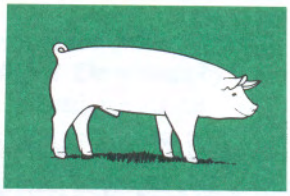
MSU Pork Quarterly



"Information for an industry on the move!"

September 1996 Volume 1.3.96

Site Selection - The Critical Decision

By: Ron Hayden, District Livestock Agent, Southwest

Whether you're investing $175,000 for a 1000 head finishing barn or $1,100,000 for a 1300 sow farrow to wean facility, probably the most critical decision after financial analysis is: "Where do I build?". Site selection has as much effect on the long term profitability and viability of any unit as any other factor. Last issue, I wrote on land use, and site selection naturally follows. The urban consumer of our product is increasingly moving to the country-side for the rural setting, but in many instances will not accept the conditions that sometimes occur "in the country".

Some factors to consider when selecting a building site might be (not in order):

- New facility use
- Existing facilities - yours and others
- Pig and people flow
- Herd health status and goals
- Environmental management
  - ⇒ Nutrient storage
  - ⇒ Nutrient utilization
  - ⇒ Soil types
  - ⇒ Odor control, predominant wind direction
- Local zoning ordinance regulation
- Distance and direction to neighbors and future neighbors
- State and Federal regulations
- Available infrastructure
- Expansion opportunities
- Other...

The current use and location of your and other producer facilities should be weighed carefully when selecting a new construction location. Depending on your new facility use; farrow to wean, farrow to feeder, nursery, or finishing, will determine proper direction and distance requirements to help ensure biosecurity between units. Herd health goals, pig flow and movement, and employee flow will also need to be analyzed as you weigh-out the pros and cons of separate site verses connected units.

Environmental management is another key factor to consider. Pit storage or lagoon, tanker with knife injection or traveler gun irrigation, sandy loam or clay silt, corn ground or sugar beets. The real scoop here is ODOR CONTROL! Distance, direction, topography and crop acres from the new building to the nearest neighbor, ag or not ag, is critical. Typically, a site to the east of current residents or a site to the west with plenty of woods (conifers and deciduous) and crops between the building and a resistance is best. Try to also consider to meet the acreage requirement for application of manure nutrients according to the MDA/MDNR Right to Farm Guidelines, in case a complaint does occur.

Local zoning may require building permits, wiring and construction codes, set back distances, etc., and proper approval and inspection may be needed during project construction. State and Federal regulations under the Clean Air and Water Act, the Coastal Zone Management Act, and other EPA or MDNR rules should be reviewed.

Lastly, existing infrastructure should be evaluated. Road and driveway conditions for feed delivery, service, and pig movement vehicles year-round; existing water, electric, gas and other utilities; and availability of expansion opportunities, facility transition to another segment and location salability must also be considered.

With all this in mind, can you find a spot in Michigan? Yes, but carefully!

What's Inside...

This newsletter is edited by:

Ron Hayden, District Livestock Agent, Southwest Michigan

MSU TELFARM BUSINESS INFORMATION SYSTEM

By: Roger Betz & Gerry Schwab

The MSU Telfarm program is designed to provide a comprehensive financial information system and decision aid for your farm business. The system has two main goals. First is to provide very reliable and accurate income tax reporting information, including the detailed depreciation schedule. The strong second goal is to utilize the income tax data, in conjunction with additional inventory and crop/livestock production data, to generate confidential meaningful business analysis and decision making information. Confidentiality is of very high importance and the stripped identification information is used to generated type of farm reports for Michigan agriculture. The MSU Telfarm program has made some very significant changes to increase user options and enhance reliability and usability of business analysis information. Telfarm now provides three basic options within the Accounting system and two levels of Payroll enrollment.

All of the Telfarm Accounting system options consist of individual technical support, December income tax estimate, January balance sheet development, whole farm accrual income statements and business analysis. New in 1996, the confidential business analysis information reports are generated with assistance of Extension staff by utilizing the popular FINPACK software developed at the University of Minnesota. During spring and summer individual farm visits are offered through Extension staff to assist in farm management areas including comparative analysis, business expansions, estate planning and other farm management areas. Cooperators with the system use either the Microtel Accountant software or the paper version for people who don't have a desire for computers.

Microtel Accountant and Payroll software programs are an enhancement to the Telfarm system. They are designed to be used by farms enrolled in Telfarm and work together to provide your farm with a complete record keeping and/or payroll system. Microtel is not the usual "off-the-shelf" software. It is very friendly to the user with substantial available support if desired. The customization that is done at the Campus-based Telfarm Center is necessary for the efficient operation of the program for your type of business and computer hardware. You may choose to have the software sent to you after customization so that you may install it yourself and use the instruction manual, or you may schedule an on-farm installation and training. Telfarm staff also offer update workshops for current Microtel clients in November at no charge.

Under the computer Microtel Accountant option of Telfarm, there are two levels. With level one you do not send accounting records to campus. All accounting records are maintained on the farm with only year end information summarized through the FINPACK program. Level two has records sent to campus for off-site backup, error checking and verification, enhanced cash flow and enterprise reports, and income tax reports. The records you send into the Telfarm center, on a floppy disk file, serve as an additional backup in case of an error or disaster that may destroy your records at your farm. We also check your records for common errors or missing information as you send them in throughout the year, so any necessary corrections can be made immediately. The staff at the Telfarm Center, specialists of the Agricultural Economics Department and the field staff of Michigan State University Extension are all available to assist you. Under both levels income tax depreciation schedules are provided.

Microtel Payroll is designed specifically for Michigan growers. The software automatically calculates state and federal withholdings, automatic deductions, links to Microtel Accountant, cuts payroll checks, produces MESC reports, prints W2s, uses piece rates and has many other features. It can separate workers for different Workers Comp. insurance rates. There are also two levels of Payroll enrollment with records either "not sent" or "sent" to campus for editing, back up and specific enhanced reports.

Microtel Check Writer is a program that enhances Microtel Accountant to print checks and minimize total "bookkeeping" time. You can also efficiently monitor unpaid bills.

The investment cost of Microtel Accountant, Payroll or Check writer is a one-time payment that licenses you to use the customized software permanently. Accountant is $320 with a $175 installation fee. Payroll is $320 with the $175 installation fee (installation fees are paid only once for both programs) and Check Writer is a $100 one time fee.

One year of enrollment in Telfarm is required to purchase Microtel software programs. Level one is $ 275 per year and level two is $475. The investment fee for the paper system depends on the size of your business. If you use only the Payroll program from Telfarm, the annual fee is either 175 or $275 depending on the level desired. Considering the comprehensiveness and usability of the information and the expert assistance provided, this is a very high value.

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MSU Telfarm Business Information System

Any software will need upgrading as laws change and as demand for improved versions continues. Microtel is unique compared to most other software, because providing upgrades and additional supports are included in the purchase price and the Telfarm yearly enrollment. You will be automatically updated and supported with new versions of Microtel, as long as you continue to renew your yearly enrollment in Telfarm.

The Telfarm system has proven to be very effective for farmers who want to gain a better understanding of their business and have the information to communicate effectively to other family members, lenders, and themselves. There are more than 600 Telfarm participants in Michigan with 380 of them on Microtel. The Microtel Accountant, Check writer and Payroll programs are easy to use, detailed and flexible. A Microtel Accountant Demonstration Disk is available at no charge.

Please consider enrolling in the Telfarm Management Information System. You will find the system of very high value if you use the capabilities. People start even in December for the current year. If you have any specific questions regarding the program's capabilities and enrollment call the Telfarm office at (517) 355-4700 or your local extension office.

Your Image Says It All

By: Dale Ricker, North Central Swine Agent

Your image is one of your most important business assets. Your professionalism - the way you conduct yourself and your business - is key to the image you project.

Have you ever heard the saying, "You will never get a second chance to make a first impression?" Yes, that's true in the sense that there is only one ***first*** impression! These opening statements apply to professions in all walks of life. The insurance person you do business with, the gas station on the corner, the grocery, etc. have all created an image that you associate with them. Whether you realize it or not, you have created an image of yourself and your business, which in turn reflects on the image of the swine industry. The image of the Swine Industry has an economic effect we don't often consider. The National Pork Producers Council uses check-off funds in a variety of ways to create a better image for pork through advertising, in store promotions, etc. Most people would agree that tremendous progress has been made in improving the image of pork, thus increasing consumption and creating good demand both in foreign and domestic sales. Are you doing your part to create a positive image for your swine operation and for the swine industry? The first impression that the consumer has of pork is when they drive by a hog farm. When people drive by your hog operation, what do you suppose their first impression of your place would be? What is there impression of the swine industry as it relates to your operation? Do passers by see a neatly kept landscape, grass mowed, weeds cut from around buildings and fences, and machinery and equipment in its proper place? Or do they see the junk pile and old tires stacked beside the barn, the head high weeds between the grain bin and the finisher barn, etc. I'm sure you get the idea.

Along these same lines, the Swine Extension Team, is in the process of changing the name of our newsletter to reflect a little better image of the industry. "MSU Pork Quarterly" will be the new name for our newsletter which will replace the "Snare".

At this years World Pork Expo one of the seminar topics was "50 management tips in 50 minutes." Gary Maas was the featured speaker for this topic and it dealt with employee management. I thought it was interesting that two of his top ten management tips related to image of the employer, his swine operation and the over all importance of image in retaining employees. Gary stated that employees prefer to work for a reputable producer that runs his operation as a business, treats employees fairly, and has the respect of his neighbors.

I recently attended a swine show at a local fair. The pigs were shown in a show ring outside the barn. The problem was a 5 inch rain made the show ring a mud hole. This show did not create a positive image for our industry. Think about your county shows, and make any changes necessary to create a more positive image for pork.

On a more positive note, I recently attended the Rural Urban Day festivities in Gratiot County. It was held at a local golf course and large tents were set up to accommodate the 2800 plus Rural and Urban folks that attended. This was an excellent opportunity for the agricultural community to socialize and create a very positive image of ag for our urban neighbors. It was a great event and I was proud of the many people who helped make it a success.

It is not necessary that all hog farms be "show places", but a lot can be done for the aesthetics of a farmstead with a good weed wacker and a little elbow grease. It's not to late to make some changes that will give you, your operation, and the swine industry a better image. If you have concerns you would like to discuss, contact your area swine agent.

Artificial Insemination ... A Revised Comparison

By: Tim Johnson, West Central Extension Swine Agent

In the previous issue of the MSU Swine Extension Newsletter, I reviewed the costs associated with various mating scenarios that could be utilized on your operation. Due to some errors on my part and other questions concerning the details that were included in the costs, I will present a revised cost comparison.

Four different mating schemes will be looked at on a cost per sow per year basis and on a cost per service basis. The first place to start is the assumptions that went into the analysis to make the comparison possible. The following boar purchase costs and sow:boar ratios were used.

Purchase Costs for Boars:		Sow:Boar Ratios
Natural Service Boars	$750	17:1
On-farm Collection Boars	$1500	105:1
Boar Stud Collection Boars	$2500	250:1

The cost of boar maintenance was valued at $0.50 per day. The sow herd has a productivity level of 2.1 litters per sow per year. If your herd is more productive than this, simply take numbers in the cost per sow per year column and divide it by the value for your farm to get your own comparison. In this scenario, we assumed sows were mated twice each service, labor costs are $10 per hour, interest rates are 10%, taxes are 40 mils, repairs are 2% of the boar facility cost, and insurance is 0.5% of the boar facility and/or lab value. The differences in the sow:boar ratios for the various systems are due to the increased efficiencies that are gained as semen handling and technology are added to the mix.

Table 1 presents the costs associated with utilizing natural service . The cost of the boar facility was set equal to one sow space. In this case $500 per sow space with a 15 year life expectancy. Boar ownership cost takes into consideration initial value and salvage value over the expected useful life for the 17 sows that one boar is expected to service. The two parts of this table represent the comparison of using boars either two or three years before replacement.

Table 1.

Natural Service Costs

Two year boar turnover	Costs per sow per year	Cost per service
Boar maintenance	$10.74	$5.11
Boar ownership cost	$18.61	$8.86
Boar facility cost	$1.96	$0.93
Boar interest cost	$2.55	$1.21
Labor (23 min/mating)	$16.10	$7.67
Taxes	$0.59	$0.28
Repairs	$0.59	$0.28
Insurance	$0.15	$0.07
Total	$51.29	$24.41
Three year boar turnover		
Boar maintenance	$10.74	$5.11
Boar ownership cost	$12.41	$5.91
Boar facility cost	$1.96	$0.93
Boar interest cost	$1.70	$0.81
Labor (23 min/mating)	$16.10	$7.67
Taxes	$0.59	$0.28
Repairs	$0.59	$0.28
Insurance	$0.15	$0.07
Total	$44.24	$21.06

In the next scenario, Table 2 presents the costs associated with purchasing semen. The costs here are largely dependent on the purchased semen cost. In this instance $10 per dose was used. Many times volume discounts can be obtained that will make this alternative look much more appealing. If you purchased semen on a regular basis and in volume you may be able to get the costs per service under $20. In that case, buying semen is competitive with natural service costs. What does not factor in is the expected genetic advantage one might get from using younger, more genetically current boars with semen purchase. If you utilize natural service, you would only have one-third to one-half of your boars being current in relation to genetic selection.

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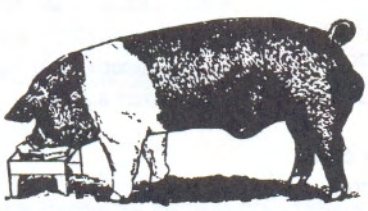

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Artificial Insemination

Table 2.

Buying Semen Breeding Cost

	Cost per sow per year	Cost per service
Semen ($10/dose)	$42.00	$20.00
Insemination equipment	$1.87	$0.89
Labor (14 min/mate)	$9.80	$4.67
Total	$53.67	$25.56

Table 3.

On Farm Collection Breeding Costs

	Cost per sow per year	Cost per service
Boar maintenance	$1.73	$0.82
Boar ownership cost	$6.58	$3.13
Boar facility cost	$0.32	$0.15
Boar interest cost	$0.77	$0.37
Lab equipment cost	$4.02	$1.91
Lab equipment interest	$0.40	$0.19
Lab facility cost	$0.40	$0.19
Lab facility interest	$0.04	$0.02
Labor-collect & process semen	$2.10	$1.00
Labor-insemination	$9.80	$4.67
Insemination equipment	$1.87	$0.89
Taxes	$0.18	$0.09
Repairs	$0.18	$0.09
Insurance	$0.05	$0.02
Total	$28.44	$13.54

The next step is on-farm semen collection. Table 3 looks at utilizing boars on the farm to collect and inseminate sows. It is assumed that boars have a two year turnover and boar facility costs are the same as with natural service. The boar facility cost per sow per year is lower due to costs being spread over more sows as compared to natural service. The important point here is that to calculate a lab and equipment costs, a 500 sow herd was used to figure costs. Therefore, to calculate your costs, simply multiply the lab and lab equipment associated costs by 500 to get total costs per year then divide by your herd size to get the costs per sow per year for your operation. The on-farm lab facility was a ten by ten room with a total cost of $2000 and ten year life. The labor to collect and process semen involved 30 minutes per collection and resulted in 10 doses of semen. From the resulting costs, on-farm collection is considerably cheaper than natural service or semen purchase.

If you are interested in starting up a boar stud to specialize in semen collection and processing, Table 4 has the costs associated with this specialized breeding scheme.

Table 4.

Boar Stud Breeding Costs

	Cost per sow per year	Cost per service
Boar maintenance	$0.73	$0.35
Boar ownership cost	$4.77	$2.27
Boar facility & lab cost	$0.40	$0.19
Boar interest cost	$0.52	$0.25
Facility interest cost	$0.04	$0.02
Lab equipment cost	$0.32	$0.15
Lab equipment interest	$0.03	$0.01
Labor-collect & process semen	$1.97	$0.94
Labor-insemination	$9.80	$4.67
Insemination equipment	$1.87	$0.89
Taxes	$0.08	$0.04
Repairs	$0.08	$0.04
Insurance	$0.02	$0.01
Total	$20.63	$9.83

The boar facility and lab to handle 25 boars are combined in a separate facility costing a total of $25,000 with a ten year life expectancy. What is important in this scenario is the tremendous increase in sow numbers that can be serviced from a facility such as this. Using sow:boar ratios that commercial studs are using, the sows that can be serviced with this small stud is 6,250. Here again, the cost per sow per year shrinks, but the real savings may be the fact that with a stud you don't have to continually take new boars onto the farm. This savings in reduced disease potential is hard to quantify, but may be one of the biggest cost savers in the entire analysis.

This cost presentation makes some assumptions that may not fit your individual situation, but hopefully with the details presented, you can tailor the costs for your situation. Artificial insemination also has other benefits and considerations that need to be taken into account before making a change in your breeding scheme. But hopefully, the cost differences outlined here will prove useful in evaluating whether or not you utilize artificial insemination on your farm.

Thanks to Dr. Schwab for assistance with compiling the costs.

Processing Swine Diets

By: Joseph Kelpinski, Extension Swine Agent, Northeast

Proper processing of swine diets is an important and often overlooked aspect of the production system. Proper processing of feed accomplishes several functions. These include: preventing ingredient sorting by the pig; breaking hard grains into smaller, uniform particle sizes; processing decreases particle size, thereby increasing the surface area available for digestion, resulting in improved feed efficiency; the more uniform feeds are in particle size, the easier they are mixed; and small particle size decreases segregation of ingredients.

However, reducing particle size through grinding and feed preparation does not come without some negative aspects. Reducing particle size requires more energy and time requirements for processing. As particle size is reduced, the amount of dust increases proportionately. Reducing particle size increases feed bridging in feeders. And finally, preparing feed with too small of a particle size can increase the incidence of gastric ulcers in animals, resulting in higher morbidity/death loss in the herd.

Ideally, producers should strive to maintain a particle size in diets of about 700-800 microns for pigs over 100 pounds of body weight. Swine under 100 pounds do best with diets ground more finely than older swine. Diets for younger pigs should range from 500-700 microns in size. To achieve this particle size, hammermills processing barley, milo, and oats need about a 1/8" screen. For corn, a 3/16-3/8" screen should be used. When grinding wheat, a much coarser grind is required to maintain palatability. Wheat must be greater than 850 microns for swine less than 120 pounds and 1750 microns for swine larger than 120 pounds. This can be accomplished using a 5/16" or larger screen. All of these screen sizes represent starting points. Producers should try different screens in their own hammermills to determine what works best.

As far as processing feed, producers have three major options. These are using a hammermill, a roller mill, or pelleting of feed. Each have various advantages and disadvantages. Hammermills have the most capacity per horsepower, more easily accommodate different grains, and are easier to adjust and repair than roller mills. However, they require more energy and produce more dust than a roller mill. Roller mills use 25-30% less energy than hammermills, however, they require more management to keep properly adjusted and must be readjusted each time a different grain is processed, resulting in increased labor costs.

Both types of mills require periodic maintenance to continue operating efficiently. Producers should use magnets within the mills in locations which will prevent metal from reaching the hammers, screens, or rollers. Hammers and screen need periodic replacement to achieve optimum performance. Producers need to evaluate the number and types of grain(s) used in rations, the labor and management capabilities of the operation, the initial investment, and the operating cost of each type of mill before deciding on which type to purchase and use.

Pelleting is another feed processing option for producers to consider. Most pelleting is done on a commercial basis. Pelleting offers the advantage of improving feed efficiency and average daily gains. Pelleting also lowers feed intake, decreases dust levels, reduces feed wastage and decreases the separation of feed ingredients. However, pelleted rations generally cost more, may have a reduced acceptance of hard pellets by young pigs, may have increased spoilage of feed if improperly pelleted, as well as being difficult to pellet feeds with high fat contents (greater than 6% fat).

Whichever method of feed processing is utilized, producers should look at the various investment and operating costs, labor and management limitations, and the ingredients typically used in their rations. With the exception of pelleted feeds, producers should strive to maintain a particle size of about 700-800 microns for older swine and 500-700 microns for younger pigs. Be sure to properly balance and blend rations to achieve maximum efficiency from whatever age class of swine you are feeding. For more information on adjusting either hammer or roller mills, contact your local Extension Swine Agent.

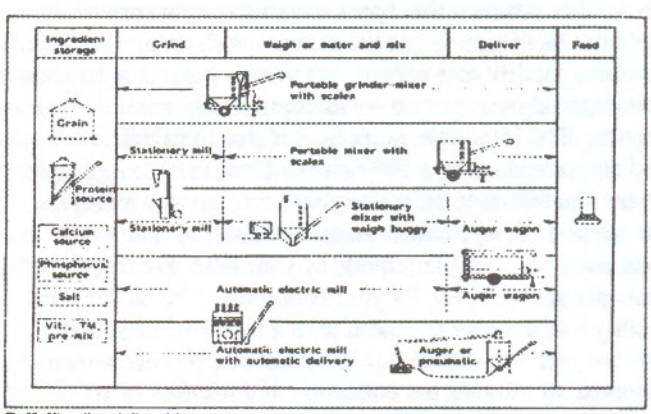

Fig 65. Alternative grinding-mixing systems.

Financial Performance on Michigan Swine Farms

By: Gerry Schwab[1]

The swine production industry in Michigan and in the United States is evolving through a structural change. While some farms are expanding animal numbers, many others are exiting the industry. The December 1995 "Hogs & Pigs" report indicated that the number of U.S. farms with hogs is down to 182,700[2]. Ten years earlier in 1985, the number of U.S. farms with hogs totaled 391,000. This dramatic reduction in number of hog farms is part of this structural change. Still the annual U.S. pig crop remains in the 100 million pig neighborhood. One obvious result is that the remaining hog farms are larger in size. Farms with 2000 or more hogs on farm in December 1995 accounted for 3 percent of the hog farms but 43 percent of the inventory. The obvious question demanding an answer is your farm's ability to compete in this new structural environment.

Michigan hog farm numbers declined from a reported 5,000 farms in 1994 to 4,700 in 1995. Reasons for exiting are no doubt quite varied ranging from lifestyle choice, life cycle stage, poor financial performance, and possibly perceived improved financial opportunities from increased grain prices. The question being raised in this article relates to the financial performance of swine producers in Michigan.

The 19 swine farms described in this article are primarily farrow-to-finish. These are farms that have worked with SwEAT team members. The majority of the farms, but not all, participate in the Telfarm financial record-keeping system with Michigan State University Extension. In working with swine producers, one objective of the SwEAT project is to help improve on-farm decision-making by having better farm records. By networking several farms together into a data base, comparative data is provided for that individual farm to compare, evaluate, and analyze its own financial performance. It is to that comparative data base we now turn.

Some general size and efficiency factors describing the commingled farms are initially presented followed by profitability and related financial measures used to analyze financial performance. It should be acknowledged that a sample of 19 farms is not large and the SwEAT project would like to work with more swine producers to improve their farm business and the comparative data base being discussed here.

Table 1 indicates that the average size of these farms is 345 sows on 385 crop acres of which 40 percent is owned with the remainder rented, primarily on a cash rent basis. Average number pigs weaned per sow per year is 16.5. The total number of raised market hogs sold is 4032 for an average of 11.7 pigs per sow per year. Although these production efficiency numbers may be in the range of respectability, many swine production experts could present a strong case that there is room for improvement. The question from a financial vantage is whether profits can be earned at these levels of production efficiency.

Profitability is one key to having a sustainable farm for future growth and continuity. Table 2 presents the Net Farm Income Statement for these 19 swine farms that are primarily farrow-to-finish. Almost 80 percent of the cash farm income was from raised market hogs and just over 88 percent from the total swine enterprise. The bottom line on Table 2 indicates that these farm had an average profit or net farm income (line G) of $83,845 earned in 1995. However much of this profit was gained through an increase in value from beginning to end of year for grain and livestock on hand (Line D).

Some of the critical profitability analysis factors presented in Table 3 are:

Rate of Return on Assets (investment) or ROI is the Profit earned by your business expressed as a percentage of the dollar investment in the business. To calculate ROI, the dollar net income level is adjusted by adding back in interest paid but subtracting out a dollar value for unpaid labor and management (line 0, Table 3). Thus, this ROI earnings percentage is calculated as if the farm has no debt. This percentage earnings level should, at a minimum, be higher than your average interest rate paid on borrowed money. Ideally, goals and objectives for your farm business include a desired rate of return. The average rate of return on assets earned by swine farms in this analysis is 9.7 percent for the 1995 year (Line w, Table 3).

Rate of Return on Equity (net worth) ROE is the Profit earned by your business expressed as a percentage of your own equity. To calculate ROE, the dollar net income level is reduced by the dollar value for unpaid labor and management. In analyzing financial performance, ROE should be greater than ROI in order to assure that financial leverage or borrowing money is helping the farm business. The average ROE for these swine farms in 1996 was 11.4 percent (see line x, Table 3).

Knowing your own ROI and ROE are critical first steps in conducting a financial analysis of your farm business. However they are helpful only in determining financial performance of the total farm business. As general guidelines to improve financial performance, either one or both of the next two measures must be improved.

See Tables 1, 2, and 3 on pages 9-12.

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Financial Performance

Operating Profit Margin: This figure indicate the dollar return on farm assets expressed as a percent of the value of farm production. Value of farm production is basically gross cash sales adjusted for inventory change and subtracting out the cost of purchased feed and of feeder livestock. Comparison of your operating profit margin with the average of 30.0 percent earned by swine farms in this sample will be one indicator of your competitiveness. Improving this performance measure can be accomplished with better marketing, lower costs, and/or improved swine performance. Here again, this measure provides an indication of how competitive your business is as compared to the farms in the data set.

Asset Turnover Rate: This number indicates how hard your assets are working. Expressing the value of farm production as a percentage of the farm assets invested indicates the dollar volume being generated by your farm investment. The higher this number the better. For the swine farms in this data set, the asset turnover of 32.3 percent (line z, Table 3) is calculated from dividing the $363,844 value of farm production by the market value of the farm assets of $1,127,130. This is one illustration of why agriculture is often referred to as a capital-intensive industry and presents a continuous challenge in earning a competitive return on investment.

Only by improving either the operating profit margin or the asset turnover rate can the return on investment be improved. These financial measures, labeled lines W, X, Y, and Z are really the bottom line in judging financial performance but provide only general indicators. They can tell us only generally what needs to be done to improve. To be more specific requires either enterprise records or the ability to break down your general financial records into the parts of which it is composed. A more complete financial analysis of the farm business requires that the cost of production for the various enterprises be determined. It is to that question we turn to in a future article.

If you would like to be able to perform this kind of financial analysis on your own swine farm, we encourage your contact to any member of the SwEAT team or of the Michigan Pork Industry Team which includes swine field agents and farm management expertise located in the Michigan State University Extension system.

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[1] Author is a member of Swine Enterprise Analysis Team (SwEAT) project that also includes Dale Rozeboom, Ron Hayden, and Roger Betz. Author acknowledges the contribution of Sherrill Nott in managing the database. All participants have appointments within the Michigan State University Extension System.

[2] "Hogs and Pigs", December 1995 and 1985, United States Department of Agriculture, Statistical Reporting Service, Washington D.C.

Mycoplasmal Pneumonia of Swine

By: Barbara Straw, University of Nebraska
L. Kirk Clark, Purdue University

Causative Agents

Mycoplasmal pneumonia of swine also is called enzootic pneumonia. It is a chronic respiratory disease of swine that seldom kills pigs but causes considerable economic loss through depression in performance.

Mycoplasma hyopneumoniae is the primary infecting agent responsible for mycoplasmal or enzootic pneumonia of swine. *M. hyopneumoniae* is able to colonize the normal lung, depressing lung defense mechanisms thus allowing other bacteria to produce secondary infections.

Except for laboratory controlled cases, *M. hyopneumoniae* infections always are complicated by secondary bacteria. The most common secondary bacterium in cases of mycoplasmal pneumonia is *Pasteurells multodica.* Other bacteria such as *Streptococi, Staphylococci, Bordetella bronchiseptica, Actinobacillus pleuropneumoniae, Klebsiella,* and *Salmonella* also may be involved.

Transmission

Transmission of *M. hyopneumoniae* can occur from carrier sows to their offspring, but the major source is from pig-to-pig in older pigs. Evidence indicates that most young pigs do not become infected until they leave the nursery and are housed in the grow-finish space with older pigs. In some herds, pigs are infected in the nursery especially if it is operated on a continuous-flow basis and younger pigs are commingled with older pigs.

Transmission of *M. hyopneumoniae* primarily if through direct contact. While long range aerosol transmission of organisms is possible, most clinical spread is due to nose-to-nose contact between animals. Therefore, environmental adjustments are designed primarily to provide a comfortable living space for the pigs rather than to dilute the number of organisms suspended in the air.

Prevalence of Infection

Nearly all (approximately 99%) commercial swine herds have mycoplasmal pneumonia. In a herd in which there are no clinical signs of mycoplasmal pneumonia, typical lesions may be seen in the lungs at a slaughter check. *M. hyopneumoniae has* been isolated from clinically normal lungs so pigs that appear healthy may be carrying organisms that will cause disease under stressful situations.

cont. on page 12

Table 1. MICHIGAN HOG FARMS, PRODUCTION SUMMARIES, 1995

		Average of All farms	
NUMBER OF FARMS		19	
HOGS, FARROW TO FINISH			
Average number of sows		345	
Litters farrowed		657	
Litters per sow		1.90	
Litters per crate		16.29	
Pigs born per litter		9.88	
Pigs weaned per litter		8.67	
Pigs weaned per sow		16.46	
Number sold per litter		6.98	
Avg. Wgt/Raised Hog sold		250	lbs/hog
Avg. Price/cwt		$43.96	/cwt
ACREAGE SUMMARY			
Total Acres Owned		366	
Total Crop Acres		385	
Crop Acres Owned		155	
Crop Acres Cash Rented		206	
Crop Acres Share Rented		24	
AVERAGE PRICE RECEIVED (Cash Sales Only)		$/bu	
Soybeans		5.93	
Wheat, Winter		3.78	
Corn		2.69	
AVERAGE YIELD PER ACRE			
Corn	bu/acre	113.94	
Soybeans	bu/acre	43.53	
Wheat, Winter	bu/acre	58.25	
Beans, Navy (cwt.)	cwt/acre	20.54	

Table 2. MICHIGAN HOG FARMS, NET FARM INCOME STATEMENT AVERAGE CASH INCOME, 1995

		Average of All Farms	Percent of Gross Cash Income
Number of Farms		19	%
CASH FARM INCOME			
Livestock:	Raised Hogs	$ 443,123	78.8%
	Feeder Pigs	1,442	0.3%
	Finish Feeder Pigs	26,576	4.7%
	Cull Breeding Livestock	22,625	4.0%
	Misc. Livestock Income	13	0.0%
	Milk	2,211	0.4%
	Dairy Heifers (for sale)	14	0.0%
Crops:	Navy Beans	$ 4,020	0.7%
	Cordwood	19	0.0%
	Corn	2,892	0.5%
	Mixed Hay	275	0.0%
	Soybeans	13,664	2.4%
	Straw	138	0.0%
	Winter Wheat	7,927	1.4%
Other:	Deficiency payments	$ 2,251	0.4%
	Other government payments	8,205	1.5%
	Custom work income	14,093	2.5%
	Patronage dividends, cash	657	0.1%
	Insurance income	2	0.0%
	Other farm income	11,973	2.1%
(A)	Gross Cash Farm Income	$562,120	100.0%

TABLE 2 (CONT.). MICHIGAN HOG FARMS, NET FARM INCOME STATEMENT EXPENSES AND INCOME STATEMENT SUMMARY, 1995

		Average of All Farms	Percent of Gross Cash Income ($562,120)	Percent of Total Cash Expenses & Depreciation ($530,647)
Number of Farms		19		
CASH FARM EXPENSE				
Seed		$ 12,472	2.2%	2.4%
Fertilizer		12,204	2.2%	2.3%
Crop chemicals		9,950	1.8%	1.9%
Crop insurance		383	0.1%	0.0%
Drying fuel		1,897	0.3%	0.4%
Crop marketing		196	0.0%	0.0%
Crop miscellaneous		1,186	0.2%	0.2%
Feeder livestock purchase		9,496	1.7%	1.8%
Purchased feed		221,652	39.4%	41.8%
Breeding fees		3,171	0.6%	0.6%
Veterinary		12,519	2.2%	2.3%
Livestock supplies		3,457	0.6%	0.7%
Livestock marketing		3,378	.6%	0.6%
Interest		33,427	5.9%	6.3%
Fuel & oil		6,624	1.2%	1.2%
Repairs		15,726	2.8%	2.9%
Custom hire		17,652	3.1%	3.3%
Hired labor		62,263	11.1%	11.7%
Land rent		16,609	3.0%	3.1%
Machinery & bldg. Leases		11,842	2.1%	2.2%
Real estate taxes		5,760	1.0%	1.1%
Farm insurance		6,573	1.2%	1.2%
Utilities		14,181	2.5%	2.7%
Dues & professional fees		1,396	0.2%	0.3%
Miscellaneous		11,330	2.0%	2.1%
(B) Total cash expense		$495,341	88.1%	93.3%
(C) Net cash farm income	(A-B)	66,779	11.9%	
INVENTORY CHANGES				
Crop and feed		18,402	3.3%	
Market livestock		19,836	3.5%	
Accounts receivable		(5,265)	-0.9%	
Prepaid expenses & supplies		17,759	3.2%	
Accounts payable		1,640	0.3%	
(D) Total inventory change		$ 52,372	9.3%	
(E) Net operating profit	(C+D)	119,151	21.2%	
DEPRECIATION & OTHER CAPITAL ADJUSTMENTS				
Breeding livestock		(101)	-0.0%	0.0%
Machinery and equipment		(23,473)	-4.2%	4.4%
Buildings and improvements		(11,678)	-2.1%	2.2%
Other farm capital		(54)	-.0%	.0%
(F) Total depr. & other capital adj		($35,306)	-6.3%	100.0%
(G) Net farm income	(E+F)	83,845	14.9%	

Table 3. MICHIGAN HOG FARMS, PROFITABILITY AND LIQUIDITY ANALYSIS, 1995

			Average of All Farms
Number of Farms			19
PROFITABILITY (Market)			
(H)	Net farm income	(G+K)	109,262
(I)	Labor and management earnings	(H-L)	69,327
(W)	Rate of return on assets	(O/P)	9.7 %
(X)	Rate of return on equity	(Q/R)	11.4 %
(Y)	Operating profit margin	(O/S)	30.0 %
(Z)	Asset turnover rate	(S/P)	32.3 %
(K)	Change in market valuation		25,417
(L)	Interest on farm net worth		39,935
(M)	Farm interest expense		33,427
(N)	Value of operator lbr and mgmt.		33,506
(O)	Return on farm assets	(H+M-N)	109,183
(P)	Average farm assets		1,127,130
(Q)	Return on farm equity	(H-N)	75,756
(R)	Average farm equity		665,585
(S)	Value of farm production		363,844
Number of Farms			19
LIQUIDITY (Cash)			
(C)	Net cash farm income		+ 66,779
	Net nonfarm income		+ 4,049
	Family living and taxes		- 33,459
	Real estate principal payments		- 15,062
	Cash available for interm. Debt		= 22,307
	Average intermediate debt		117,297
	Years to turnover interm. Debt		5.3
	Expense as a % of income		88 %
	Interest as a % of income		6 %
LIQUIDITY (Accrual)			
	Total accrual farm income		+ 595,093
	Total accrual farm expense		- 475,942
	Net accrual operating income		= 119,151
	Net nonfarm income		+ 4,049
	Family living and taxes		- 33,459
	Real estate principal payments		- 15,062
	Available for intermediate debt		= 74,679
	Average intermediate debt		117,297
	Years to turnover interm. Debt		1.6
	Expense as a % of income		80 %
	Interest as a % of income		6 %

cont. from pg. 8
Mycoplasmal Pneumonia

Clinical Signs of Infection

There have been occasional reports of nursing pigs being affected with mycoplasmal pneumonia, typically, signs are seen in pigs aged 6 to 10 weeks and older. Affected pigs have a dry, nonproductive cough that is most noticeable after exercise. Coughing may persist for 1 to 2 months. Although pigs continue to eat, feed intake is usually depressed and pigs fail to grow at a normal rate particularly if lesions are extensive due to secondary bacterial complications. The extent of damage to the lung and effect on growth rate are variable depending on the dose of *M. hyopneumoniae,* number and kind of secondary infections and degree of environmental stress.

Control Measures

Antibiotics. Antibiotics have been used since their discovery in efforts to treat, control, and prevent pneumonia in pigs. Many antibiotics have been shown to be effective against *M. hyopneumoniae* grown in the laboratory. However, the effect of antibiotics on enzootic pneumonia in pigs remains questionable. In one study, researchers examined the effect of tiamulin, lincomycin, and a combination of chlortetracycline and tiamulin on the development of pneumonia and growth performance in naturally exposed pigs and the results indicate that the antibiotics used had little influence on the development of lesions of enzootic pneumonia. Although these antibodies enhanced growth performance, their use was not cost effective. In other studies, kitasomycin, tiamulin, and lincomycin, used either before or after *M. hyopneumoniae* challenge, did not reduce the clinical signs or lesions of mycoplasmal pneumonia. The newer quinalone antibiotics appear to be effective against mycoplasmal pneumonia, but none of these antibiotics are commercially available in the United States.

Elimination of Disease

Primary Specific Pathogen Free (SPF), Medicated Early Weaning (MEW), Modified Medicated Early Weaning (MMEW), Secondary SPF, MMEW plus 2- and 3-Site Multiplication (Isowean), and All-In, All-Out (AIAO) programs were developed to prevent the transmission of diseases from the sow to her pigs and from older pigs to younger pigs. These programs used alone or in combination have been shown to allow pigs to attain a growth rate near their genetic potential if all other inputs are correctly managed. These programs either prevent or control enzootic pneumonia, in addition to most other diseases in pigs.

Seed stock suppliers heavily utilize these disease control programs, however, because reinfection of herds free of enzootic pneumonia has been common, these programs (except AIAO) are less frequently implemented in commercial herds.

All comments and suggestions should be directed to:

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