



Cornell University

Cornell Center for Animal Resources and Education

CARE517.01 Swine Husbandry

The intent of this document is to describe the routine husbandry procedures at Cornell University Swine Farm. This procedure is approved by the Cornell Institutional Animal Care and Use Committee (IACUC) and the Cornell Center for Animal Resources and Education (CARE). The facility may have supplemental SOPs that further describe their specific manner of operation. Any exemption must be approved by the IACUC prior to its application.

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Note: Emergency veterinary care is available at all times including after working hours and on weekends and holidays through Ambulatory Service of the College of Veterinary Medicine or CARE.

1. Environment

- a. Minimum space requirements
 - i. The following table summarizes the minimum standards that are followed for the housing of swine:

Sow and litter in pen	35 square feet
Sow in crate	14 square feet
Nursery pens (7–60 lbs)	1.7–4.0 square feet/pig
Growing pens (60–125 lbs)	4–6 square feet/pig
Finishing pens (125–230 lbs)	6.5–8.0 square feet/pig
Late finish pens (231–275 lbs)	8–9 square feet/pig
Mature adults in pens	16 square feet/pig

- ii. Additional space is provided whenever possible.
- b. Bedding
 - i. Swine should be maintained on contact bedding (e.g., shavings) whenever feasible.
 - ii. In some cases, elevated pens or concrete slats with no bedding are used.

- iii. Farrowing crates have rubber mats for sow comfort.
- c. Pen maintenance
 - i. Pens are cleaned daily. Dirty bedding is scooped out of stalls and slatted concrete floors and elevated pens are hosed.
 - ii. Rubber mats are cleaned of debris daily.
 - iii. Pens and crates are thoroughly cleaned before a new group of pigs is introduced.
- d. Temperature and ventilation
 - i. Ideal temperature range for adult pigs is between 50 and 75° F. They can tolerate temperatures as cold as 5° F and as hot as 90° F, but they are not kept at these extreme temperatures for extended periods of time.
 - ii. Piglets less than weaning age have supplemental heat provided. From birth to 1 week of age piglets need temperatures of around 95° F. Temperature requirements decrease 5° F per week until weaning.
 - iii. Weaned pigs, 3–4 weeks old, need supplemental heat to approximately 75° F.
 - iv. Ventilation is equally distributed throughout the facility to minimize odor, evacuate humidity and provide fresh air to the animals.
- e. Lighting
 - i. Breeding and growing swine benefit from 16 hours of light (L) and 8 hours dark (D).
 - ii. Experimental animals may be kept in a L:D cycle of 12:12.
- f. Pest control
 - i. Refer to CARE SOP 538.01 (<http://www.research.cornell.edu/care/CARE538.pdf>) for a description of the vermin control program in agricultural facilities.
 - ii. Rodent and insect control is performed by a commercial pest control company.

2. Feed and Water Requirements

- a. Animals are fed to meet current National Research Council recommendations for swine nutrition.
- b. Water is available *ad libitum*. Note: pigs are likely to destroy and tip over troughs and pans, so nipple waterers are often preferred.
- c. Feeders and feeding stations are kept free from manure, urine and contaminants.
- d. Feeders and waterers are thoroughly cleaned before a new group of pigs is introduced in a given area. They are cleaned more frequently if soiled.

3. Health and Well Being

- a. Acclimation and quarantine
 - i. Animals transferred to another location are acclimated for at least 72 hours before beginning experimental procedures.

- ii. New incoming animals undergo a period of quarantine or acclimation. Duration may depend on the source and known health history and will be determined in consultation with veterinary staff.
- b. Hoof care
Hoof health is assessed by trained professional staff. When necessary, veterinary staff is notified and hooves are trimmed or treated as required.
- c. Preventive medicine
 - i. Piglets:
 - Injection of 100 mg of iron-dextran solution IM between 12 and 24 hours of birth.
 - Injection of 150,000 units of procaine Penicillin G IM between 12 and 24 hours of birth.
 - Vaccination via IM against Atrophic Rhinitis, Pasteurellosis, Pneumonia, and Erysipelas between 7 and 10 days after birth. A booster shot is given at the time of weaning.
 - Injection of 0.5 mL of Ivomec (1% Ivermectin solution) SQ at weaning.
 - ii. Breeding stock (gilts, sows and boars):
 - Yearly vaccination for erysipelas, parvovirus and 5-way leptospira.
 - Twice yearly deworming.
 - Pregnant sows are vaccinated 2 and 4 weeks before farrowing for *E. coli* and *clostridia*.

Note: Routine treatments are administered by professional caretakers in consultation with veterinary staff.

- d. Health monitoring
 - i. Each animal is checked daily by trained personnel for signs of injury or illness.
 - ii. Neonates and pregnant sows are checked at least 2 times daily.
 - iii. Any abnormalities, injuries or illness are reported to the facility manager for action.
 - iv. Refer to CARE SOP 542.01 (<http://www.research.cornell.edu/care/CARE542.pdf>) for record keeping requirements at Cornell animal facilities.
- e. Baby pig management
 - i. Navel dipping — Navels of neonates are dipped in 3.5% tincture iodine between 2 and 12 hours of birth. Iodine solution is replaced between litters.
 - ii. Tooth clipping — The 8 needle teeth of neonates are clipped between 12 and 24 hours of birth with a clean, stainless steel, side-cutting pliers. Each tooth is clipped about 1 mm above the gum line. Pliers are sanitized between piglets by dipping in a 6% solution of iodine in water.
 - iii. Ear notching — The ears of neonates are notched between 12 and 24 hours of birth for identification. A stainless-steel, pig ear

- notching tool is used. The universal numbering system for swine identification is followed. Notcher is sanitized between uses by dipping in a 6% solution of betadine.
- iv. Tail docking — Neonates have their tails docked between 12 and 24 hours of birth with a stainless-steel emasculator tool, leaving approximately 1 inch of tail remaining. Undiluted iodine is applied on the tail stump wound. Tail docker is sanitized between each use by dipping in a 6% solution of iodine.
 - v. Castrations — Male piglets are castrated between 7 and 10 days after birth. Scrotum area is washed with a betadine scrub, the scrotum is incised, and the testes are pulled and cut. The incision area is sprayed with betadine solution.
 - f. Disposal of animals
 - i. Animals are humanely euthanized, following guidelines set in CARE SOP 307.01 (<http://www.research.cornell.edu/care/CARE307.pdf>).
 - ii. Production animals may be sold.

4. Documentation and Record Keeping

Refer to CARE SOP 542.01 (<http://www.research.cornell.edu/care/CARE542.pdf>) for record keeping requirements at Cornell animal facilities.

5. Environmental Enrichment

- a. Swine are social animals and are housed in groups whenever possible.
- b. Visual contact between swine is always maintained.
- c. Additionally enrichment for swine species might be provided with chains, bowling balls, strips of material, rubber hoses, foraging opportunities, etc.
- d. Positive human contact.

6. References

- a. *Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching*. Federation of Animal Science Societies, Savoy, IL. 1999.
- b. University of Medicine and Dentistry of New Jersey. Swine Husbandry SOP 1-4-98. <http://www3.umdnj.edu/oraweb/pighusb.htm> (accessed Dec. 2005).
- c. Grandin, Temple. Recommendations for Investigators Using Pigs for Research. In *Comfortable Quarters for Laboratory Animals*, 9th ed.; Viktor Reinhardt, Ed. Animal Welfare Institute, Washington, DC, 2002.