LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE

Alternative farrowing systems during cold weather

Abstract: The project investigators studied the performance of alternative farrowing systems during cold weather. These systems have the potential to expand the niche pork markets in Iowa by making larger supplies of marketable pork available in the summer months.

Question & Answer

Q: What farrowing systems are available to help niche market swine producers?

A: There is no one "best" system, but there are several workable options.

Background

Iowa pork producers see niche markets (such as no-antibiotic, natural, organic, Berkshire, or family-reared pork) as good avenues for small and midsize family farms to improve their financial position. The premiums paid in these markets will help maximize farm income, but the markets call for a constant supply of pork throughout the year. In addition, most of these niche markets require that the pigs be farrowed outdoors or indoors in bedded pens. These requirements have made it difficult for producers to farrow pigs during the winter months, creating a shortage of market pigs in the summer and hindering farmer access to the more lucrative niche markets.

Project goals were to:

1. Document successful cold weather farrowing on midwestern, and particularly Iowa farms;
2. Design, construct, and demonstrate a simple, heated farrowing system that will provide warm, draft-free environments for young pigs;
3. Develop budgets and sensitivity tables to show the costs and returns of winter farrowing for the niche market producers; and
4. Disseminate information on cold weather farrowing systems through field days, web sites, and popular press articles.

Approach and methods

Objective 1. Successful alternative cold weather farrowing systems were sought out with help from ISU Extension field staff, Practical Farmers of Iowa, and niche marketing groups operating in Iowa. The investigators visited farm sites and interviewed operators to determine what housing systems and management components worked best. When available, seasonal farrowing efficiency measurements were documented and compiled.

Objective 2. A farrowing system was designed and constructed for use at the ISU Allee Demonstration Farm in Newell. The farrowing system was created to meet these criteria:

- Provide a warm, draft-free microclimate for the piglets,
- Allow the producer to adequately observe pigs in the hover area,
- Be designed to minimize fire safety concerns,
- Be relatively inexpensive and easily sanitized, and
- Protect piglets from being crushed by the sows.

Objective 3. Budgets (to assess economic feasibility) were developed on the cost of production and expected returns for the farrowing alternatives. Costs were determined first for the production of pigs to weaning age. These included

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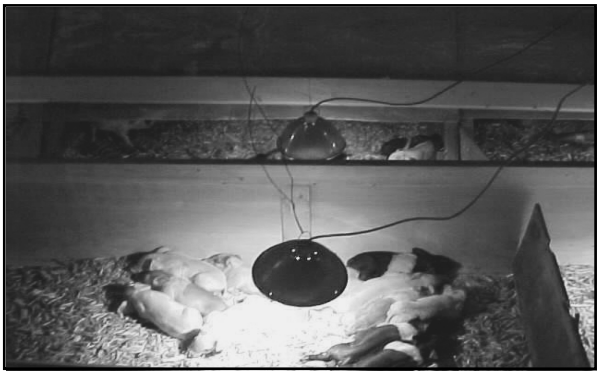
Budget:
$25,064 for year one
$20,770 for year two
$25,829 for year three



Winter farrowing scenes

expenses for breeding, gestation, and farrowing phases of production. Currently, the biggest problem in cold weather farrowing is raising the pigs to weaning age.

Cost items considered included number of pigs farrowed and number of pigs weaned per litter. Pig weaning weights and feed requirements also were considered, along with labor and investment requirements. Pig price and cost information reflected prices that were typical historically or at that level over the last five years.

Objective 4: Information from the project was made available during regular field days and meetings. Information was added to a section of the Hoop Structure web page since the information was likely to appeal to the producers interested in using hoop structures. Information was provided to ISU Extension livestock and agricultural engineering field specialists to share at winter meetings. News releases were sent to local and national agricultural media.

Results and discussion

At the Allee Farm, a total of 293 pigs were weaned, an average of 8.14 pigs/litter, in 2002/2003. Total energy expense for producing those pigs was $4.94 per pig weaned. For 2003/2004, a much more severe winter, 132 pigs were weaned for an average of 6.6 pigs/litter. Associated energy expenses were $7.73 per pig weaned. Averages for the two winters were 7.59 pigs per litter, with an average energy cost of $5.81 per pig weaned.

Winter farrowing techniques were studied on four southeast Minnesota farms (all selling livestock to Niman Ranch Pork Company of Thornton, Iowa). These farmers used older buildings that were converted for farrowing. During the winters of 2001/2002 and 2002/2003, the four farmers averaged 8.8 pigs weaned per litter, values that compare favorably with U.S. and Minnesota averages. Temperature in the buildings during farrowing averaged 49 degrees F compared with an average outdoor temperature of 14 degrees. The use of bedding and zone heat allowed the piglets to be comfortable at temperatures lower than the normal critical temperature level. The energy use per litter varied greatly by farm, depending upon the insulation and ventilation.

A budget estimate was calculated for producing weaner pigs in a natural setting typical of Niman Ranch style operations. When analyzing the sensitivity of both facility investment and herd management techniques, the most influential cost item is labor. Analysis revealed that the breakeven cost for producing weaner pigs is unlikely to be less than $34.63 per pig (at $8 per hour labor cost) and could be as high or higher than $39.20 per pig (at $15 per hour labor), if litter labor demand has been underestimated.

Conclusions

There are a variety of farrowing systems currently being used during cold weather to farrow pigs for the niche pork market. All rely upon a primary heat source capable of maintaining a room temperature of at least 50 degrees F and auxiliary heat sources to create a warmer microclimate for the young pigs. The use of adequate bedding and a design in harmony with the natural instincts of the hogs are keys to the success of the example systems. A final consideration is a breeding program that insures that sows in a particular room farrow within a short time frame (7 days or less). Three unique systems, detailed in this study, are free stalls in retrofitted buildings, the Swedish deep-bedded system, and greenhouses with radiant tube heaters. No system has a clear advantage over the others, but each system has its own strengths and management requirements. Producers interested in capitalizing on the growing demand for niche swine born in the winter should consider their individual resources and goals as they adopt a system to meeting their needs.

Impact of results

The niche pork market continues to expand, offering additional options to producers. Although the investigators did not find one "best" system of alternative winter farrowing, this project generated considerable information to aid farmers in choosing the best option to help achieve the expansion of pork niche markets.

Education and outreach

Thirteen publications were generated from the research conducted by the investigators. Many of them appeared in the Animal Industry Reports (2004-2006) from ISU Extension.

The investigators presented information at a USDA conference on alternative swine housing education in Washington, D.C. in September 2005. Papers were presented at two overseas meetings (Italy and Ukraine) on Iowa experiences with hooped house swine production. An analysis of the costs of organic pork production was given at the American Agricultural Economics meeting in 2004.

Several farmers have visited the research site at the Allee Farm, which was featured in a video on alternative swine production prepared by the USDA's Sustainable Agriculture Research and Education program. Jay Harmon spoke about the project to a group of 50 pork producers in Kalona.

Leveraged funds

Although leveraged funds were not secured with this grant, the project was the basis for a subsequent major National Research Institute grant.

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