mathematics (STEM). A hallmark of agricultural and food production systems has always been a drive toward greater efficiency. That is, getting more product from a given resource base whether that be the land, labor, and capital employed on farms or more retail food product from a given raw farm commodity. These gains occur because brilliant people apply scientific and technological discoveries as well as innovate on their own. It's the reason why we have the most affordable, safe, and abundant food supply that the world has ever



“It’s an exciting, and challenging, time to work towards securing nutrition for all the occupants in our world.”



seen. The marketplace demands people trained in plant and animal sciences, agricultural engineering and mechanization, genetics, supply chain management, and natural resources and environmental management in order to continue to improve our innovation and efficiency.

Retailing and marketing services is the third category of employment that is demanded in the marketplace. It relates to the first two because much retailing and marketing strategy resides in the decision maker camp and is directly connected to supply chain management. However, industrial selling and marketing are not arts. There are principles that underlie these activities that can be acquired as a part of a college degree program and without sound sales and marketing no amount of efficiency gains and technology will make a business successful. A large percentage of the entry positions of students from my department at Purdue are in agribusiness or other industries in the role of sales and marketing agents. These are great entry level positions

because they give an individual first-hand experience with the company’s customers and its products. It is a common starting point for someone who eventually ends up as a top level decision maker.

My final category is the one that I work in, that of communicator, teacher, and researcher. I would call this the knowledge acquisition and dissemination sector. It’s far broader than being just a university professor, and we need brilliant people in this role to train those who will fill the other positions that I described, not to mention conduct research to create the new science and technologies that experts will apply in the field. There are other employment opportunities to create and disseminate knowledge too. Extension educators, commodity group representatives and directors, agricultural media, K-12 educators, non-governmental agencies, and governmental agencies are great employment opportunities for college graduates with expertise in food, agricultural, natural resources sciences, and economics. Information is a valuable commodity and people who are talented in

communicating it are always in demand.

Today we can collect, store, and analyze large and complex data sets in ways we couldn’t have imagined in the past. This will drive a need for college graduates in all of the above areas to be more data and analytically savvy. This doesn’t mean everyone needs to be steeped in statistics and computational programming, but it does mean that they need to be able to interpret analytical information and its relevance to their role. Also, new college graduates will need to be able to give practical insights to the analytics experts themselves to make sure those analysts can provide meaningful and accurate information.

Whether you lean towards the area of decision maker, technology, retail and marketing, or teacher and researcher, there will be increased opportunities for employment in food and agriculture over the coming years. It’s an exciting, and challenging, time to work towards securing nutrition for all the occupants in our world.

Keep the conversation going. We invite you to share this publication on social media using the hashtag #WeNeedAgCareers.

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