MSU Pork Quarterly

Vol 4, No 4 "Information for an industry on the move!" 1999

COMPARISON OF FARMWELD® MODEL CF42SAS0 AND CRYSTAL SPRING™ MODEL WF3050 EARLY-WEAN FEEDERS

By: D. J. Barnes[2], J. A. Snedegar[3] and D.W. Rozeboom[4]

SUMMARY

Two wean-to-finish feeders were evaluated for their effect on pig growth performance and carcass characteristics. At weaning (10.7 ± 2.0 days of age), 196 pigs were randomly allocated to pens equipped with either a Farmweld® Model CF42SAS0 dry wean-to-finish feeder (FW) or a Crystal Spring™ Model WF3050 wet-dry wean-to-finish feeder (CS). Dry feed was fed in the CS feeder until pigs weighed about 60 lb., at which time the source of water to the feeder was turned-on and the nipple water source was removed from each CS pen. A similar dietary regimen was followed for both feeders throughout the study. The ADG, ADFI, and F:G of pigs reared on the FW and CS feeders were similar. Live animal scan data, as well as carcass kill-sheet data, indicated that use of the CS feeder increased subcutaneous fat deposition slightly. Overall, both feeders provided very satisfactory performance.

INTRODUCTION

Two-site, wean-to-finish production is a relatively new practice where pigs are weaned, moved away from the sow herd and placed in a building where they will be grown to market weight. Often, pigs remain in the same pen from entry until close-out. This practice eliminates the need for the nursery phase (and a separate nursery site) in the typical three-phase production system, leaving only the breeding herd and wean-to-finish sites in a two-phase production system.

The wean-to-finish system of production is more or less unproven. Whether there is an economic advantage of wean-to-finish production over three-phase production is debatable. Furthermore, we do not know what equipment and management practices work most efficiently for rearing of pigs over such a wide weight and age range.

Feeders in three-phase production have been previously designed uniquely for either the nursery (10 to 60 lb. weight range) or the grow-finish unit (60 to 300 lb. weight range). With wean-to-finish production, feeders have had to be redesigned. The same feeder must be specially-made so that young piglets can access feed, but also made to limit the amount of feed wastage when used by older, market-weight animals.

Farmweld® (Teutopolis, IL) and Gro Master, Inc. (Omaha, NE) are two manufacturers of recently engineered wean-to-finish feeders for use in commercial swine production facilities. Farmweld® feeders are named after the parent company and designed for dry feeds. The trade name of the feeder made by Gro Master, Inc. is Crystal Spring™, and it is a wet-dry feeder providing animals the opportunity to mix dry feed with water prior to consumption. In 1998-99, a research project was undertaken at Michigan State University's new swine research and teaching facility comparing the growth performance and carcass attributes of pigs reared using either the Farmweld® Model CF42SAS0 dry wean-to-finish feeder (FW) or a Crystal Spring™ Model WF3050 wet-dry wean-to-finish feeder (CS).

MATERIALS AND METHODS

One-hundred ninety-six, mixed sex, crossbred (DRU x (Yorkshire x Landrace), Yorkshire x Landrace, and purebred (Yorkshire) pigs were used. They were offspring of sows farrowed at the North MSU Swine Farm in August of 1998. Pigs were weaned into a wean-to-finish room at the newly constructed South MSU Swine Farm at 10.7 ± 2.0 days of age and 8.7 ± 1.3 lb. live weight. There were four different weaning groups over a 10-day period (8, 2, 2, and 2 pens per group). Within each weaning group, pigs were allotted by litter and sex to the two experimental treatments.

Treatments were two different types of wean-to-finish feeders: (FW) Farmweld® Model CF42SAS0 dry wean-to-finish feeder, or (CS) Crystal Spring™ Model WF3050 wet-dry wean-to-finish feeder. The FW and CS feeders provide 3 and 2 spaces per pen, respectively. Spaces in the single sided, fence-line, FW feeder were about 14 inches wide, 10 inches

(Continued on page 2)

What's inside...

This newsletter is edited by:
Tim Johnson
West Central Swine Agent
(616-846-8250) johnsoti@msue.msu.edu

(Comparison...continued from page 1)
from front lip to back hopper, with a 4-inch high front lip. The CS feeder was double-sided, with one space per side. There was a single nipple drinker positioned vertically, below the dry feed table. The dry feed table was adjustable to two different heights for nursery or grow-finish pigs. Both feeding spaces were 12 inches wide, 9 inches from to back, with a 1.25-inch high front lip. Seven feeders of each type were randomly placed in the 14 pens, with 3 or 4 feeders per either side of the center aisle. Feeders were placed along the north fence-line of each pen, approximately one-third of the pen length distance from the aisle.

Fourteen pigs were placed in each pen (8 x 16 ft). The wean-to-finish room contained 14 pens, a manure liquid-solid separation scrapper system immediately below the concrete slats, and an electronically controlled mechanical ventilation/ heating system. Temperature was maintained at 90 to 95°F during week one, 85 to 90°F during week two, 80 to 85°F during week three, 75 to 80°f during week four, 70 to 75°F during weeks five through seven, and 65 to 70°F thereafter. During weeks one to three, microenvironments were provided using one 250-Watt heat lamp and one rubber mat (4 x 8 ft) in the center of each pen. Heat lamps were removed after 7 to 10 days and rubber mats remained in pens until pigs reached approximately 25 lb..

No vaccines were administered to piglets pre- or post-weaning. At weaning, pigs in the first group were given .5 mL of penicillin. Vomiting was observed however, and pigs in the remaining groups were given only .25 mL of penicillin. No adverse affects were then observed with the smaller dosage.

In each pen, two nipple waterers were fixed to drip slowly throughout the first week. The water nipple in the trough of each CS feeder was turned-on once pigs reached about 60 lb. live weight. At the same time, fence-line nipple waterers were removed from CS pens, inserts in the CS feeders were removed (which allowed access to the lowered dry feed tray by nursery size pigs), and the dry feed trays in the CS feeders were raised to a grow-finish height.

Similar diets were fed to both treatments throughout the experiment, following a seven-phase program from weaning until market. Dietary percent lysine from start to finish were: 1.4, 1.3, 1.25, 1.15, 1.0, 0.9, and 0.7. Phases 1 and 2 were commercially available pelleted feeds. Phases 3 through 7 were Standard Swine Diets used at Michigan State University. Choice white grease was added at 3% of the diet in the last five phases. Three times daily during the first week, one pound of feed per pen was spread onto rubber mats to stimulate appetite.

All pigs were weighed individually at weaning, at the end of the nursery phase (7 weeks) and at market. Spot weights were taken when deciding when to change nursery rations. Feed additions (bags) were weighed and recorded daily by pen. The amount of feed remaining in feeders after the nursery and last finishing phases were also recorded.

Live-animal carcass measures (10^{th} rib back fat, last rib back-fat depth, and longissimus muscle area) were taken on all animals one to two days prior to slaughter using *Real Time Ultrasound* (Pie Medical, Maastricht, The Netherlands; A. Snedegar NSIF Certified Technician; Model 200SLC). Animals were shipped to slaughter on two different occasions. Hogs within each treatment group were tattooed similarly. An individual killsheet was obtained for each treatment on both shipping dates. The first shipment was made when 50% or more of a pen had reached 240 lb. (50 and 52 head for FW and CS, respectively). Only hogs weighing 240 lb. or greater were marketed. Twenty-one days later, all other pigs completed the study, with 39 and 38 head of FW and CS, respectively, shipped to slaughter. A total of 15 purebred gilts (7 and 8 from the CS and FW treatments, respectively) were retained at the farm for breeding purposes.

One pig was removed from the experiment due to an inguinal hernia. At that time, all animals in the pen and feed remaining in the feeder were weighed and recorded. Two other animals were treated with a single three-day series of antibiotic injections for illness and lameness. Both recovered completely.

RESULTS

In the first two weeks following weaning, pigs in every pen were observed sleeping or standing in feeders. This resulted in small amounts of nursery feed needing to be manually removed and discarded (crushed powdery feed, contamination with urine and feces). There was a tendency for the Phase III nursery diet to bridge in both feeders, but more so with the CS feeder. Loosening bridged feed added from five to fifteen minutes of time to chores every morning, depending on the number of feeders bridged. The problem persisted until pigs weighed about 25 to 30 lb.. During the remainder of the nursery phase, the CS feeder required closer management as well. Young pigs were able to push inserts in the CS feeder up, thereby wasting feed.

In the grow-finish phase, pigs on both feeders performed very well. The number of pigs per feeder space was less than those suggested by both manufacturers for commercial production. In some pens, only two of the three FW spaces were used.

Growth performance of the pigs did not differ between feeder types (Table 2). Pigs reached market weight at similar times, with 50 and 52 head removed on the first shipping date (FW and CS, respectively). Regardless of feeder type, average daily gains in this wean-to-finish study were excellent, about 5 to 10% greater than gains reported for pigs grown in commercial grow-finish units from 50 to 250 lb. (PigCHAMP, 1998). Conversely, daily feed usage and feed conversion numbers were slightly poorer than those reported for commercial units (PigCHAMP, 1998; M. Brumm personal communication). It is not clear why these results were observed. Genotype and

(Continued on page 3)

feed wastage (low stocking densities, incorrect feeder adjustments) may have been contributing factors. Feed wastage was not measured in this study. As mentioned previously, the manufacturer's of both feeders suggest that 20 to 25 pigs per pen maximizes competition among pigs, increases actual feed intakes and decreases feed wastage.

Carcass data collected suggested that feeder type may influence carcass composition. Live animal last-rib backfat depth was greater with the CS feeder (Table 2). Similar trends were apparent in 10thrib backfat depth (scanned) and average backfat depth (killsheet). However, no other carcass measure differed (P>.05).

CONCLUSIONS

The comparison of the dry and wet-dry wean-to-finish feeders in this study did not identify any major differences in pig performance. Different amounts of feeder management were required, particularly in the nursery phase. Weight gains from weaning to market were very acceptable for both feeders. Higher than normal feed usage and feed efficiencies with both feeders suggest that feeders may have been underutilized, and/or that pigs in this study may genetically have greater appetites and be poorer converters of feed. A greater feed intake in the grow-finish phase with the wet-dry feeder may have contributed to fatter carcasses, and should be considered in light of the genotypes, diets, management, and environment used herein.

[1]Trade Names are used to identify products. Endorsement is not intended, nor is any criticism implied of similar products not named. The authors wish to express their appreciation to Dr. Mike Brumm, University of Nebraska, for his review of this article.

[2]Undergraduate student; research project completed for credit in the Department of Animal Science
[3]Farm Manager
[4]Associate Professor/Extension Swine Professional

[5]Terminal sire line marketed by International Boar Semen, Eldora, Iowa, USA

Table 1. Comparison of pig performance reared using either a Crystal Spring™ or Farmweld® early-wean feeder

Item	Feeder Type		MSE[a]	P[b]
	Crystal Spring™	Farmweld®		
Number of pigs	Initial=98 Final=97	Initial=98 Final=98	-	-
Pig age, d				
Initial	10.6	10.8	3.90	.61
Final	163.4	163.5	93.0	.94
Pig weight, lb.				
Initial	8.7	8.7	1.81	.82
Final	262.4	260.1	240.7	.31
CV's pig weight, %[c]				
Initial	9.2	8.2	27.42	.71
At First Marketing	7.8	9.4	8.82	.33
Change in CV	-1.4	1.3	32.42	.40
Scan – *Real-Time Ultrasound*				
Loin-eye area, inch^2	6.5	6.6	0.47	.29
10th rib backfat depth, inch	0.77	0.74	0.026	.25
Last rib backfat depth, inch	0.67	0.62	0.021	.01
IBP® Killsheet Data[d]				
Number slaughtered	90	89	-	-
Average backfat depth, inch	0.86	0.79	-	-
Average loin depth, inch	2.53	2.56	-	-
Average % lean	53.4	54.0	-	-
Average carcass weight, lb.	183.4	189.2	-	-
Average % yield	74.2	78.0	-	-
Number of pens[e]	7	7	-	-
Average Daily Gain, lb.				
Nursery Phase	1.01	1.02	0.0039	.75
Grow-Finish Phase	2.06	2.01	0.0093	.30
Wean-to-Market	1.67	1.65	0.0038	.52
Average Daily Feed, lb.				
Nursery Phase	1.94	1.89	0.0278	.64
Grow-Finish Phase	6.43	6.07	0.1144	.07
Wean-to-Market	4.75	4.55	0.0495	.12
Feed:Gain				
Nursery Phase	1.92	1.86	0.023	.54
Grow-Finish Phase	3.12	3.03	0.018	.23
Wean-to-Market	2.85	2.76	0.014	.20

[a]Mean square error
[b]Probability > F Value
[c]Within feeder group
[d]No statistical analysis applied
[e]Fourteen pigs per pen initially

Y2K, IS YOUR FARM PREPARED?

By: Jerry May, Extension Swine Agent, Central Michigan

Early in the summer a local newspaper (Mt. Pleasant Morning Sun) contained an article detailing the effects of Y2K on small businesses. The author was concerned that small businesses would not be prepared for January 1, 2000. "Completing tasks like these (Y2K preparation) for a small business can be taxing on the companies personnel as well as its' bottom line." Pork production no matter what the facility size, is a small business, and all farm managers should assess how Y2K may affect their facilities.

Published viewpoints range from a "doomsday" philosophy to the "there really is no problem" approach. MSU Extension believes the issue lies somewhere in-between. Livestock farms because of their dependence on electricity, and automatic controls may need to be more concerned with the transition in to the year 2000. Temporary loss of electricity, or ventilation controls that don't function correctly, are two worries that producers may want to have contingency plans for. Because livestock farms are labor intensive, finding time to assess ventilation controls and other systems with microchips in them, for Y2K compatibility will be an inconvenience. But how each farm manager will assess Y2K's potential problems will help determine the farm's ability to smoothly transition into the next century.

Suppliers of utilities and fuels have been planning for Y2K, and feel as though they will transition into year 2000 with a minimum of problems. Consumers Energy for one has spent $22 million preparing for January 1st and publicly states that "As a result, we consider the likelihood of any significant impact to our customers to be remote." The National Rural Electric Cooperative Association expects that 100% of its members will be prepared by December 31st. Consumers Energy does plan to have extra employees on duty at the year's end, ready to respond to any minor glitches that may develop.

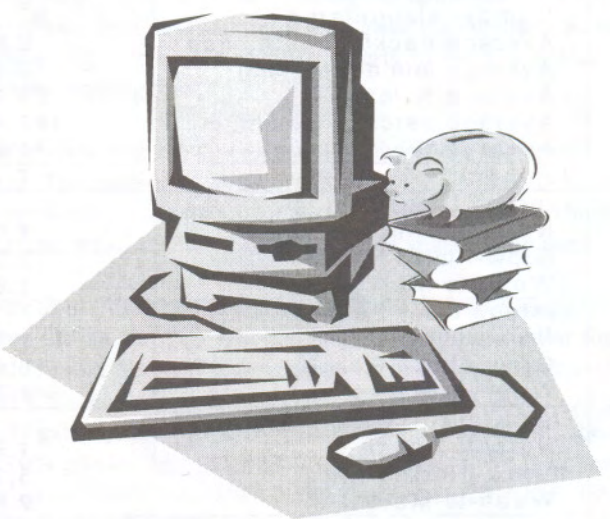
Y2K is a perverse problem in that it is hard to predict where or how it will effect your facility. Machinery that has controls that display the month and year, such as feed systems, ventilation controls, and alarm systems may be affected by Y2K. Any farm manager that has a control that gives a date reading should check with the manufacturer to be sure that the system is Y2K compliant. To date the agribusiness suppliers major concern is the control systems that provide the date in their readings, but there is one other area of concern. If a ventilation system or feed system for example is hooked to a personnel computer, the system may be Y2K compliant but if the computer or its software isn't the system itself will fail to function properly. This is an area of concern for agribusiness suppliers because the choice of computer is out of their control.

There is a wealth of information available on the web to assist you in planning for Y2K. MSU Extension has a web site that is dedicated to Y2K, that will also has connect you to other Y2K sites. You can access the MSU site at http://www.msue.msu.edu/y2k. Another site you may find useful is the Small Business Association site at http://www.sba.gov/y2k.

On November 18, 1999 Iowa State Universtiy, The U.S. Commerce Dept., The Iowa Manufacturing Extension Partnership and South Dakota State University Extension, will jointly sponsor "The Millennium Y2K Bug", a satellite broadcast for farmers, ranchers, and agribusiness, and other rural small business owners. The two hour long broadcast will cover farm, ranch and agribusiness concerns and risks. The broadcast is scheduled for 8:30 - 10:30 PM EST on the evening of the 18th. Anyone interested in the broadcast should contact their local extension office for more information.

Dan Rossman, Gratiot County Extension Director likes to compare Y2K to a predicated winter storm. How sever and exactly where the storm may hit is unpredictable. You may get "flurries" while your neighbor gets "blowing and drifting". What steps would you take to prepare for a winter storm, and then what action would you take when the storm hits? Would you check your alternator and be sure it would start and run? Would you schedule someone to walk your facilities at night to be sure they are weathering the storm? Would you check ventilation systems to be sure that they are continuing to work?

Remember that the best winter storms are the ones you are prepared for but then never hit.



WHERE TO CHECK YOUR COMPUTER SYSTEM FOR Y2K COMPLIANCE

By: Tim Johnson, West Central Swine Agent

The new millennium will soon be upon us. As the previous article by Jerry May alludes to, Y2K problems may crop up in the strangest places and be highly variable from one place to another. However, in most cases, older computer software that utilizes just two-digits to describe the year in a date field will have the majority of the problems. In most cases, we simply have to change the default for any date holder to a four-digit year format. For example, in the past we commonly used this format to describe the date (*mm/dd/yy*). To ensure Y2K compliance, we need to use the following format with a four-digit year (*mm/dd/yyyy*). It is also important to check any operating systems to make sure that when the date rolls over on January 1st that the computer doesn't think it is now 1900 instead of 2000. If you have a program that relies on dates to perform a calculation such as number of days worked for a payroll program, your employees will be very upset when the computer says that they owe you several years of back labor. To try and check each individual program can be overwhelming, especially if you know nothing about computer languages. To assist novices like myself, the computer industry has established several sites that can aid you in determining the compliance of your computer system. When checking your system it is important to check both the BIOS and any software you use. The BIOS is the program your computer needs when you first turn it on. If this program doesn't work, problems can develop very quickly. Other software such as word processing, an accounting package, a spreadsheet, may have problems in making calculations, but typically will not keep your computer from starting up. I have listed several sites below that I have utilized to test various computers on. Most of the sites are self-explanatory, just follow the directions.

Norton 2000 BIOS Test and Fix

<http://www2.pcworld.com/fileworld/file_description/0,1458,6097,00.html>

This utility lets you compare your PC against a database of known Year 2000 problems. It generates a bootable disk that tests your system and then provides a comprehensive report of its findings. The utility tests your system's BIOS, real-time and system clocks, and more.

Microsoft Product Analyzer

<http://computingcentral.msn.com/guide/year2000/msy2k/learningmore/analyzer.asp>

This web site does a comprehensive job of analyzing your Microsoft brand software. I have personally used this site to analyze my software for Y2K compliance. The program lists all installed Microsoft programs, compliance level and sites to get an update if needed. I would recommend this site if you are using Microsoft products.

McAfee Y2K Clinic

<http://www.mcafee.com/centers/y2k/>

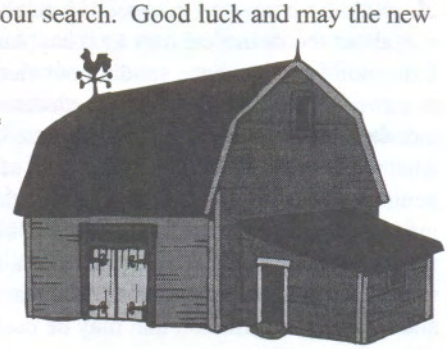
This site does a very comprehensive job while on-line to check both BIOS and software for compliance. The program runs while on-line and provides a report on where to go for more information if problems are detected. A recommended site for compliance checking.

ZD Net / PC Computing web site

<http://www.zdnet.com/vlabs/y2k/testy2k.html>

This site is a clearinghouse of many sites dealing with Y2K including the sites listed above. It is possible at this site to get sidetracked however, due to the many listings. If you are interested in other issues of Y2K, or want to read more articles about it in addition to checking your computer, then this site may be the place to go, but be prepared to spend some time searching for exactly what you need or want.

If you are interested in checking your computer at any of these sites and do not want to re-type the address, please send an e-mail to <johnsoti@msue.msu.edu>. I will send the addresses to you in a return message so that you can simply click on the hyper link and connect with the site. It can save you some frustration with typing in some of the small details that can often derail your search. Good luck and may the new millennium find your technology compliant and still working.



BACKFLOW DURING AI - IS IT A PROBLEM?

By: Dr. Ronald O. Bates, State Swine Specialist, Michigan State University

The swine industry had rapidly adopted artificial insemination over the last 6 years. Techniques for artificial insemination are straightforward and with practice most persons can attain a high skill level. However, artificial insemination techniques insert human intervention into all aspects of the breeding process. Thus human error can cause breakdowns in procedure to occur. To maintain high success rates, methodical implementation of proper techniques for each mating is critical. However, events occur throughout the mating process that are difficult to control. It is often questioned of what importance these can play in the success or failure of a mating. One of these events is seminal backflow during and after artificial insemination.

There was a recent report[1] that evaluated the impact of backflow during and after artificial insemination. In this experiment weaned sows were detected for heat every 8 hours after weaning. Once in heat, sows were evaluated ultrasonically every 4 hours to determine the time of ovulation. Once detected in heat sows were mated either immediately or after 24 hours with an 80-ml dose of semen that contained 1, 3 or 6 billion sperm. Mating was timed with impending ovulation so only one dose per mating was needed. Backflow was measured at three time intervals: 1) during mating, 2) for the first one-half hour after mating and 3) one-half hour to 2.5 hours after mating.

All sows exhibited backflow during the study. During insemination, 63% had some backflow while 98% had backflow during the first one-half hour after insemination and 98% had backflow from one-half hour to 2.5 hours after insemination. Backflow was extremely variable across sows; however, during insemination backflow averaged 7%. For the first one-half hour after insemination backflow averaged 31% and from .5 to 2.5 hours backflow averaged 36% of the total amount of fluid (semen plus extender) inseminated. This tells us that within 2.5 hours of insemination 74% of total fluid inseminated can "leak out" from the sow.

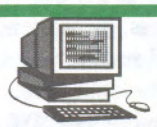
There were parity differences for backflow after insemination. Among parity 1 sows, 47% had backflow of more than 5% during insemination compared with 24% of parity 2 and greater sows having 5% or more backflow during insemination.

The study further evaluated the impact of backflow on fertilization rate. The amount of backflow was negatively related to fertilization rate when sows were inseminated with 1 billion sperm. Sows with low backflow had an 89% fertilization rate while those with high backflow had a 57% fertilization rate. When the insemination dose had a higher sperm concentration (3 or 6 billion sperm) no differences in fertilization rates occurred among sows that had either low or high backflow rates.

There are several items to learn from this study. The most important is that some backflow is a natural event during mating even within research studies that are carefully inseminating sows. However, it is critical to minimize backflow during insemination. This is especially true when using semen that has a lower sperm concentration or may have lower quality (e.g. due to age of the insemination dose). Even though younger sows did have higher backflow rates it did not hamper fertilization rates. This is probably due to strong uterine and other smooth muscle contractions that move sperm quickly after insemination from the uterine horns into the ova ducts for fertilization.

Within an AI program make an effort to minimize backflow during insemination to optimize fertilization rates of eggs, especially during insemination.

[1]Steverink, D.W.B., N.M. Soede, E.G. Bouwman and B. Kemb. 1998. Semen backflow after insemination and its effect on fertilization results in sows. Anim. Reprod. Sci. 54:109-119.



ELECTRONIC SWINE NEWS UPDATES

If you have a computer and have an e-mail address, you might be interested in receiving current news and information about the swine industry as it happens. The MSU Swine Extension team has been sending out electronic news updates to other producers and extension educators for about six months. Time is precious for every one of us, and time is what many of us needs to keep abreast of changes and happenings in the industry. The World Wide Web has allowed information to get out almost instantly, but finding it may be somewhat cumbersome. What the news updates try to do is summarize this information for you, search those various sites and compile information that may be useful. The news is sent out on an as needed basis and comes from a variety of resources. The electronic update is comprised of short articles in digest form to alert you to news in the industry, abstracts of research reports, and major market news and analysis. While not meant to replace your DTN, news updates do provide some of the other information that may be helpful to your operation. Best of all its FREE. Simply send an e-mail message to <johnsoti@msue.msu.edu> and include a short note that you would like to be added to our mailing list and you too can begin receiving regular updates. If you don't like the results, simply let me know and I can remove your name from the list.

"GREEN & WHITE" LEADS WINTER YOUTH ACTIVITIES

By: Brian Hines, South Central Swine Agent

A new activity is being created for youth to participate in over the winter months. This is an effort to get swine enthusiasts together in a learning atmosphere. This event does not require youth to bring in a hog to show, because the all-around winner is the individual with the highest cumulative score in 3 out of 4 events. The four events are Essay, Poster, Skill-a-thon, and Invitational Showmanship. A Quiz Bowl contest will also be held, but it will be its own division. All contests will be divided by age divisions and overall winners will be recognized.

The different events include a skillathon that has "hands on" applications of swine production. It covers feed, identification, body parts, meats, equipment used, breeds, and many other aspects of raising swine. The quiz bowl event will be a team of four individuals to test knowledge on the topics listed above as well as reproduction, industry, and the environment. The poster session will be a display made to promote or educate on any part of the swine industry. The other part is the essay contest where participants are asked to write an essay on a particular topic and then graded on accuracy and timeliness of information. Further details on all these contests are outlined in the Entry form brochure you can get from Carla McLachlan.

The final portion of the day's events is the Market swine show. This is a terminal event with all swine being required to weigh 220 and over with no upper weight limit. It is open to people of any age but must be a Michigan resident. All classes will be broke by weight and the top three in each class will be re-weighed and must weigh within 10lbs. of official entry weight. Class premiums will be prorated to number of entries received. An overall top five will receive extra monetary awards and prizes. The showmanship participants will be selected from placing classes. They will be asked to return at the completion of the market classes. The entry fee is $7/hd and a pen fee of $11. You can house approximately 3-4 pigs per pen. No PRV testing is required due to the show being a terminal show.

All participants in the June "Spartan Classic" will automatically receive entry forms. Every MSU Extension office and FFA Chapter will also receive entry information on this event. A complete set of rules and explanation of each contest is in the entry form brochure. The other competition is for scholarships to attend a two or four year college. This entails an application from Michigan Pork Producers Association, an interview, and a short speech on a pork-related topic. The interviews and speeches will be held at this event with winners announced Feb. 3 at the Michigan Pork Expo Banquet. Hope you can come and participate in this state wide youth event. Information and entry forms can be picked up from Carla McLachlan, Event Coordinator at (517) 432-5402, or your AOE area swine agent.

1998 SWINE BUSINESS SUMMARIES

As we all know, 1998 was a momentous year in the swine industry, a year that will undoubtedly go down in history. As we look back on 1998, many of you are interested in evaluating what did happen, and how things have changed. In many cases, benchmarking allows for these types of comparisons. How do I compare to others, and where are my costs different from the average? The Iowa State Swine Business Records Summary and the Michigan Swine Business Summary are good places to start. The following pages have summaries from each of the states respective analysis. The ISU report has the farrow to finish and wean to finish operations summarized. Other swine enterprise summaries are available from ISU at <http://www.extension.iastate.edu/ipic/>. The ISU summaries are sorted by margin over all costs (line 19 in the summary) into thirds, and the average is also listed. The MSU summary is a little different in that the farms are ranked on rate of return on farm assets. A very different method of ranking than the Iowa summary. The MSU summary is available in its entirety at <http://www.msu.edu/user/nott>. The Iowa summary just reports the swine side of the farm enterprise, while MSU puts farms with more than 50% of farm sales from a particular enterprise into that respective summary group. Therefore, for this summary, farms had more than 50% of the farm sales from hogs. So, the MSU summary is a whole farm analysis, while ISU is swine enterprise only. The ISU summary gives more detail about specific swine production targets and the economics of each. The MSU summary looks at the bigger picture and gives you the bottom line for the farm as a whole. It is not an apples to apples comparison between the two states reports. Each gives you a little different information about the swine industry. The summaries are similar in that both show that 1998 was a poor year even for the best of farms, and that there is a tremendous difference between the top group in each summary and the bottom group, no matter how you slice it. If you would like to have some detailed analysis done on your farm, please contact your Extension Swine agent or Regional Farm Management Agent. Extension personnel with swine experience are listed on the back cover of this newsletter, contact one of them to set up an appointment. All consultations are confidential and are done at no cost to you.

1998 ISU Swine Business Record

Farrow to Finish State Summary

Total Number of Operations (85)

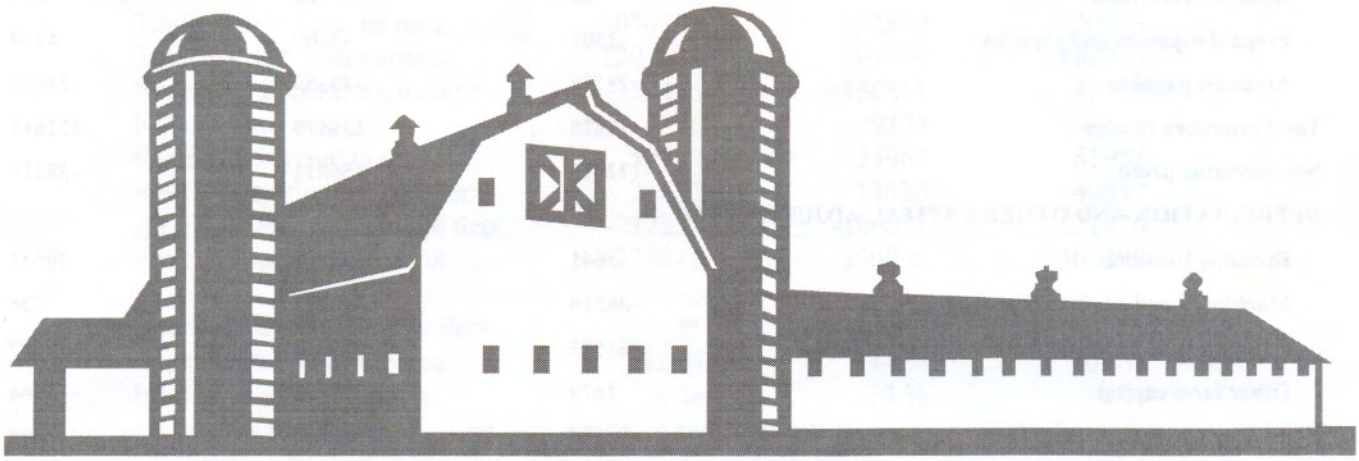
Sorted by Margin Over All Costs Including Inventory	Top 10%	Top 1/3	Bottom 1/3	Average
1 Return to Capital, Unpaid Labor and Management, $	$ 11,387	$ (3,601)	$ (60,912)	$ (37,872)
2 Net Profit and Return to Management this Period, $	$ (11,276)	$ (35,454)	$ (97,469)	$ (73,857)
3 Return per Hour for All Hours of Labor and Management, $/hr	$ 1.53	$ (3.01)	$ (23.00)	$ (21.44)
4 Percent Return on Capital, %	-4.50%	-13.30%	-40.80%	-27.70%
7 Average Price per Cwt. of Market Hogs, $	$ 34.07	$ 33.65	$ 32.93	$ 33.43
8 Average Price per Cwt. of Cull Breeding Stock Sold, $	$ 19.80	$ 22.12	$ 20.57	$ 21.70
9 Average Price per Cwt. of All Mkt. Animals Sold Excluding Newly Weaned Pigs, $	$ 33.58	$ 33.26	$ 32.52	$ 32.92
10 Feed Cost per Cwt. of Pork Produced, $	$ 19.93	$ 20.92	$ 24.26	$ 22.42
11 Other Oper. Cost (except Hired Labor) per Cwt of Pork Produced, $	$ 4.15	$ 4.68	$ 5.99	$ 5.55
12 Utilities, Fuel Elec. & Telephone per Cwt., $	$ 1.00	$ 1.17	$ 1.62	$ 1.39
13 Veterinary Services & Medicine per Cwt., $	$ 1.06	$ 1.23	$ 1.50	$ 1.32
14 Depreciation, Taxes & Ins. Costs per Cwt. of Pork Produced, $	$ 1.39	$ 2.18	$ 3.08	$ 2.62
15 Capital Charge on Fixed Capital per Cwt. of Pork Produced, $	$ 0.73	$ 1.01	$ 1.79	$ 1.42
16 Capital Charge on Operating Capital per Cwt. of Pork Produced, $	$ 0.94	$ 0.92	$ 1.16	$ 1.04
17 Value of Labor (All) per Cwt. of Pork Produced, $	$ 3.06	$ 3.85	$ 5.46	$ 4.76
18 Total Cost per Cwt. of Pork Produced, $	$ 30.04	$ 33.21	$ 41.66	$ 37.46
19 Margin Over All Costs per Cwt. of Pork Sold, not including inventory, $	$ 4.97	$ 1.22	$ (9.15)	$ (4.06)
20 Margin Over All Costs per Cwt. of Pork Produced, including inventory, $	$ (2.05)	$ (4.84)	$ (17.64)	$ (11.05)
21 Margin Over All Costs per Head Sold, including inventory, $	$ (5.61)	$ (12.58)	$ (44.59)	$ (28.13)
22 Fixed Costs per period per Female Maintained, $	$ 77	$ 126	$ 173	$ 156
23 Fixed Costs per period per Crate Maintained, $	$ 346	$ 668	$ 953	$ 808
24 Fixed Costs per Pig Weaned, $	$ 5.01	$ 7.38	$ 11.12	$ 9.32
25 Net Profit per period per Female Maintained, $	$ (87)	$ (201)	$ (600)	$ (418)
26 Net Profit per period per Crate Maintained, $	$ (352)	$ (972)	$ (3,096)	$ (2,085)
27 Net Profit per Pig Marketed, $	$ (5.80)	$ (13.04)	$ (46.65)	$ (29.27)
32 Total No. of Market Hogs Sold this Period	2613	2626	2149	2589
33 Average Wt. of Market Hogs Sold, Lb.	258	256	251	254
34 Pig Death Loss, Birth to Weaning (% of No. Farrowed Live)	8.1%	11.1%	13.1%	12.40%
35 Pig Death Loss, Weaning to Feeder (% of No. Weaned)	2.0%	2.3%	2.8%	2.71%
36 Pig Death Loss, Feeder to Market (% of No. of Feeders Started)	5.6%	5.4%	6.3%	6.10%
37 Breeding Stock Death Loss, (% of No. Maintained)	3.2%	4.7%	5.7%	5.30%
38 Average Breeding Female Inventory, No. of Head	151	177	166	184
39 No. of Litters Weaned per Female per Year	1.82	1.93	1.77	1.91
40 No. of Pigs Weaned per Litter	8.87	8.81	8.51	8.69
41 No. of Pigs Weaned per Female per Year	16.11	16.99	15.22	16.60
42 No. of Litters Weaned per Crate per Year	8.62	9.81	9.27	9.65
43 No. of Pigs Weaned per Crate per Year	75.51	86.93	79.54	84.38
44 Total Pounds of Feed per Cwt. of Pork Produced, Lb.	347	341	363	351
45 Average Cost of Diets per Cwt., $	$ 5.77	$ 6.17	$ 6.70	$ 6.41
46 Hours of Labor per Cwt. of Pork Produced, Hours	0.38	0.44	0.58	0.51
47 Hours of Labor per Female Maintained per Year, Hours	16.85	18.47	20.47	20.21
48 Hours of Labor per Litter Weaned, Hours	9.38	9.59	11.64	10.50
49 Cost of Feed Additives & Drugs/Cwt. of Pork Produced, $	0.90	1.03	1.30	1.58

1998 ISU Swine Business Record

Wean to Finish State Summary

Total Number of Operations (60)

		AVERAGE
1	Average Price per Cwt. of Market Hogs, $	$ 33.29
2	Feed Cost per Cwt. of Pork Produced, $	$ 20.30
3	Other Oper. Cost (except Hired Labor)/Cwt. Pork Produced,$	$ 3.90
4	Utilities, Fuel Elec. & Telephone/Cwt., $	$ 0.94
5	Veterinary Services & Medicine per Cwt.,	$ 0.76
6	Depreciation, Taxes & Ins. Costs per Cwt. of Pork Produced, $	$ 1.89
7	Capital Charge on Fixed Capital/Cwt. of Pork Produced, $	$ 1.07
8	Capital Charge on Operating Capital/Cwt. of Pork Produced, $	$ 1.20
9	Value of Labor (All) per Cwt. of Pork Produced, $	$ 3.55
10	Total Cost per Cwt. of Pork Produced, $	$ 31.16
11	Total No. of Market Hogs Sold this Period	2783
12	Average Wt. of Market Hogs Sold, lb	254
13	Pig Death Loss, Weaning to Feeder (% of No. Weaned)	3.16%
14	Pig Death Loss, Feeder to Market (% of No. of Feeders Started)	4.04%
15	Total Pounds of Feed per Cwt. of Pork Produced, lb	316
16	Average Cost of Diets per Cwt. ,$	$ 6.43
17	Hours of Labor per Cwt. of Pork Produced, Hours	0.27
18	Cost of Feed Additives & Drugs/Cwt. of Pork Produced, $	$ 1.74

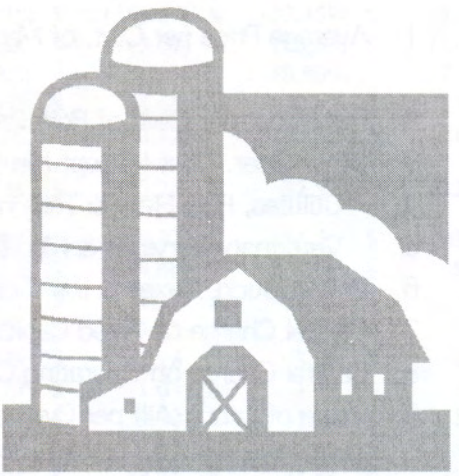


Livestock and Crop Production Summaries, 1998

Swine Farms in Michigan

(Farms sorted by Rate of Return on Farm Assets)

	Average of All Farms)))))))
Hogs, Farrow to Finish	
Number of Farms	12
Average number of sows	851.3
Litters farrowed	1607
Litters per sow	1.89
Litters per crate	13.49
Pigs born per litter	10.45
Pigs weaned per litter	8.97
Pigs weaned per sow	16.01
Number sold per litter	6.36
Avg lbs. / Raised Hog sold	260
Avg. price / cwt	34.42



	Average of All Farms)))))))	Average of Low 43%)))))))	Average of High 43%)))))))
Number of Farms	14	6	6
Gross Cash Farm Income	1074417	459499	1661175
Total cash expense	1175605	476733	1851099
Net cash farm income	-101187	-17234	-189923
INVENTORY CHANGES			
Crops and feed	-15253	-18936	-20720
Market livestock	15719	-86755	189654
Accounts receivable	40	-920	843
Prepaid expenses and supplies	-3507	-3609	4860
Accounts payable	-28228	-29359	-23024
Total inventory change	-31228	-139577	151613
Net operating profit	-132415	-156811	-38310
DEPRECIATION AND OTHER CAPITAL ADJUSTMENTS			
Breeding livestock	3641	-22869	30523
Machinery and equipment	-38510	-16221	-50226
Buildings and improvements	-61575	-21448	-99657
Other farm capital	1679	21	3664
Total depr. And other capital adj	-94765	-60517	-115695
Net farm income	-227180	-217329	-154006

PROFITABILITY AND LIQUIDITY ANALYSIS, 1998

Swine Farms in Michigan

(Farms sorted by Rate of Return on Farm Assets)

	Avg. Of All Farms	Avg. Of Low 43%	Avg.Of High 43%	Avg. Of All Farms	Avg. Of Low 43%	Avg. Of High 43%
	)))))))))	)))))))))	)))))))))	)))))))))	)))))))))	)))))))))
Number of Farms	14	6	6	14	6	6
PROFITABILITY	---------- Cost ----------			---------- Market ----------		
Net farm income	-227180	-217329	-154006	-165223	-150650	-102847
Labor & mgmt earnings	-251547	-223114	-195740	-225095	-185766	-181566
Rate of return on assets	-12.5 %	-31.0 %	-4.4 %	-5.8 %	-11.6 %	-1.5 %
Rate of return on equity	-70.5 %	-479.4 %	-29.4 %	-20.6 %	-32.1 %	-11.2 %
Operating profit margin	-33.0 %	-260.7 %	-8.5 %	-22.0 %	-177.5 %	-3.9 %
Asset turnover rate	37.8 %	11.9 %	51.0 %	26.4 %	6.5 %	39.0 %
Interest on farm net worth	24367	5786	41735	59872	35116	78719
Farm interest expense	81051	45657	104768	81051	45657	104768
Value of operator lbr & mgmt.	40369	37435	44739	40369	37435	44739
Return on farm assets	-186498	-209107	-93977	-124541	-142428	-42818
Average farm assets	149627	674672	2159495	2137923	1230750	2825114
Return on farm equity	-267549	-254764	-198744	-205592	-188085	-147586
Average farm equity	379486	53147	676717	997862	585271	1311981
Value of farm production	565348	80222	1100652	565348	80222	1100652

	Average Of All Farms	Average Of Low 43%	Average Of High 43%
	)))))))))	)))))))))	)))))))))
Number of Farms	14	6	6
LIQUIDITY (Cash)			
Net cash farm income	-101187	-17234	-189923
Net nonfarm income	4576	9323	-1524
Family living and taxes	50719	24969	81983
Real estate principal payments	33672	13620	49652
Cash available for interm. debt	-181003	-46500	-323083
Average intermediate debt	233817	130000	300089
Years to turnover interm. debt	**	**	**
Expense as a % of income	109 %	104 %	111 %
Interest as a % of income	7 %	9 %	6 %
LIQUIDITY (Accrual)			
Total accrual farm income	1074923	352889	1830953
Total accrual farm expense	1207339	509700	1869263
Net accrual operating income	-132415	-156811	-38310
Net nonfarm income	4576	9323	-1524
Family living and taxes	50719	24969	81983
Real estate principal payments	33672	13620	49652
Available for intermediate debt	-212231	-186077	-171470
Average intermediate debt	233817	130000	300089
Years to turnover interm. debt	**	**	**
Expense as a % of income	112 %	144 %	102 %
Interest as a % of income	8 %	13 %	6 %

** Income insufficient to meet debt servicing requirements

MICHIGAN STATE UNIVERSITY EXTENSION

All comments and suggestions should be directed to:

1. **Jerry May, North Central Swine Agent**
   Farm Records, Production Systems
   (517) 875-5233

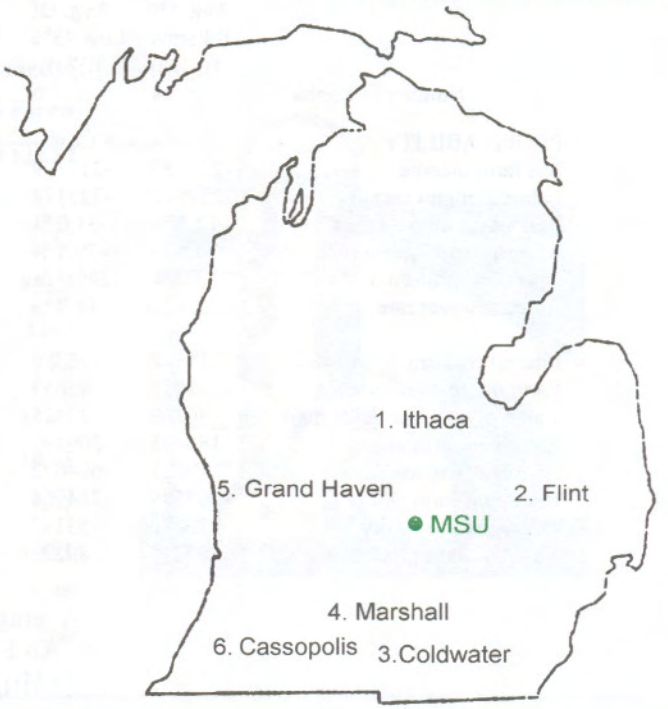
2. **Joe Kelpinski, Northeast Swine Agent**
   Environmental Mgt., Finishing Mgt.
   (810) 244-8517

3. **Brian Hines, South Central Swine Agent**
   Genetic Evaluation, AI, Facilities
   (517) 279-4311

4. **Roger Betz, Southwest District Farm Mgt.**
   Finance, Cash Flow, Business Analysis
   (616) 781-0784

5. **Tim Johnson, West Central Swine Agent**
   Production Records, Software, Confinement
   (616) 846-8250

6. **Suzanne Hoover, Southwest Swine Agent**
   Nutrition, Nursery Management, AI and Boar collection
   (616) 445-8661



"GREEN and WHITE"

Swine Youth Education Fair

AND

Open Market Hog Show
January 29, 2000
MSU Pavilion

Youth Contests will include:
Quiz Bowl, Swine Skillathon, Essay and
Educational or Promotional Poster contests
(You do not have to have a hog at the show to participate)

Market Hog Show is open to all Michigan residents and will include a youth invitational showmanship contest

Entry deadline is January 13, 2000

Entry forms will be mailed after November 15, 1999 to all FFA Chapters, County 4-H Offices, and summer show "Spartan Classic" participants

For Information:

Event Coordinator
Carla McLachlan
517-432-5402
(entry forms)

Co-Chairperson
Mary Kelpinski
517-699-2145
MPPA

Co-Chairperson
Ken Geuns
517-353-2924
MSU

SPONSORED BY:
Michigan Pork Producers Association
Michigan State University Swine Team