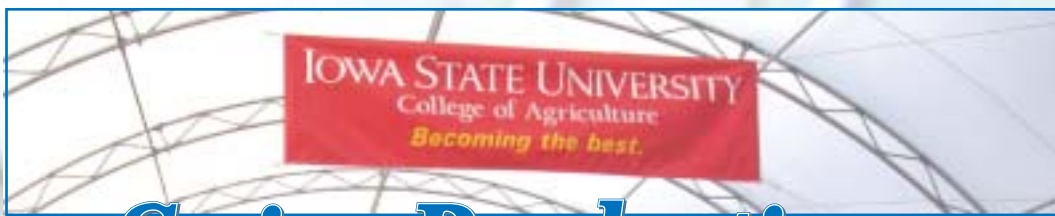


A Research Initiative —

Hoop Barn Swine Production



Searching for alternatives

As profit margins narrow, pork producers are on the lookout for ways to cut costs while providing a healthy environment for their swine. Since the mid-1990s, hoop hog barns have become an increasingly popular alternative for swine production. The tent-like, low-cost buildings are versatile and easy to assemble. The structures rely on deep bedding and natural airflow.

In 1997, the Leopold Center for Sustainable Agriculture formed an interdisciplinary group of Iowa State University scientists to conduct research on hoop production facilities for swine. This "Alternative Swine Production System Initiative Team" quickly became known as the "Hoop Group."

From 1997 through 2002, the Center provided the primary funding. Additional support came from the Iowa Pork Producers Association and the Iowa Agricultural and Home Economics Experiment Station. In 2002, the U.S. Department of Agriculture awarded a grant so the ISU hoop research team could continue its work.

What is a hoop barn?

A hoop barn consists of 4-foot-high sidewalls fitted with steel tubular arches covered with an opaque UV-resistant polypropylene tarp. Most of the floor area inside the hoop is bedded with cornstalks or other crop residues. The remaining floor is a concrete slab where feeders and waterers are located. Finishing pigs typically are housed in groups ranging from 75 to 250 head, with each building holding one group of pigs. Occasionally the building is divided lengthwise to accommodate two groups. Sows also can be housed in hoop barns.

Research projects

Funds were used to construct a side-by-side comparison of a confinement system and hoop barns at the ISU Rhodes Research and Demonstration farm near Marshalltown. A modular confinement facility and three hoop structures have been the site of finishing pig trials.

Gestating sow trials have been conducted in hoop structures at the Lauren Christian Swine Research Farm near Atlantic.

Research projects conducted by Hoop Group members are designed to answer questions about pig performance, environmental impacts, odor, the effects of bedding manure compost on soil quality, pork quality, production costs and returns, and producer opinions on hoop production.



Research results

The Iowa State University Hoop Group is recognized internationally for its leadership in deep-bedded hoop swine production. Some research findings:

- Hoop pigs grow faster during the summer than confinement pigs, although they grow less efficiently during the winter.
- On an annual basis, there are no major differences in feed intake, growth rate, feed efficiency and mortality between pigs in hoop structures and pigs in confinement systems.
- The annual overall cost of pork production for finishing pigs is similar between hoop and confinement systems.
- Hoop-raised pigs fight less and respond to stress better than confinement pigs.
- The health status of hoop-raised pigs is similar to confinement-raised pigs.
- A May 2001 survey showed there are more than 2,100 hoop structures in Iowa used for swine production by more than 770 producers.
- A survey of consumers in four communities suggests some consumers may be willing to pay more per package for pork chops produced under a system that improves air and water quality.
- A survey of 2,600 stakeholders in the Iowa swine industry showed a belief that hoop production may help solve a variety of problems facing the industry.
- Hoop structures offer a viable system of swine production and an alternative for producers interested in pursuing specialty or niche markets.

Ongoing research

While the Hoop Group members have completed several research projects and published their results, other projects continue. These include:

- Work related to housing gestating sows in bedded hoop barns.
- Developing feed intake, growth and feed efficiency curves for pigs in both hoops and confinement during winter and summer.
- The potential of Echinacea as a feed additive for nursery pigs.
- Feeding oats to finishing pigs in bedded hoop barns.
- Examining various pig densities to determine the optimum square-footage allowance per pig.
- An in-depth analysis of gas emissions and air quality of deep-bedded hoop barns.
- A case study with Niman Ranch Natural Pork Company.



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New research gets underway

The recent USDA grant has made it possible for the research team to undertake some new initiatives. These include:

- Developing a comprehensive manual of practical applications and best management practices of hoop barn use for swine production.
- Collecting information on uses of hoop structures for species other than swine and developing fact sheets.
- Developing a nationwide network of hoop barn demonstration sites and planning and conducting a national workshop.
- Conducting a systems analysis of hoop barns as a total pork production system.
- Developing humane, medically acceptable and economically feasible protocols for using hoop barns to raise disadvantaged and lightweight pigs.
- Studying the influence of finishing pigs in hoop barns on the color, texture and water-holding capacity of fresh pork and the interaction of genetic lines and production systems on pork quality traits.
- Surveying producers who are experienced with hoop barn swine production to learn their opinions on the animal welfare benefits and limitations of hoop structures.
- Studying the feeding of triticale to finishing pigs in bedded hoop barns.
- Evaluating winter farrowing in bedded facilities.

Outreach efforts

Hoop Group members haven't just done the research — they've also been heavily involved in sharing research results with the public. Eight field days and numerous tours of research sites have been held with more than 4,000 people in attendance.

The Leopold Center conducted a Swine System Options Conference in February 1996 with 230 people attending. Members of the research team assisted with a second such conference in February 1999, attended by more than 350 people.

Team members have been primary contributors to two hoop publications prepared by the Midwest Plan Service and one prepared for the Pork Industry Handbook. More than one-third of the articles appearing in a recent University of Minnesota Source Book on Alternatives for Pork Producers were articles prepared by the team. More than 50 extension articles, nine journal articles and four technical pamphlets also have been produced by group members.

Hoop Group members participate in the Pork Niche Market Working Group, a coalition of 30 organizations working on new niche markets for pork.

Publications detailing the Hoop Group's research, plus general information about this research initiative, is on the Web. The site is widely used, continually updated, and receives a stream of inquiries related to hoop barns that are responded to by team members. The Web site is: http://www.abe.iastate.edu/hoop_structures/

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