Principal Investigator

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Project Duration

2000 to 2003

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Keywords

Berkshire hogs, crates, farrow to finish, hogs, nest boxes, pens

Farrowing Crates vs. Pens vs. Nest **Boxes**

Project Summary

This project used an on-farm study to compare sow behavior and weaning success rates when farrowing was done in crates, pens, and nest boxes. The Stassens recorded information on pigs born alive, number crushed, and number weaned from sows in eight conventional crates, eight nest boxes, and eight pens. Starting with gilts, three to four farrowing cycles were observed by the end of the project.

Project Description

Steve Stassen and his family raise purebred Berkshire hogs for alternative markets and for direct marketing top end gilts to other growers for breeding stock. They raise corn and beans in rotation on 18 acres and have 35 acres of pasture. Their operation has evolved from crossbred Berkshires to a purebred herd and Steve has found a niche, and potential for increased profits, in marketing purebreds and naturally raised hogs. Steve is a qualified producer for Niman Ranch which provides a premium price for hogs sold to east and west coast markets

All of the Stassens are involved with the farm. Steve and his wife, Jane, have four children: Amber (18), Kimberly (15), Stephanie (13), and Matthew (11). The kids raise Jersey steers for direct marketing and sheep for 4-H projects. Steve also works at Glacial Plains Cooperative in Kerkhoven. He has raised hogs on his farm for more than ten years and grew up helping his father raise hogs. Steve is president of the county Pork Producers Board and serves on the boards of the American Berkshire Association and University of Minnesota's Swine Task Force.

> The Stassen kids are now experts at handling pigs in the straw-based system.

The Stassen farm is set up for environmentally-friendly hog production that emphasizes animal health and well-being. Their original setup included a farrowing house with eight crates. Steve wanted to add capacity with the flexibility to raise hogs for the alternative markets. He also feels that it is more economical to build nest boxes and pens rather than purchase crates and adapt a building to a conventional system.

Steve splits his 40 sow Berkshire herd into two groups with each group farrowing twice per year. He wants to make the operation efficient enough so everyone in his family can be involved.

Results

2000 Results

In the initial year of this project, the Stassens moved a used building to the farm for nest-box farrowing and built a hoop barn for farrowing pens and for use as a wean-to-finish facility. They compared the pens and nest boxes with conventional crate farrowing which continued in an existing barn.



During this first year, the Stassens reached some preliminary conclusions about each system.

Crates:

While crates required daily manure scraping, the danger of sows crushing little pigs (especially from birth to four days) was lowest (Table 1). Sows were least protective of their offspring in crates; it was easier for Steve and the Stassen children to handle the little pigs for notching, vaccinations, and other processing.

Nest boxes:

These stayed cleaner longer than crates, because sows tended to manure in one spot. Steve's sows were good nesters and the restricted space seemed to prevent crushing. Sows seemed to have a better appetite in boxes than in crates, maybe because they were more active. Steve observed that all sows in a group should farrow within seven to ten days so pigs stay with their mothers and sows don't steal from other litters.

Pens:

Like boxes, the pens stayed cleaner longer than crates because of sow manuring habits. Pens had the greatest danger of sows crushing little pigs when rolling over during farrowing. Steve thought guard rails might help this situation. It was relatively easy for Steve and the children to move through pens and do chores, but it was more difficult to separate little pigs from their mothers for processing in pens than in crates. As with boxes, appetites were better than for crated animals. Steve found that all sows in a group should be introduced to the pen system at the same time because adding one later created problems in the group.

The first year of their project, the Stassens learned to manage for "boss" sows in the more natural setting by making more room between pens. Boss sows want to be closer to feed and water, so extra room has to be made to accommodate timid sows and make sure they get enough to eat and drink. For more details about farrowing setup and first year results, see *Greenbook 2001* available at: www.mda.state.mn.us or by calling the Minnesota Department of Agriculture.

2001 Results

In 2001, the Stassens built off what they learned during the initial year of the project. To make the best use of available space, they switched farrowing pens from the hoop barn to the building they had moved onto the farm the previous year, and moved nest boxes from the used building to the hoop barn.

Another change the Stassens made in 2001 was position of the nest boxes. Steve and his family found that nest boxes worked best when the sow had access to both ends. Before, they had the boxes up against a wall. The sows didn't like to back out of boxes and sometimes stood on the sides, damaging the boxes. When the sows could climb into the boxes from either end, they seemed more comfortable and less stressed.

After observing "boss" sow behavior in 2000, Steve allowed plenty of room between the boxes in the hoop house, because when boxes were too close, the boss sows chased the gilts or young sows away.

The Stassens found advantages and drawbacks to the nest box system. One benefit was crush protection during farrowing that was better than pens and similar to crates (Table 1). In this more natural setting, sows could come and go as they wanted. Exercise seemed to boost their appetite and made for bigger pigs at weaning. Steve and his family also observed that the sows weaned out of the boxes and those weaned out of the pens came into heat better than the sows from crates.

Limiting factors to the nest box system were space and flexibility. Steve says you need plenty of room in the front and back for easy access, and room between the boxes prevents the sows from fighting. He also found that using the boxes in the hoop barn limited farrowing to a certain time of year. The boxes worked best when the temperature was 55 to 60°F or higher – from mid-April to the end of September. "If it gets any colder, the pigs scour and pile under the sow and more crushing results," Steve said.

Steve also made improvements to the pen system. One of his ideas at the end of 2000 was to add rails and bumper guards to the pens to encourage sows to settle down more quickly, like they did in the nest boxes. He added them this year and said they seemed to help.

After observing "boss" sow behavior in 2000 and the way the boss sows kept the more timid sows from food and water, Steve separated the sows in the pens with gates so that each sow had a pen for farrowing and a separate place for feed and water. With these changes, Steve and his family felt the pens worked fairly well.

Steve suspects his family's situation may be different from that of other producers because of the type of pigs they have chosen to raise for specialty markets. With the added value of their specialty market, Steve says they need to save as many pigs as they can. He says that the purebred pigs can be weaker and more susceptible at birth than crossbred animals with hybrid vigor.

2002 Results

The Stassens started this project in order to compare the performance of crates, pens, and nest boxes. By 2002, they had enough information to make some decisions for their operation (Table 1). At one point, Steve thought he might not continue to use the pens along with the farrowing crates, but changed his mind after he observed how well the sows and gilts adjusted and adapted to the system with bedding. He added bumpers to the pens to cut down on the risk of crushing. He also adjusted the breeding schedule so as not to farrow between mid-June and mid-August, because of the heat. The Stassens decided to keep using the crates and the pens, but to stop using the nest boxes, mostly because the boxes require so much more space.

Steve and his family noticed that the sows weaned from pens and nest boxes came into heat better than the sows weaned from the crates. They also observed that sows who have farrowed twice or more in the pens adapt very well and seem to be the best mothers. Even the biggest sows did well in the pen system. The Stassens learned that if they process the little pigs at less than four days of age, the sows don't get as excited and ear notching can occur right in the pen.

Steve said he and his kids have really enjoyed working with this project because the pigs react well to the systems they are using, and are easy to work with. All by themselves, the kids have weaned sows, gotten the crates or pens and boxes cleaned, then put sows in the cleaned systems. It seems the sows are easier to handle when using bedding and pens during gestation, lactation, nursery, and finishing.

Reflecting on what he and his family have learned during the three years of this project, Steve says that other farmers could experiment with remodeling older buildings to accommodate these farrowing systems. He recommends that additional research be done about how cross bred sows would do in these systems compared to the purbreds he uses. Since the sows are adjusting to being on bedding during gestation and farrowing, Steve says he plans to

continue using crates and pens. The nest boxes are nice, but can only be used seasonally, since they take a lot of space and require an insulated building in harsh weather.

Would he recommend this system to others? Steve said he would recommend the pen system to farmers who have a specialty market and raise a moderate number of pigs. "If someone had 100 sows, it would be a lot of work to do all by yourself," Steve said. "But the straw system is nice to work with because of the way the sows like straw and it has less odor and dust than conventional systems."

Steve says he has discussed his methods with a few neighbors who are considering conversion to a straw system. "I feel more people would be interested in his system, but we need two things," said Pete. "First, we need consumer demand for pork raised this way. The other thing we need are better prices for pigs raised in this system. You cannot raise any hog in any system for under \$30."

Management Tips

- 1. Avoid farrowing in the extreme heat of summer (mid-June to mid-August) because sows get too hot and lazy, and the risk of crushing little pigs increases.
- 2. Make sure temperature in the farrowing area is above 55°F. Otherwise, pigs are more likely to pile under the sow and be crushed.
- 3. When using pens, separate the farrowing area from feed and water. This method limits the power of "boss" sows.
- 4. If you process little pigs at less than four days of age, sows don't get excited and processing can occur right in the pens.
- 5. Compared to sows that farrow in crates, sows that farrow at least once in the pen system seem to come into heat better and to be better mothers.

Table 1. Comparison of Farrowing Methods 2000 to 2002									
Farrowing Method	Avg. No. Born			Avg. No. Alive			Avg. No. Weaned		
	2000	2001	2002	2000	2001	2002	2000	2001	2002
Crate	8.77	8.85	10.45	8.14	8.30	9.06	7.14	6.90	7.60
Pen	8.40	8.65	9.44	8.00	8.10	8.36	6.40	6.35	7.26
Nest box	8.00	8.40	9.45	8.00	8.00	8.66	7.00	6.60	7.36

Cooperators

Wayne Martin, Alternative Swine Production Systems Program, St. Paul, MN Jim Van Der Pol, Farmer, Kerhoven, MN

Project Location

One mile south of Kerkhoven on Swift Cty. 35. Go straight ahead on gravel road 1 mile south. The Stassen farm is on the east side of the road.

Other Resources

Alternative Swine Production Systems Program, University of Minnesota Extension, 385 Animal Science Building, 1988 Fitch Ave., St Paul, MN 55108, 612-625-6224.

Dwight Ault, Farmer, Austin, MN, 507-437-3085. Dwight has used a Swedish deep straw farrowing system since 1996.

Nolan Jungclaus, Farmer, Lake Lillian, MN, 320-664-4843. Nolan has used a Swedish deep straw farrowing system since 1995.

University of Minnesota Extension Service. 2001. Hogs your way: Choosing a hog production system in the Upper Midwest. Publication No. BU-7641-S. University of Minnesota Extension, St. Paul, MN, 612-625-8173 or 800-876-8636.

University of Minnesota Extension Service. 1999. Swine source book: Alternatives for pork producers. Publication No. PC-7289-S. University of Minnesota Extension, St. Paul, MN, 612-625-8173 or 800-876-8636.