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COOPERATIVE UNIT SYSTEMS[1]

3. Swine Facilities

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Introduction

Facilities are one of the most important considerations for housing market swine projects in groups. While the facility specifications are largely dependent on the region and location, a few considerations such as feeding systems, waste management systems, and space requirements remain the same and are crucial to the success of the projects.

For more information on cooperative unit systems, consult the previous Ask IFAS publications in this series: *Cooperative Unit Systems: 1. Introduction and Raising Market Animals in a Group Setting*, and *Cooperative Unit Systems: 2. Organizational Strategies.*

Basic Requirements

When selecting facilities to house a group of market swine projects, the following topics should be addressed thoroughly, with the aim of ensuring the safety of both human and animal participants:

- Water
- Feeding systems
- Waste management
- Electricity
- Weather protection
- Space requirements
- Pen arrangements
- Fencing materials

For a sample facilities checklist, see Appendix A.

Water

A reliable water system that provides access to fresh water is of the utmost importance. Many swine producers favor automatic waterers for their facilities. Automatic waterers offer many advantages, such as prevention of water stagnation and contaminants that may find their way into a bucket or trough. An automatic water pipe system may be constructed of materials from a local hardware store, such as PEX pipe (which is more durable than PVC), metal connectors, short pieces of hose, and automatic water nipples, for a reasonable price. Automatic waterers are not the only way to provide water. The following criteria should be used when selecting a water system:

- Continuous access to the water source
- Fresh and clean water source (avoid stagnant water)
- If utilizing automatic waterers: it is recommended that the ratio of swine per waterer not exceed 10 swine to one waterer (Walker, 2015)

The average hog weighing 50 pounds will consume 1 gallon daily, while the average hog weighing 150 pounds will consume 1.5 to 2 gallons of water daily (Walker, 2015). According to Walker (2015), if water is used for cleaning or in misting systems, the daily water requirements will double. Additionally, a common rule of thumb is that water consumption by swine will be roughly twice the intake of feed, with slightly higher water consumption in hot weather (Walker, 2015). Depending on the unit's location, steps should be taken to ensure the system can be winterized to prevent freezing and bursting of the pipes, without jeopardizing the health of the swine.



Figure 1. Automatic waterer.
Credit: Alyssa Schortinghouse, UF/IFAS

Feeding System

There are multiple feeding systems that can be used in group housing facilities. One of the most common is a free-choice feeding system, through which swine in a pen have continuous and unhindered access to feed. Continuous feeders can hold multiple bags of feed at a time and are able to ensure access for all animals in the pen throughout a prolonged period. Bullying may occur when using a free-choice feeding system. The animals should be carefully monitored to make sure that they are all able to eat. If pigs vary in size, the smaller animal is likely to be bullied out of eating its share. Similarly, if one animal is extremely aggressive and another is timid, the timid one will not receive the proper amount of nutrition. If utilizing a free-choice feeding system with self-feeders, it is recommended that the ratio of swine to self-feeders not exceed four swine per foot of feeder access (Walker, 2015). For optimal performance of this system, pay close attention to the performance of the animals in each pen to ensure each animal is reaching essential benchmarks throughout the project.

For group housing projects such as a cooperative unit, a free-choice feeding system is highly favorable to maximize the growth of project animals while limiting the time demands on the participants. With free-choice feeding systems, there are few options to track each project animal's actual consumption throughout the project. To distribute the cost of feed, each pen should track the feed provided to determine the cost, which is equally divided between the owners of all the project animals in the pen.

Another option is to feed each animal individually with buckets or pans. While this option is best achieved by bringing each animal into its own area to feed it, the method also enables customization of feeding needs to each project animal. The time demands of this option often act as a major deterrent when large groups of animals are involved.

On average, a growing hog weighing 30 pounds on full feed will consume 1.9 pounds of feed with an average daily gain of 1 pound (Walker, 2015). Furthermore, Walker (2015) posits that a 150-pound growing hog on full feed will consume 7 pounds of feed with an average daily gain of 2 pounds.

Waste Management

Controlling the waste from a group of market swine projects should be carefully discussed. Most facilities will fall into either a wet system or a dry system. A wet system is a system in which the facilities are shavings-free or are not used as the primary bedding source, and the pen can be sprayed out with a water hose. All fluids are pushed to an exterior waste collection system, such as an anaerobic lagoon. If working with a lagoon system, plan for 50 to 100 square feet of surface per pig. The required water volume may be calculated using the following formula: 2 cubic feet multiplied by the number of animals multiplied by the maximum animal weight.

In a dry system, the facilities are bedded down with shavings or an absorbent bedding material on a solid base such as packed dirt, and water is not heavily used to clean out the facilities. A waste composting area should be designated for a dry system. All discards from the facilities should go into the designated composting system, avoiding the spread of waste outside of the designated area. If composting, 1–2 gallons of compost per head per day should be planned for with an expectation that the storage duration will be for two to six months.

For more information on risk management, consult *Risk Management for 4-H Youth Development Work: Insurance* (https://ask.ifas.ufl.edu/publication/4H296).

Electricity

Electricity availability should be considered early in the planning process, although it is not a necessity for all units. It is possible to run generators to fulfill the electricity need, but this is an intensive process. For safety reasons, a well-lit unit is necessary because some participants will be working after the sun has gone down. Furthermore, electricity is needed for heat lamps during the winter or fans in the summer, because pigs traditionally raised as market animals are more sensitive to extreme temperatures (Huynh, 2005). Even in moderate climates, the variation of temperatures between day and night could affect the performance of market swine projects.

Weather Protection

Even though electricity and artificial heat can help regulate the swine's temperature, it is also extremely important to ensure protection from the elements such as the rain, sun, and wind. At the same time, it is still important to ensure proper airflow. When setting up heat lamps, be sure to place the lamps on one side of the pen and not in a corner to maximize the utilization. This setup will allow the animals to gather close to the heat if they are cold, or to move away from the heat if needed. The swine should also be able to move away from rain, wind, and sun. Swine, like humans, can get sunburn and windburn from long periods of exposure. If adequate protection is not provided, the swine may be more prone to sickness and stress-related health issues.

Spacing Requirements

The spacing needs for each swine and the optimum group size have been topics of much research. McGlone and Newby (1994) found that very large groups of pigs often have higher morbidity rates than smaller groups, even though there was no significant difference between the growth measurements. Furthermore, the research by McGlone and Newby (1994) found that too little space hindered the growth of the swine in the study, and each swine needs a minimum of roughly seven square feet. For optimal growth on solid floors, it is recommended that each pig weighing approximately 200 pounds should have ten square feet of pen space (Walker, 2015). Furthermore, swine have the tendency to sleep on top of each other. As the swine grow, and if too many animals are housed in one pen, the possibility for health concerns increases. Health issues such as prolapses increase due to swine stepping and sleeping on top of each another, regardless of the extra space.

Determining Penning Arrangements

There are many ways to go about determining how market swine projects may be penned. It is common practice to house many swine together in large production operations, but it is important to consider the ease with which youths are able to isolate their project animals. This is necessary so they can remove their animals from the pen and work with their projects individually without the other animals interfering. Pen decisions can depend on a number of factors, the most common being:

- Ownership
- Feed type and amount
- Size of animals

Penning the animals based on either feed type or size is most common for the sake of convenience. The selected feeding system will largely inform this decision, but all choices should work to ensure the best growth opportunities and safety of all animals.

Fencing Materials

Last but certainly not least are the materials needed to ensure the enclosure is sturdy and safe for market swine animals. The most common materials for enclosures include:

- Posts and hog wire
- Hog wire panels

Hogs like to root by sticking their noses into the ground and digging if possible. This could compromise the integrity of the enclosure if they dig a hole along the perimeter of the fencing. Furthermore, hogs like to rub and scratch and will do so on any available structure. If wire is used to secure the fencing, ensure that all points are on the exterior of the pen with the tails bent back to avoid any sharp protrusions. If panel clamps are used, ensure that all the clamps are secure and sturdy enough to handle the rough impacts hogs will inflict on the fence.

The fencing should be secured to a solid structure to ensure the hogs are not able to move the pen around at will. If possible, it is highly recommended that a secondary perimeter fence be built to act as a security barrier in the event any hog escapes or breaks the fencing.

Conclusion

Each animal unit is unique and will have to select the best options to meet its needs. The safety of all participants depends on the decisions made in organizing the cooperative unit. Always err on the side of caution, because the safety of the youths as well as the project animals is the primary concern. It is highly recommended to work with a local veterinarian or swine health care expert when organizing this portion. Their advice will not only aid in organizing the cooperative unit but will also establish a relationship that may be needed in the future.

***Please note that this publication does not include recommendations for pandemics such as COVID-19. Federal and state guidelines during times of crisis should always supersede the recommendations provided in this document. For the Centers for Disease Control and Prevention's recommendations regarding livestock during the COVID-19 pandemic, please refer to their website: https://stacks.cdc.gov/view/cdc/90234.**

References

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Appendix A—Cooperative Unit Systems: Swine Facilities Checklist

The cooperative swine unit is located at:

- Access to fresh water? Yes No
  - Can be winterized? Yes No
- Waste Management Plan:
  - Composting
  - Lagoon
  - Septic Tank
  - Other: _____
- Electricity: Yes No

No? Plan:

- Weather Protection
  - Wind blockage at the level of the swine? Yes No
    - If no: Can you adjust for this? Yes No
  - Protection from the sun at all times? Yes No
    - If no: Can you adjust for this? Yes No
  - Protection from rain at all times? Yes No
    - If no: Can you adjust for this? Yes No
- Spacing Requirements
  - Minimum of 7 sq. ft per animal? Yes No
  - Pigs per pen?
  - Penned based on?
    - Owners
    - Feed

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