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Swine Production Networks in Minnesota: Resources for Decision Making

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UNIVERSITY OF MINNESOTA

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Swine Production Networks in Minnesota: Resources for Decision Making

Summary

Swine production networks are becoming a significant part of the Minnesota swine industry, with at least 30 production networks in operation as of late 1995. There are probably at least 450 producers involved, representing at least nine percent of the state's sow inventory. Not counted in these numbers are a few other networks involved only in data-sharing or marketing.

The types of arrangements range from small to large. There are small-scale, informal farmer-to-farmer formula pricing arrangements. At the other extreme are the large-scale, jointly owned weaner units directed by hired management consultants. They also vary in leadership style. Styles range from a "strong leader style" with heavy consultant involvement to a "flat or democratic style" with more member involvement in decision-making.

The producers we interviewed, regardless of system or size, all cited essentially the same reason for joining networks. They were looking for a way to access the technology and systems they saw as necessary to achieve low cost production of the product quality and volume necessary to be competitive in the future. Within that general theme, some people emphasized product quality while others focused on volume or labor simplification.

None of the networks we surveyed had been in operation very long, with most in business no more than a year or two. It is too early to predict what their long-term success will be. Nevertheless, most of the respondents seemed pleased with the arrangements so far. Advantages and disadvantages of swine production networks include both logistical factors and human factors. The start-up phase of production networks is not without its problems, with a number of specific problems arising frequently. Keys to success seem to boil down to: members who are compatible and share a common mission, meeting pig flow targets, and maintaining high pig health .

An example financial analysis of a 1,400 sow network is presented. With typical costs, the network would break even with a market hog price of about \$44/cwt from farrow to finish. The farrowing stage considered by itself breaks even at a price of \$26/weaned pig. If the nursery stage buys those weaned pigs at the \$26 price, it breaks even at a feeder pig price of \$45/pig. Pig pricing formulas and custom rates are discussed for sharing risks among the farrower, nursery and finisher members of the network.

A final section of the paper, not included in paper copies of this revision but available in the electronic version and from the authors on request, is a list of publications selected and reviewed by the University of Minnesota Swine Focus Team. They cover various aspects of networking and segregated early weaning in swine production.

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Swine Production Networks in Minnesota: Resources for Decision Making

Bob Koehler, Bill Lazarus and Brian Buhr*

Rapid industry change and competitive pressures are causing independent pork producers to question their future in pork production. Many producers wonder how they can manage and position their swine operations to continue to make a significant contribution to family living needs. Non-economic factors such as values, attitude, aptitude, and social pressures also impact decisions.

Networking, or producer cooperation, is a popular concept in the swine industry today. It is viewed as an approach that can help small- and medium-sized operations gain increased access to information, technology, capital, and markets. It has been suggested that networking will allow traditional producers to gain advantages associated with larger, highly organized, specialized pork production systems and organizations. Networking has been defined various ways. One definition is: “a means to gain access to a set of advantages which a producer or input supplier by themselves could not acquire.”¹ The networking concept has a lot in common with the cooperatives that have played an important role in American private enterprise for many years. Networking commonly includes such activities as:

- sharing data and management ideas,
- joint marketing or input purchasing,
- seedstock multiplication, and
- sharing some or all stages of market hog production.

While there are information-sharing and marketing groups that are active in Minnesota, this report focuses on networks that are directly involved in production of market hogs or seedstock multiplication. Today’s swine production networks typically involve producers who combine one or more stages of their swine operations into a business unit for the mutual benefit of the members. Some of the most common types of networks are described below. Some networks are organized as corporations, while others are partnerships, cooperatives or simple contractual relationships.

INSIGHTS FROM NETWORK PARTICIPANTS

The research summarized in this report was funded by the Minnesota Pork Producers Association to determine the extent to which Minnesota pork producers are becoming involved in networking arrangements, and to develop models of successful networking

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¹ Dennis DiPietre, “Networking and The New American Pork Industry,” in Proceedings, Networking II Conference, National Pork Producers Council, St. Louis, Missouri, December 6-7, 1994.

strategies. Some of the questions we address are: 1) what types of networking arrangements are possible; 2) how does one evaluate the benefits and costs of becoming involved in a network; and 3) what are the logistical steps to organize or join a network once the decision has been made that the benefits outweigh the costs?

The description and analysis of swine production networks in this report are based on interviews of Minnesota producers who have joined networks that are far enough along to be producing animals. A personal interview approach was chosen for the survey, in order to be able to discuss the topic in more depth than would be possible in telephone or mail surveys. The swine industry is competitive and somewhat controversial. In most cases, producers are willing to discuss the business and financial aspects of networking only when they are assured that confidentiality will be maintained and the data will be kept in context. We provided this assurance when we scheduled and conducted the interviews. We felt it would have been more difficult to explain the purpose of the survey and obtain cooperation if another survey technique had been used. Personal interviews can be expensive to conduct because of the time requirement and travel expenses, but the small number of interviews made this manageable.

We obtained names of networks and producer contacts from the Minnesota Pork Producers Association, county extension educators, state faculty who work with pork producers, industry consultants and vendors, other producers, and our own contacts from past extension activities. We were not able to obtain a statistically reliable estimate of the total number of networks, producers or volume of hog and pig marketings involved in Minnesota. We would have had to survey several thousand producers by mail or phone to obtain statistical reliability. The current project did not provide funding for such an extensive mail or phone survey in addition to the personal interviews, which we considered the more important part of the research. Our judgment is that our informal, “word of mouth” inquiries probably found most of the networks currently existing, although more continue to come to light. We are more likely to have missed the less formal ones that involve fewer producers and do not involve new construction.

The primary interviewer was Koehler, who conducted 18 producer interviews while on a temporary leave during November and December of 1995 from his position with the Murray County Extension Service. Lazarus also conducted two interviews for a total of 20 interviews.

Types of Swine Networks Operating in Minnesota

We identified a variety of production networks in Minnesota. They ranged from small-scale, informal farmer-to-farmer formula pricing arrangements to large-scale, jointly owned weaner units directed by hired management consultants. Producers in production networks often share information and market as a group as a result of their production network membership. We sought arrangements that are far enough along to be operating and producing pigs. We focused on networks producing market animals rather than those

producing breeding gilts only, because market animal production in networks represents a more fundamental change in the industry and involves more management issues.

We also recognize that contract growers for the few individual “mega-producers”² in Minnesota might also be considered to be networked, as well as those involved in production programs organized by cooperatives and feed companies. We did not focus on these contract grower situations because we perceived that most decision making is centralized in the hands of the “mega-producer.” We were more interested in networks where major decisions are shared more widely among several producers.

Every swine production network currently operating in Minnesota is a little different from the others, so any classification oversimplifies reality. An approximate classification that emerged from the producer interviews follows:

1) Co-owned key stage of production

A key stage of production, usually breeding/gestation/farrowing, is held in a business entity owned jointly by members. The jointly owned stage is often a new facility with hired management and labor. Shareholders receive pigs, weaned or feeder pigs, based on their shares. Pig prices are set at rates sufficient to operate the business entity and retire facility debt. Each participant usually finishes their share of pigs. This type of arrangement can also be used for breeding stock multiplier units and boar studs for artificial insemination.

2) Co-owned production systems

Instead of just a single stage, participants (producers or investors) form a business entity to build or purchase a complete swine operation that they operate with hired management and labor. Profits are distributed based on ownership.

3) Livestock owned jointly - profit split

Participants form and jointly own a business entity that holds just the livestock. Each participant/partner provides facilities and labor (and sometimes other inputs like utilities) for a stage of production. The value of each participant’s contribution should be about equal. Participants bear the cost of maintaining their individual facilities. The jointly owned entity purchases feed, veterinary services, breeding stock, and other operating inputs. Returns over operating input costs are then split equally by participants to provide a return to their facility and labor contributions. Participants fund the business entity entirely with equity capital, and borrow individually rather than with the business entity since that entity will have few assets beyond the herd. Systems can also be devised with

² Defined as marketing over 50,000 hogs per year, equivalent to an inventory of roughly 2,500 sows. This is in line with the definition of a “super producer” adopted by V. James Rhodes and Glenn Grimes in their periodic swine industry surveys, e.g. Structure of US Hog Production: A 1992 Survey, Department of Agricultural Economics, University of Missouri, Columbia, MO, 1992.

unequal degrees of contribution and ownership. This option and the next one are not common, but are being used in a few instances.

4) Livestock owned jointly - rental fees

Like option 3, in this arrangement facilities and labor for each stage of production are provided by the participants. Participants form a business entity that owns the herd and purchases feed, veterinary services, breeding stock and other inputs. A difference is that the joint business entity pays each participant a fee for their contribution, usually on a per pig or pig space basis. The business entity's returns over operating input costs and rental fees are split by participants based on their ownership shares.

5) Formula Pricing

Each stage of production continues to be owned and managed separately, but producers are connected by formula pricing agreements for pigs between one or more stages of production. For instance, a finisher may purchase feeder pigs from a farrowing/nursery operation on a pre-determined pricing system. The terms of the agreement might include specifications on health programs, genetics, and other considerations in addition to the pricing mechanism.

6) Custom/Contract Agreement

Grower carries out a stage of production, usually finishing or farrowing, for a fee payment, usually on a per pig basis for farrowing while finishing may be per pig, per day, or per pig space. Growers normally furnish facilities, labor, utilities, and manure handling and application.

Extent of Production Networking in Minnesota

The "co-owned key stage of production" network is probably the most common of the networks requiring significant investment and organization, but the other types also exist. Thirty production networking arrangements were identified in the course of making our inquiries (Table 1). Of these, six appear to be operating mainly for the purpose of multiplying breeding gilts. The gilt multiplier networks are different from those involved in market hog production in that the multipliers have relatively large numbers of members, who also have their own farrowing units and produce their own market animals using gilts from the network. The distinction between gilt multipliers and other networks is not clear-cut. Some of the other networks also produce breeding gilts, but also have large farrowing units producing market animals.

The thirty networks surveyed have about 450 producer members. An exact count is difficult because some members own multiple shares, and would have required interviewing all 450 producers which is beyond the scope of this survey. This equates to about four percent of the 12,000 farms with hogs in Minnesota. Around 70 percent of the

networked producers belong to market hog production networks, with the rest in the multipliers. There are market hog production networks with as few as two members, up to over 100 members. The multiplier units typically have around 20 members each. Several multiple-purpose networks exist in Minnesota that include gilt multiplication as one of their functions along with market hog production, and have larger memberships in the range of 70 to 100 members. They are included in the “market hog production” category.

The networks collectively have a capacity of about 49,000 sows. Minnesota’s sow herd was a reported 570,000 sows as of December 1995, so the networks surveyed may account for about nine percent of the total sow herd (assuming that the networks are operating at or near capacity). Most of the sows are in the market hog production networks, with fewer involved in the gilt multipliers.

A February 1995 University of Missouri survey of the US pork industry provides additional evidence of producer involvement in production networks. They report that about one percent of swine producers are “splitting production” and 1.5 percent were in “seedstock multipliers,” which totals 2.5 percent compared to our 3 percent. When joint marketing, joint purchasing, and data sharing are included (which were not addressed in our study), producers involved in some form of networking total nine percent of swine producers surveyed.

Informal custom or contract agreements between producers are probably the most common type of network. They typically require less investment and organization than the other types of networks. Because of our focus on networks requiring significant investment and organization, we did not count the number of custom or contract arrangements in place in Minnesota, or include those producers in the interviews.

<u>Type of Network</u>	<u>Number of Networks</u>	<u>Producers Involved</u>	<u>Sow Capacity</u>
Market hog production	24	322	42,000
Gilt multiplication	6	128	7,000
Both types	30	450	49,000
Total Minnesota swine industry ^a		12,000	570,000
Networks’ share of total Minnesota swine industry		4%	9%

^aUSDA Hogs and Pigs Report, December 1995.

Reasons for Networking

The producers we interviewed, regardless of system or size, all cited essentially the same reason for joining networks. They were looking for a way to access the technology and systems they saw as necessary to achieve low cost production of the product quality and volume necessary to be competitive in the future.

Specific reasons cited were:

- Achieve product quality and volume necessary for long term market access.
- Keep pace with industry change.
- Benefit from the expertise of others in the system including consultants and hired staff.
- Increase pig flow.
- Expand scope of the swine enterprise (as opposed to other investments such as land).
- Increase finishing capacity to a level where volume premiums can be negotiated with packers.
- Desire to specialize, utilize strengths.
- Gain efficiency.
- Reduce the number of different production demands, gain focus and reduce confusion, usually by transferring the breeding/farrowing stage to a network.
- Eliminate a breeding herd with disease problems in a continuous-flow facility, and fit into a multiple site system with new breeding stock.
- Make time for an off-farm job by just finishing, instead of also farrowing.

We also asked whether there was a particular event, meeting, publication or individual that spurred the group's interest in entering into the arrangement. The networking concept has been so widely discussed over the past few years that many producers found it difficult to identify what initially spurred their interest. The National Pork Producers Council's first Networking Symposium at Des Moines in December, 1993 was mentioned most often. Several gilt multiplier networks were operating in Minnesota prior to that time, so the concept was not entirely new³.

Network Impacts

In 19 of the interviews, producers were asked specifically what benefits they had expected when they became involved in their networks, and what benefits they had gained. Most of the networks had not been operating long enough to draw firm conclusions about benefits gained, but the responses received were:

³ See, for example, James Lewis, "Coordinate Producer Groups: The Camelot Concept," in Proceedings, Minnesota Swine Health Clinic, Austin and New Ulm, Minnesota, December 1990, and Curt Watson, "Group Financial Arrangements." in Networking: Competitive Positioning for Pork Producers, National Pork Producers Council, December 1-2, 1993, West Des Moines, Iowa.

	Yes	No	No Response
Made your swine enterprise more profitable?	9	0	10
Affected your labor situation by:			
Increasing your satisfaction in your work?	15	0	4
Reducing the number of conflicting or concurrent demands on your time?	8	3	8
Freed up a substantial amount of time for other productive pursuits?	7	5	7
Increasing family or leisure time?	2	10	7

The reported reasons for networking and specific benefits cited can be categorized into two major areas: 1) advantages from organization and structure (“logistical factors”) and 2) advantages stemming from people, both their access and attitude (“human factors”). Changes associated with networking logistics and human relationships also bring some disadvantages. The advantages and disadvantages for each impact are listed in Figure 1.

	Logistical Factors	Human factors
Advantages	<ul style="list-style-type: none"> • Technology Adoption • Specialized Skills • Specialized Facilities • Disciplined Pig Flow • Larger Pig Group Size • Leveraged Purchasing 	<ul style="list-style-type: none"> • More Expertise in System • Increased Information & Data • Information Sharing Opportunity • Working Conditions • Invigoration/Satisfaction • Motivation
Disadvantages	<ul style="list-style-type: none"> • Equitably Rewarding Individual Stages of the System • Transportation of Pigs • More Possible Points of Risk Exposure 	<ul style="list-style-type: none"> • Personality Conflicts • Demands For: <ul style="list-style-type: none"> ⇒ Performance ⇒ Integrity ⇒ Trust ⇒ Commitment
Figure 1.	Advantages and Disadvantages of Producer Involvement in Swine Production Networks	

Networked producers cite opportunities to position themselves more favorably because of the logistical advantages listed in Figure 1. A major perceived logistical disadvantage of a network is that different components of the system become separate profit centers which are owned by and reward different network members. According to the producers interviewed, it is difficult to negotiate a financial plan with pricing formulas and other terms that promises to fairly reward the members in control of the different individual stages of the production system. The more profit centers there are, the more challenging this becomes as any small error in valuing contributions is magnified. Dissension could

develop in the network if a pricing formula locks one member into a loss at the same time as other members are profiting. Dissension is more likely when overall profit margins are squeezed so that there is a smaller pie to divide among the stages. One approach used by some networks is to operate one stage at break-even, and then capture the profits at the next stage. For instance, shareholders in a weaner unit may price pigs at the cost of production, and capture the profit or loss in their individual finishing operations. They may also look at their nursery as a break-even proposition that helps the finishing stage to earn a profit.

Networking seems to bring advantages on the human side as well. Increased access to information and expertise appear to be major factors. Producers in networked systems also cited better working conditions (due to new facilities), and greater satisfaction from their work because of greater specialization and ability to focus on their areas of greatest interest.

Perceived Choices, Debt and Expected Profitability

Many producers said their former conventional one-site systems where they operated 100-200 sow farrow-to-finish herds with family labor were not meeting production and financial goals. Some felt their choice was not between networking or continuing as they were, but rather between networking or quitting swine production.

Most network participants have made substantial investments in a co-owned facility and/or made major renovations in existing facilities. Nearly all have increased debt load and reduced working capital. The success of these networks will have a major impact on the future financial condition of their member producers. Loan payments on the new investments made by the networks and their members contribute to tight cash flows. Networked producers attempt to offset the added debt with greater efficiency, product quality, and input cost control. The human aspect of this new investment and debt load is that commitment and enthusiasm has increased.

The producer comments about costs, volume and management complexity suggest to the authors that well-managed traditional farm operations with depreciated facilities may actually have lower per unit production costs than experienced by the networks. The difficulty on many traditional farms is that they may not have sufficient volume to contribute adequately to family income. There is also the fear that they may experience future difficulty in keeping technologically current, maintaining labor, and will face change when facilities need replacement. Those traditional farm systems that attempt to increase income by increasing swine enterprise size while continuing to both farrow and finish often reach a management and labor overload, which the networks are designed to avoid.

Organizational and Leadership Structures

A swine production network is a long-term business relationship with other producers and/or input suppliers. A number of criteria need to be considered when deciding whether

to join a swine production network and in the choice of an organizational and leadership structure. Some of the most important criteria are:

- 1) How much control and decision making is delegated to a professional manager and how much remains with the individual members,
- 2) Which options will provide access to resources at lowest cost and allow participation in economic activities that maximize profits,
- 3) Risk of financial loss, and
- 4) Permanence or longevity of the arrangement.⁴

With respect to control and decision making, some of the networks we identified were organized along the lines of a relatively “flat” or “democratic” model with producers taking an active management role. Others were organized with a fairly strong leader, usually a professional manager or consultant. Impressions from the interviews suggest that there may be advantages and disadvantages to both models (Figure 2).

	"Flat or Democratic Model"	"Strong Leader Model"
Advantages	<ul style="list-style-type: none"> • Sensitive to Members' Desires 	<ul style="list-style-type: none"> • Efficient Structure • Experience
Disadvantages	<ul style="list-style-type: none"> • Need Outside Management • Need Expertise Sources • "Old Habits" • Friendships • Personalities 	<ul style="list-style-type: none"> • Communications Challenges • Fewer Checks and Balances

Figure 2. Organizational and Leadership Structures Observed in Minnesota Swine Production Networks

The original idea for many networks started with one or two individuals, evolving to the group size necessary to make the specific system function. Many of these networks continue to function with policy and major business decisions made by a board of directors. Often, the board includes all shareholders. Such systems are sensitive to member needs and can respond to changing member conditions. However, almost all of those “democratic” systems require an outside management source. Outside input on day to day management decisions can bring more experience and expertise to the network. When board members micro-manage the system, there is a greater danger of personality conflicts. Old habits from previous individual operations may be an impediment.

⁴ For more details on organizational structures, see Michael Boehlje and David Lins, “Alternative Financial/Organizational Structures of Farm and Agribusiness Firms,” North Central Region Extension Publication 568, April 1995.

Another broad class of network leadership involves a central leader. This individual or firm usually has experience in pig production and in organizing large scale production. This experience is brought to new networks. New entities may be copies of previously formed groups, and each group may also be networked to other similar entities for genetics, input purchasing, and marketing. Sometimes the organizer has a financial investment in the system. The organizer usually assumes the management function of the network and the network pays a management fee for this service. Fees may include bonuses based on production or profit targets.

The advantages of this system are the experience and track record of the organizer and efficiency in decision making. However, a disadvantage is that the system size and other requirements may not fit all producers. Also, participant/investors give up more control in this model and must trust the organizer to manage the business prudently. Communication with members and opportunity for member input can be a concern with this approach.

Use of Packer Contracts

Many networks reported using long term packer contracts to sell market hogs. This reduces risk in the system, makes more accurate feasibility projections possible, and may help access to capital, including lender participation at a greater percentage of the total project. The reduced risk is especially relevant if financial instability of some members might affect others.

Problems Experienced by Networks

Networks can experience a variety of problems. Problems identified by network participants include:

- Achieving farrowing rate targets in farrowing unit start-ups
- Recruiting, training, and keeping high quality employees in large units
- Meeting pig weight targets in 2-week weaning programs
- Pig health including problems with PRRS
- Bringing adequate discipline, accountability, and structure to formula pricing and other farm based systems
- Negative reactions from others

Negative Reactions from Neighbors, Friends, or the Community

Negative reaction to the concept of producer networking or cooperation is limited. Only a few producers indicated that they had received negative comments about networking in particular. Those comments related to “putting small independent producers out of business.” However, almost all networks that built new facilities were challenged in the permitting process. Challenges were especially common when new sites were involved. Opposition centered on operation size and ownership structure.

Public relations plans have been suggested as ways to address community concerns over new facilities⁵. The interviewed producers took various steps to proactively address concerns. Key ideas they suggested based on their experiences include:

- Be sure that your partners are credible and positively perceived by the community.
- Inform all County Commissioners of your intentions before making commitments. (It is best that they hear their first information from you, they will be better prepared to answer questions that arise early in the process.)
- Inform neighbors within a reasonable distance (1-2 miles) of the site of your intentions.
- Share as much information as you can about the goals and purposes of the operation and the technology to be employed.
- Offer to take skeptics to view similar operations and sites.
- Remain calm and objective if you are challenged. Do not burn bridges.
- Be prepared to deal with the fact that the process may not always be fair.

Concluding Remarks: Keys to Networking Success

The task of identifying key factors underlying business success is complex. There are numerous ways to look at indicators of success. Three interrelated factors were often cited in our interviews as being essential to making a network function successfully. These factors are not particularly original with the authors, but we list them here for the sake of emphasis. They are:

- Members who are compatible and share a common mission,
- Meeting pig flow targets, and
- Maintaining high pig health.

Members who are compatible and share a common mission

Important “people factors” cited were the needs to: 1) work together cooperatively, 2) give up some individuality in favor of group decisions, and 3) meet increased scheduling demands. In some types of networks the need for participants to demonstrate a high degree of commitment and integrity was identified as a major factor. Performance of functions at the expected level was mentioned as critical. Members must also have the financial strength to meet their obligations to the network. Issues of liability in some network structures suggest a need to set standards on the financial status of members. When establishing a network, it is important to spell out and understand roles, expectations, and procedures. In some network structures, prospective members also need to consider the personalities and work styles of other members. Members must be compatible and share a common mission.

Another factor relating to people is the expertise and experience of the management team. Networks that employ people with demonstrated skills and experience in managing pig

⁵ See, for example, the “Communications” section of JD McKean, DS Bundy, JD Harmon, PJ Holden, and JD Lawrence, TeamPork Community Nursery Handbook. EDC-16, Iowa State University Extension, Ames, IA, January 1995.

production systems tend to have fewer start-up problems. It appears essential that even small networks need some kind of management oversight and that some outside consulting source is in a better position to bring discipline and sound business practice to the network. This is even more important when network members are friends and/or relatives.

Meeting pig flow targets

Achieving pig flow targets is obviously necessary to reach financial goals and meet cash flow requirements. In start-up situations, getting production levels to acceptable levels as quickly as possible seems related to the experience of the management team. New systems that rely on members for management may not be prepared for the production challenges they will face. Achieving projected financial and production levels early builds member confidence and commitment to the network.

Maintaining high pig health

The networks with newly populated herds still experience disease related challenges despite measures to maintain high health. Often, new diseases that were not previously a problem show up with “high health” pigs and must be dealt with. Avoidance of disasters that severely reduce pig flow is critical to early network success.

FINANCIAL ANALYSIS AND TYPICAL PRICING FORMULAS AND COMPENSATION APPROACHES

Producers who attempt to set up a network must evaluate the economic feasibility of the proposal, convince lenders of the proposal’s soundness, and negotiate pig pricing formulas, custom rates, and compensation formulas that will allocate profits and losses among the participants over the network’s life. Two information needs identified in the producer interviews were for:

- Planning data that can be used as a starting point for financial analysis and planning of proposed networks, and
- Software for performing the analysis using performance and input requirements for specific situations.

This section attempts to address both needs. A set of planning data is presented. The analysis is presented in tables printed from a Microsoft Excel spreadsheet template titled PigNet, developed at the University of Minnesota⁶ for use in analyzing networking situations. The template is a modification of PigProphet, developed at Texas A&M University. The analysis treats the farrowing unit, nurseries and finishing facilities as separate profit centers whose profits and losses flow to different members of the network.

The producers and hired managers who are operating successful networks typically have considerable experience in swine production before becoming involved in the network. They probably have sources identified for much of the planning data needed. They know

⁶ For information on availability and cost of the PigNet spreadsheet template, contact the authors.

how to select and operate production and financial information systems that provide them with realistic measures of performance based on past performance and future expectations. They monitor hog and input prices and other aspects of the economic environment within which they are operating. They do this by talking to vendors and other producers and by studying government market statistics, university research, and other available information.

Successful producers and managers understand that the industry is changing rapidly and that any planning benchmarks will become obsolete over time. They understand that shrinking margins and increasing volume magnify the financial losses resulting from any management errors or poorly negotiated contract terms. They continually look for ways to negotiate slightly better prices on inputs and hogs, because the resulting gains are also magnified over greater volumes.

In evaluating any major capital investment, it is important to consider both 1) whether the investment looks better than other available alternatives - long run profitability, and 2) whether the investment is possible in terms of available cash and borrowing capacity - the short run transitional cash flow problem that must be dealt with to get up and running. If the long-run profitability of the network alternative looks attractive, a second step of looking at cash flows during startup should be undertaken. The FINFLO module of the FINPACK software program is one analysis tool available for projecting cash flows⁷. The following analysis focuses on long run costs and profitability.

The financial analysis is structured in terms of five questions:

- Will the overall networked farrow-to-finish swine production system be profitable, at projected long run planning prices, costs and returns?
- What long run weaner pig and feeder pig planning prices will equitably share net returns among the owners of the farrowing unit, the nurseries and the finishers?
- What will be the impact of network participation on individual member farms' profitability and financial condition?
- What weaner pig and feeder pig pricing formulas will equitably share profits and losses among the farrowing, nursery and finishing profit centers as market hog and feed prices vary over time, and
- What contract rates will equitably share net returns between contractors and contract growers in networks where the contractor supplies animals, feed, and veterinary services and the grower supplies facilities and labor?

Producers are cautioned not to rely only on the planning data provided here. It will not fit specific situations exactly. Each network will need to make its own determination of these values to reflect the contributions provided in each stage. Producers who do not have the expertise and resources discussed above and who can not gather and evaluate information from many sources on an ongoing basis, probably should hire consultants with that expertise to help plan the network.

⁷ Available from the Center for Farm Financial Management at the University of Minnesota.

Input Data Sources and Rationale

The producer interviews were not intended to obtain a complete picture of costs and returns. Sufficient data was collected to make judgements about typical values for some key data items, however. They include:

- Number of pig spaces in each stage,
- Construction cost/pig space for a turnkey situation,
- Cost of land for the building sites,
- Labor requirements,
- Manure disposal costs, and
- Utility costs (finishing only).

Additional data to complete the analysis is taken from a variety of published sources, and is brought together here as a source of planning data. Sources include:

- University of Minnesota PigCHAMP record summaries,
- The Missouri System of Swine Production reference notebook,
- The Iowa State University TeamPork Community Nursery Handbook, and
- The 1994 Southwestern Minnesota Farm Business Management Association Annual Summary.

General information about the example jointly owned 1,400 sow segregated early wean (SEW) farrowing unit is shown in Table 2. The unit has nine farrowing rooms of 22 crates each for a total of 198 farrowing crates. Reproductive performance is based on the 50th percentile of 1994-95 PigCHAMP records from 99 farms with early weaned sows (lactation lengths of less than 17 days)⁸ and on industry sources. The PigCHAMP farms averaged 9 pigs per litter weaned. The PigCHAMP lactation length was 16 days, which allows three weeks between sow groups in the farrowing room including time to move the sows into the room three days ahead of farrowing plus two days for cleanup. Other numbers taken from PigCHAMP are 2.36 litters/mated female/year, a 79 percent farrowing rate, 5.7 percent sow death rate and 54 percent cull rate. Market hog mortality of one percent in the nursery and two percent in grow-finish is consistent with PigCHAMP grow-finish records and the producer interviews.

PigNet requires a number of other data items shown in Table 2 which affect calculations of farrowing room utilization, required number of boars, and gilt pool size. These remaining data items are based on industry estimates.

Table 3 summarizes production and inventory information for the operation. The plan is to wean 29,721 pigs per year and market 28,835. This is equivalent to 21.2 pigs weaned per sow or 150 per crate. Pigs marketed per sow calculates to 20.6.

⁸ Bob Morrison and Gary Dial, "Integrating Production and Financial Records." Proceedings, Minnesota Swine Health Clinic, December 1995, pp. 106-107.

Table 2. General Information About An Example Swine Production Network	
Avg. Female Inventory	1,400
Pigs Weaned/Litter	9
Avg. Lactation Length	16
Far. Crate Tie-Up Prefarrow (days)	3
Far. Crate Tie-Up Postwean (days)	2
No. of Sow Groups Weaned/Week	3
No. of Farrowing Rooms	9
No. of Farrowing Crates/Room	22
Litters Cross-Fostered/Group	0
Litters/Female/Year	2.36
Farrowing Rate(%)	79
Replacement Rate (%)	54
Entry-1st Service (gilts)	45
% Non-breeder Gilts	10
No. of Natural Matings/Sow Serviced	3
No. of Matings/Wk for Boars	4
No. of AI Matings/Sow Serviced	0
Death Rate, sow herd (%)	5.7
Boar, useful life(months)	18
Cull sow wt.	425
Cull Boar Wt.	525
Non Breeder gilt mkt. wt.	290
Gilts raised(1),bought(2)	2
Death Rate, wean-nurs (%)	1
Death Rate, nurs-mkt (%)	2
Shrink - Mkt. Hogs (%)	2

Table 3. Production and Inventory Information

1. GENERAL OUTPUT:			
Total Litters Farrowed/Year	3,302	Total Females Farr./Group	21
% Farrowing Capacity	96	No. Sows Served/Group	22
Litters/Crate/Year	16.68	No. Gilts Served/Group	5
		Total	27
Total No. of Sow Groups	58	Avg. Gilt Pool Size	93
Pigs Weaned/Sow Group	190		
Days Between Weaning of Sow Groups	2.33	Sow :Boar Ratio	23 : 1
2. AVERAGE INVENTORY:			
Sows & Gilts	1,400	Average No. of Pig Groups in:	
Boars	60	Nursery	19.9
Pigs in Nursery	3,776	Grow-Finish	47.5
Pigs in Grow-Finish	9,031		
Total	14,267		
3. ANIMAL FLOW:			
No. of Farrowing Rooms	9		
No. of Crates/Room	22		
Total No. of Crates	198		
Max. Groups in Breed.-Gest.	50		
Sugg. No. Nursery Rooms	12		
Total Litters	3,302	Litters/Crate/Year	16.7
Pigs Weaned	29,721	Pigs Weaned/Crate/Yr	150
Pigs Into Nursery/Yr	29,721	Pigs Weaned/Sow/Year	21.2
Nursery Deaths	297	Pigs Mktd/Sow/Year	20.6
Pigs Into Finisher/Yr	29,423	Replacement Gilts Needed	756
Barrows/Boars	14,712	Avg. Parity Removed	4.37
Gilts	14,712		
Post Nursery Deaths	588		
Hogs Marketed/Yr	28,835		

Required Investment and Facility Ownership Costs

Facility ownership costs are calculated based on straight line depreciation of the facilities. An 8 percent opportunity cost interest rate is charged on the average investment in facilities, breeding stock and operating inputs. Facilities are assumed to have a 15 year life with no salvage value. Insurance at 0.65 percent and property taxes at 0.6 percent are both charged on the original construction cost of the facilities and equipment.

Current construction costs reported by the surveyed producers for a typical new 1,400 sow segregated early wean farrowing unit including facilities, equipment and land are about \$1.3 million dollars, or \$910/sow space. Nursery and grow-finish spaces are set based on running the 29,791 weaned pigs through the nursery in 8 weeks and through the finisher in 16 weeks. Four 1,200 pig nurseries and eight 1,200 pig finishing buildings are assumed. At an estimated \$120/pig space for the nurseries and \$165/space for finishers, the nursery stage will cost just under \$0.6 million and a little over \$1.6 million for the finishers (Table 4). Note: when estimating capital requirements for new facilities, be sure to include cost of land, site preparation, roads, well, and electrical utilities. Land costs are included at \$10,000 for the farrowing unit, \$5,000 for the nursery, and \$10,000 for the finishers.

At \$225 per breeding gilt and \$900/each for 60 boars, the farrower incurs a cost of \$390,084 to stock the unit with livestock. This includes gilts for an average gilt pool size of 93 animals after the unit is up and running, for 1,493 total females. However, it is common to have lower-than-expected conception/farrowing rates in a new unit, so that it may be necessary to purchase 1,600-1,700 gilts initially. If the long run profitability analysis looks promising, the transitional cash flow plan should include provisions for these extra initial gilt purchases.

Adding the operating capital required for feed and other inputs (detailed below), the farrower requires just under \$2 million in capital investment when the operation is up and running. With the nursery and finishing stages included, total investment is \$5.1 million. Operating capital is based on a half year's input requirements for the farrower, and one turn's requirements for the nurseries and finishers.

<u>Investment Required:</u>	<u>Farrow</u>	<u>Nursery</u>	<u>Finish</u>	<u>Total</u>
(Sow- or pig-spaces)	1,400	4,800	9,600	
Facilities, equipment and land	\$1,284,000	\$533,000	\$1,594,000	\$3,411,000
Breeding herd	390,084	xxx	xxx	390,084
Operating inputs	263,388	59,237	431,967	754,591
Weaned pig/feeder pig purchases	xxx	103,155	409,651	512,807
Total	\$1,937,472	\$695,392	\$2,435,618	\$5,068,482

Feeding Program and Operating Inputs

An example feeding program was developed based on typical performance rates (Table 5). Feed efficiencies and daily rates of gain were estimated for a five-stage nursery feeding programs and six-stage feeding programs for the barrow and gilt finishers⁹. Feed in this example was priced as complete feeds delivered to the farm, using corn at \$0.045/lb (\$2.52/bu) and 44 percent soybean meal at \$0.09/lb (\$180/ton). Prices of nursery feeds 2 through 5 include cost of an antibiotic (Table 6).

	Begin Weight	feed/ lb.gain	Pounds Fed	Average Daily Gain	Begin Age
Creep Feed	9	1.00	1.00	0.48	12
At Weaning	10	xxx	xxx	0.46	14
Nursery 1	10	1.06	2.12	0.48	14
Nursery 2	12	1.21	4.84	0.61	18
Nursery 3	16	1.36	5.44	0.74	25
Nursery 4	20	1.60	16.00	0.90	30
Nursery 5	30	1.98	43.56	1.15	41
Nursery 6	52	2.31	0.00	1.38	60
Leaving Nursery	52				60
Overall Nursery		1.71	71.96	0.91	
GroFin 1 Barrows	52	2.31	42	1.38	60
GroFin 2 Barrows	70	2.63	53	1.50	73
GroFin 3 Barrows	90	3.03	91	1.60	87
GroFin 4 Barrows	120	3.47	139	1.74	106
GroFin 5 Barrows	160	3.81	152	1.84	129
GroFin 6 Barrows	200	4.05	162	1.90	150
Leaving Finisher (Mkt)	240				171
Overall GroFin Barrows		3.40	638	1.70	
Nursery/GroFin Barrows		3.09	710	1.40	
GroFin 1 Gilts	52	2.31	42	1.30	60
GroFin 2 Gilts	70	2.59	52	1.42	74
GroFin 3 Gilts	90	2.90	87	1.52	88
GroFin 4 Gilts	120	3.16	126	1.63	108
GroFin 5 Gilts	160	3.31	132	1.74	133
GroFin 6 Gilts	200	3.48	139	1.79	156
Leaving Finisher (Mkt)	240				178
Overall GroFin Gilts		3.08	578	1.60	
Nursery/GroFin Gilts		2.83	650	1.35	
Whole Herd Feed Efficiency		3.19			

⁹ The PigNet template contains an extra line for a sixth nursery ration if one is desired.

Table 6. Diet Costs by Stage	
<u>Rations:</u>	<u>Diet Cost/cwt.</u>
Gestation	\$6.21
Lactation	\$7.11
Creep Feed	\$53.50
Nursery 1	\$53.50
Nursery 2	\$32.05
Nursery 3	\$23.94
Nursery 4	\$16.78
Nursery 5	\$9.36
Nursery 6	\$0.00
GroFin 1 Barrows	\$6.71
GroFin 2 Barrows	\$6.46
GroFin 3 Barrows	\$6.20
GroFin 4 Barrows	\$5.89
GroFin 5 Barrows	\$5.66
GroFin 6 Barrows	\$5.45
GroFin 1 Gilts	\$6.71
GroFin 2 Gilts	\$6.54
GroFin 3 Gilts	\$6.29
GroFin 4 Gilts	\$6.06
GroFin 5 Gilts	\$5.82
GroFin 6 Gilts	\$5.62
Feed milling and delivery:	15.00

Example operating input requirements are shown in Table 7. Farrowing inputs were based mainly on a 1,200 sow weaner pig budget in DiPietre et al.¹⁰ and scaled up to the larger 1,400 sow size. Farrowing veterinary costs are assumed to be \$1.90 per pig weaned, based on 1995 farrow-to-finish averages from the Southwest Minnesota Farm Business Management Association and Iowa Swine Enterprise Record Program, with nursery and finish costs netted out as explained below. Miscellaneous supplies and repairs include building and equipment maintenance, supplies, trucking, records, manure disposal and miscellaneous. Manure disposal costs for lactation are based on 1,400 sows x 2.36 litters/year x 4 gallons/sow and litter/day x 12 days/litter x \$0.00625/gallon for custom spreading. For gestation, the calculation is 1,400 sows x 1.1 gallon/day x 337 days/year x \$0.00625/gallon. The manure production rates per day are from Midwest Plan Service guidelines. Labor hours for assume one full-time-equivalent person for each 280 sows. A breeding/genetics charge is included in the budget based on the purchase prices of

¹⁰ Swine Focus Team. The Missouri System of Swine Production. Manual 144, Commercial Agriculture Program, S102 Animal Sciences Research Center, University of Missouri, Columbia, MO 65211, Revised July 1994.

\$225/gilt and \$900/boar, and cull breeding stock sale prices of \$40/cwt for gilts, \$36/cwt for sows, and \$28/cwt for boars.

Nursery utilities, supplies and repairs are based primarily on a budget in the Iowa State University Community Nursery Notebook¹¹. Veterinary/medicine costs in the community nursery notebook analysis are assumed to be \$1.20/pig in a commingled situation, but it may be possible to reduce this cost in an SEW system. For that reason, the veterinary/medicine costs are assumed here to be \$0.75/pig entering the nursery. Manure disposal costs assume an average inventory of 4,166 pigs x 0.3 gallon/pig/day x 365 days x \$0.00625/gallon. Labor requirements assume a 1,200 pig nursery with a person working 4 hours/day for the first 4 days after a batch of pigs is brought in, and then 3 hours/day for another 52 days/batch. This averages 9 minutes/pig.

Finishing inputs are based on figures from the 1994 Southwestern Minnesota Farm Business Management Association summary (SW FBMA), the survey, and industry estimates. Utility costs of \$1/pig are based on records of feeder pig finishers in the Iowa and Nebraska swine enterprise record programs and on information from a large producer. This is less than the \$1.50/pig average of 17 feeder pig finishers in the SW FBMA. Veterinary costs of \$1/pig are based on the survey. The \$1.97/head marketing cost in the example includes trucking at \$1.50/hog plus the National Pork Board checkoff of 0.45 percent of the sale price. If other marketing costs are incurred, they can either be included here or the market prices can be entered net of marketing costs.

Finishing repairs were set at \$1.25/pig rather than the \$1.55 summary number because of the newer, larger facilities assumed for the network. Manure disposal is based on 29,493 hogs marketed/year, charged at a rate of \$0.67/hog marketed, from records of a producer in a large Minnesota network. Labor requirements are based on records from a unit with two 1,000 pig finishing barns, with a person working 1.5 hours/day/1,000 hogs. This calculates to 12 minutes per hog marketed. This may be conservative, as some industry standards call for 9 minutes of finishing labor per hog marketed.

Two other items that should be included under miscellaneous costs, if applicable, are transportation of pigs between sites, and professional fees for accounting, legal services, and management/coordination.

¹¹ JD McKean, DS Bundy, JD Harmon, PJ Holden, and JD Lawrence, TeamPork Community Nursery Handbook. EDC-16, Iowa State University Extension, Ames, IA, January 1995.

	<u>Farrow</u>	<u>Nursery</u>	<u>Finish</u>	<u>Total</u>
Util,fuel,elect.(yr)	\$17,800	\$35,749	\$29,493	\$83,042
Vet.,medicine(yr)	\$56,470	\$22,291	\$29,493	\$108,254
Trucking & marketing costs(\$/head)	\$0.00	\$0.00	\$1.96	
Misc. supp./repairs (yr)	\$36,467	\$28,574	\$53,374	\$118,415
Manure disposal (yr)	\$4,235	\$2,590	\$19,760	\$26,585
Professional fees (yr)	\$0	\$0	\$0	\$0
Hired labor(hr/wk)	240	86	113	439
Hired labor wage(\$/hr)	\$12.00	\$10.00	\$10.00	\$11.09

Breakeven Hog and Pig Prices

An annual break-even budget of costs and returns was calculated for the example operation in order to address the first two questions listed earlier (Table 8):

- Will the overall networked farrow-to-finish swine production system be profitable, at projected long run planning prices, costs and returns?
- What long run weaner pig and feeder pig planning prices will equitably share net returns among the owners of the farrowing unit, the nurseries and the finishers?

In this “break-even budget,” prices are set for 1) transferring the weaner pigs to the nursery, 2) transferring feeder pigs to the finisher, and 3) selling market hogs, at levels just covering all costs listed, including all labor. The overall operation will be profitable at a market hog price of \$43.71/cwt. The individual stages break even at a weaner pig sale price of \$26.40 and a feeder pig price of \$44.88. All labor is treated in the budget as hired labor, although PigNet includes space to enter operator labor separately if desired. Note that there is no return to management included. This procedure of adjusting prices to just cover all costs in each stage should determine the theoretical “appropriate” price between stages based on a set of input assumptions.

The budget has columns for total annual costs and returns for each stage, per pig numbers for each stage, and a total per hundredweight of market hogs sold. Note that the transfers of weaner pigs between the farrowing and nursery stages show up as returns in the farrowing stage and as feeder stock purchases for the nursery. There are similar entries for the transfer to finishing. The per pig purchase costs are slightly higher than the per pig returns because of factoring mortality into the purchase costs.

The second page of Table 8 shows several alternative measures of return on investment:

- rate of return based on initial investment,
- internal rate of return, and
- rate of return on average investment.

The budget assumptions described above include an 8 percent interest charge on average investment. This is the traditional farm management approach to estimating capital investment ownership costs. It is easy to calculate and explain - average investment is calculated by averaging the initial construction or purchase cost plus the salvage value, and this average is multiplied by the interest rate. However, this approach considerably underestimates the nominal interest costs in the early years of the investment. The finance literature also shows that the average investment method slightly underestimates overall interest and depreciation costs over the life of an investment.

Another simple and more conservative method is to calculate a rate of return based on the initial investment. Dhuyvetter uses this approach in a recent paper on estimating value of SEW pigs¹². The initial investment calculation is also used in the long run budgeting FINLRB module of the widely used FINPACK financial analysis and planning software package mentioned earlier. The actual investment declines over time as facilities depreciate, however, so this calculation theoretically underestimates the average rate of return that will actually be observed over time.

The rate of return measure that most accurately accounts for the time value of money (interest costs involved in financing cash flows over time) is the third measure shown - the internal rate of return (IRR). The IRR is calculated from a series of annual cash flows including the initial investment, the annual operating cash flows, and the ending salvage value. Each cash flow is discounted back to the present to account for the compounded interest that would be paid or received over the intervening years. The IRR rate itself is the interest rate at which the (usually negative) initial investment plus the later (usually positive) operating cash flows and salvage values, sum to zero. The PigNet template uses a built-in Excel function to find the IRR rate using an iterative process.

How much difference does it make which rate of return measure is used? In the budget, the rate of return on the average investment is 8 percent, while the return on initial investment is 4.45 percent and the internal rate of return is 6.42 percent. If producers are comparing the rate of return to their cost of capital, the decision might be made to proceed with the investment or not depending on which measure is used. The IRR is probably the most accurate measure to use, but the other measures are also included here to show how that measure compares with the other two, which may be more familiar to some users. Uncertainty about costs, industry trends and facility life are probably more important than the differences among these three return measures.

¹² Kevin C. Dhuyvetter, "Estimating the Value of SEW Pigs at Various Stages of Growth." Paper presented at the 1996 annual meeting of the American Association of Swine Practitioners.

Table 8. Annual Budget of Costs and Returns by Stage

	Farrow Per Weaned Pig Sold	Nursery Per Feeder Pig Sold	Finish Per Mkt Hog Sold	Total Per Mkt Hog Sold
<u>A. INCOME</u>				
1. Mkt. Hogs	xxx	xxx	102.83	102.83
2. Weaner Pigs	26.40	xxx	xxx	0.00
3. Feeder Pigs	xxx	44.88	xxx	0.00
4. Seedstock Sales	0.00	xxx	xxx	0.00
5. Less Feeder stock purchases		26.67	45.80	xxx
GROSS INCOME	26.40	18.21	57.03	102.83
<u>B. OPERATING COSTS</u>				
1. Feed				
a. Complete Feed(inc creep)	7.07	10.75	0.00	18.25
b. Grain	0.00	0.00	20.95	20.95
c. SBM(Comm.sup)	0.00	0.00	11.37	11.37
d. Premix & additives	0.00	(0.00)	3.82	3.82
e. Feed milling and delivery	<u>0.77</u>	<u>0.54</u>	<u>4.56</u>	<u>5.91</u>
TOTAL Feed costs	7.84	11.29	40.71	60.31
2. Util.,fuel,elect	0.60	1.21	1.02	2.88
3. Vet. & medicine	1.90	0.76	1.02	3.75
4. Trucking & marketing costs	0.05	0.00	1.96	2.02
5. Miscel. supplies/repairs	1.23	0.97	1.85	4.11
6. Manure disposal	0.14	0.09	0.69	0.92
7. Breeding/genetic charge (sum of lines a..d)	4.10	xxx	xxx	4.22
a. Depreciation	2.96	xxx	xxx	3.05
b. Semen	0.00	xxx	xxx	0.00
c. Opportunity cost	1.05	xxx	xxx	1.08
d. Insurance	0.09	xxx	xxx	0.09
8. Professional fees	0.00	0.00	0.00	0.00
9. Operator labor	0.00	0.00	0.00	0.00
10. Hired labor	5.05	1.52	2.04	8.81
11. Opportunity cost	<u>0.34</u>	<u>0.22</u>	<u>1.16</u>	<u>1.72</u>
TOTAL Non-feed oper. costs	<u>13.41</u>	<u>4.77</u>	<u>9.74</u>	<u>28.43</u>
TOTAL OPERATING COSTS	21.25	16.06	50.45	88.74
RETURN OVER OPERATING COSTS	5.15	2.15	6.58	14.09
<u>C. FACILITY OWNERSHIP COSTS</u>				
1. Depreciation	2.86	1.20	3.66	7.83
2. Insurance & Property Taxes	0.54	0.23	0.69	1.48
3. Opportunity cost	1.74	0.73	2.23	4.77
TOTAL OWNERSHIP COSTS	5.14	2.15	6.58	14.07
TOTAL COST OF PRODUCTION	<u>26.39</u>	<u>18.22</u>	<u>57.03</u>	<u>102.82</u>
RETURN TO MANAGEMENT	<u>0.01</u>	<u>(0.00)</u>	<u>0.00</u>	<u>0.01</u>
RETURN TO CAPITAL, OP. LABOR & MGT.	<u>2.09</u>	<u>0.95</u>	<u>3.38</u>	<u>6.50</u>
BREAKEVEN SELLING PRICE FOR MKT. HOGS (Per Cwt)				\$43.71

Table 8. (continued)				
	Farrow Per Weaned <u>Pig Sold</u>	Nursery Per Feeder <u>Pig Sold</u>	Finish Per Mkt <u>Hog Sold</u>	Total Per Mkt <u>Hog Sold</u>
Initial investment in breeding herd, buildings and equipment	56.33	18.11	55.28	131.82
Return based on initial investment	4.98%	4.03%	4.03%	4.45%
Internal rate of return	6.79%	6.46%	6.12%	6.42%
Average investment inc. operating inputs	39.10	11.84	42.26	94.64
Return based on avg investment	8.03%	7.98%	8.00%	8.01%

Whole-Farm Profitability and Cash Flow Considerations

The third question is:

- What will be the impact of network participation on individual member farms' profitability and financial condition?

If the swine network looks attractive in the analysis shown in Table 8, we recommend a more in-depth analysis of the individual network member's profitability, solvency and liquidity situation before making the final decision to join the network. This in-depth analysis should consider the member's share of the network's investment, costs and returns together with the other enterprises and sources of income available to the member's farm operation. One tool for a more in-depth whole-farm profitability analysis is the FINLRB module of FINPACK. A difficulty of using FINLRB is that it provides little assistance in estimating a number of critically important input data including potential pig flow from a particular size facility, and feed requirements per litter or per pig. To address this difficulty, the PigNet template generates FINPACK per unit data banks (enterprise budgets) for the entire farrow-to-finish system and for farrowing, nursery and finishing individually in order to facilitate FINLRB analysis.

A transitional cash flow analysis will likely also be required in order to evaluate financing needs. The FINFLO module of FINPACK can be utilized for this purpose. If any stages of the network are to be jointly owned, we recommend that a cash flow analysis be done for the entire jointly owned business entity as well as for each individual member's farm business including their share of the network investment.

Pig Pricing Formulas And Network Compensation Methods

Another question is:

- What contract rates will equitably share net returns between contractors and contract growers in networks where the contractor supplies animals, feed, and veterinary services and the grower supplies facilities and labor?

Pig pricing formulas, custom rates, and compensation formulas are typically based on an estimate of production costs for various stages of production. These formulas may also consider potential profits based on expected prices, average prices, or futures prices.

In contract or custom production networks, one network member may supply the animals while another member provides the facilities and labor in return for a per pig payment. As a guide for setting fees, Table 9 summarizes the per pig contributions from Table 8 split out into two categories as they might be provided by the two members.

The "farrowing" line in Table 9 includes breeding and gestation as well as farrowing and lactation. These are combined here because most contract farrowers handle the breeding step as well as farrowing. There are instances where a producer with good farrowing facilities is interested in contract farrowing only, with another producer owning the sows

and doing the breeding. The question then is: how much of the farrowing cost shown in Table 9 will be incurred during farrowing and lactation only, and how much during breeding and gestation¹³?

To split out labor, utilities, manure disposal and other miscellaneous costs between breeding/gestation and farrowing/lactation would require separate metering of utility costs to separate buildings and other detailed records. Such a split between breeding/gestation and farrowing/lactation is not shown in Table 9 because such detailed records were not available. One cost item that can be split is the farrowing feed cost of \$7.84/weaned pig for the breeding herd (see Table 8). The breeding/gestation share of this is \$5.56, with \$2.28 for sow feed and creep feed during farrowing/lactation.

Some custom rates reported in the survey for contract or custom networking arrangements where one member owns the animals and another provides facilities and labor are summarized in Table 10. Rates suggested by the spreadsheet analysis are also discussed.

¹³ See “Sow Pools in a Swine Production System” by William F. Lazarus and Lee J. Johnston, available from Waite Library, Department of Applied Economics, 1994 Buford Avenue, University of Minnesota, St. Paul, MN 55108 for additional information on systems of centralized breeding/gestation with farrowing on individual members’ farms.

Table 9. Summary of Costs by Stage of Production and Contribution Based on PigNet Spreadsheet			
PRODUCTION CONTRACTING ANALYSIS	Farrow Per Weaned Pig Sold	Nursery Per Feeder Pig Sold	Finish Per Mkt Hog Sold
<u>GROWER</u>			
<u>Operating and ownership costs</u>			
2. Util.,fuel,elect	0.60	1.21	1.02
5. Miscel. supplies/repairs	1.23	0.97	1.85
6. Manure disposal	0.14	0.09	0.69
9. Operator labor	0.00	0.00	0.00
10. Hired labor	5.05	1.52	2.04
<u>Facility ownership costs</u>	<u>5.14</u>	<u>2.15</u>	<u>6.58</u>
Total grower costs	12.16	5.95	12.18
<u>CONTRACTOR</u>			
<u>Operating and ownership costs not including grower payment</u>			
TOTAL Feed costs	7.84	11.29	40.71
3. Vet. & medicine	1.90	0.76	1.02
4. Trucking & marketing costs	0.05	0.00	1.96
7. Breeding/genetic charge (sum of lines a..d)	4.10	xxx	xxx
8. Professional fees	0.00	0.00	0.00
<u>11. Opportunity cost</u>	<u>0.34</u>	<u>0.22</u>	<u>1.16</u>
Total not including grower payment	14.23	12.26	44.85
Contractor Income	26.40	18.21	57.03
Contract Payment	12.16	5.95	12.18
Total contractor costs including grower payment	26.39	18.21	57.03
GROWER RETURN TO MGMT & RISK	(0.00)	(0.00)	(0.00)
CONTRACTOR RETURN TO MGMT & RISK	0.01	0.00	0.00
Grower Internal rate of return	5.64%	7.31%	7.02%
Contractor Internal rate of return	8.99%	3.76%	4.43%
<u>Percentage breakdown of costs</u>			
Grower percent of total costs	12%	6%	12%
Contractor percent of total costs	<u>14%</u>	<u>12%</u>	<u>44%</u>
Stage percent of total costs	26%	18%	55%

Table 10. Custom Rates for Situations Where One Network Member Supplies Animals and Feed While Another Member Supplies Facilities and Labor

Breeding & Gestation	Limited information indicates fees up to \$8/pig.
Farrowing	Limited information indicates fees up to \$8/pig.
Feeder Pig Production	Sliding scale systems exist with \$14.00-\$16.00 per pig average, others with 25-30% of litter or equivalent value. Spreadsheet suggests \$18.11/pig (\$12.16 farrowing plus \$5.95 nursery) to cover facilities, labor, utilities and miscellaneous expenses including manure disposal.
Nursery Costs	Three different approaches are reported: 1) Per pig/day - range of \$0.07-\$0.10 2) Per pig - \$5.50 appears typical 3) Per pig-space (3 ft ²)/year - range of \$30-\$32 Spreadsheet suggests \$5.95/pig (or \$35.70/pig-space if 6 turns/year) to cover facilities, labor, utilities and miscellaneous expenses including manure disposal.
Finishing	Two different approaches are reported: 1) Per pig/day - range of \$0.07-\$0.10 2) Per pig-space - range of \$35-\$36 (or lower per pig guarantee with bonus payments based on feed efficiency and deathloss) Spreadsheet suggests \$12.18/pig (or \$0.11/pig/day, or \$36.54/pig-space if 3 turns/year to cover facilities, labor, utilities and miscellaneous expenses including manure disposal.)
Note: The square footage allocation per pig and timing of payment will alter fees	

The last question addressed in this section is:

- What weaner pig and feeder pig pricing formulas will equitably share profits and losses among the farrowing, nursery and finishing profit centers as market hog and feed prices vary over time?

Hog and feed prices vary both seasonally and cyclically, resulting in profits and losses in swine production over time. Historical trends in Iowa-southern Minnesota barrow-gilt prices, Iowa feeder pig auction prices, and north central Iowa corn prices are shown in Figures 3 and 4.

Table 11 lists pricing approaches reported in the interviews, an approach based on the financial analysis above, and an approach derived from the Iowa feeder pig auction market. One pig pricing method being used is to price the pigs at a fixed price per qualified pig. The fixed price shifts all of the hog price risk to the buyer of the pigs. The seller is still left with feed price risk as feed prices vary over time.

The analysis presented in Tables 1 through 9 can be used to find prices for weaner pigs and feeder pigs that share profits or losses when pigs are transferred among the farrower, nursery and finisher. The profit split projected when the networking arrangement is set up will change over time, however, as prices vary. The budget itself can be recalculated each time prices and costs change, each time finding the weaner pig and feeder pig prices which allocate returns equitably. PigNet includes a macro which solves for weaner pig prices which provide equal internal rates of return on investment for the farrower and the combined nursery-finishing stages over a range of quarterly corn, soybean meal, and 170 day hog futures prices which occurred in the three-year period 1993-95. This relationship can be expressed as a formula:

$$P_p = -0.699 - 1.750 * C_p - 0.0239 * SBM_p + 0.862 * .MH_p$$

Where P_p = Weaner pig price/hd.,
 C_p = corn price/bu.,
 SBM_p = soybean meal price/ton, and
 MH_p = 170 day hog futures price.

It is important to realize that as the budget is modified to fit specific situations, this formula will need to be modified using the macro in PigNet.

Figure 3. Iowa-Southern Minnesota Cash Hog Prices Compared to Iowa Auction Feeder Pig Prices, 1988-Present

Figure 4. North Central Iowa Cash Corn Prices, 1988-Present

Figure 3. IA-S MN Cash Hog Prices
and IA Feeder Pig Prices, 1988-Present

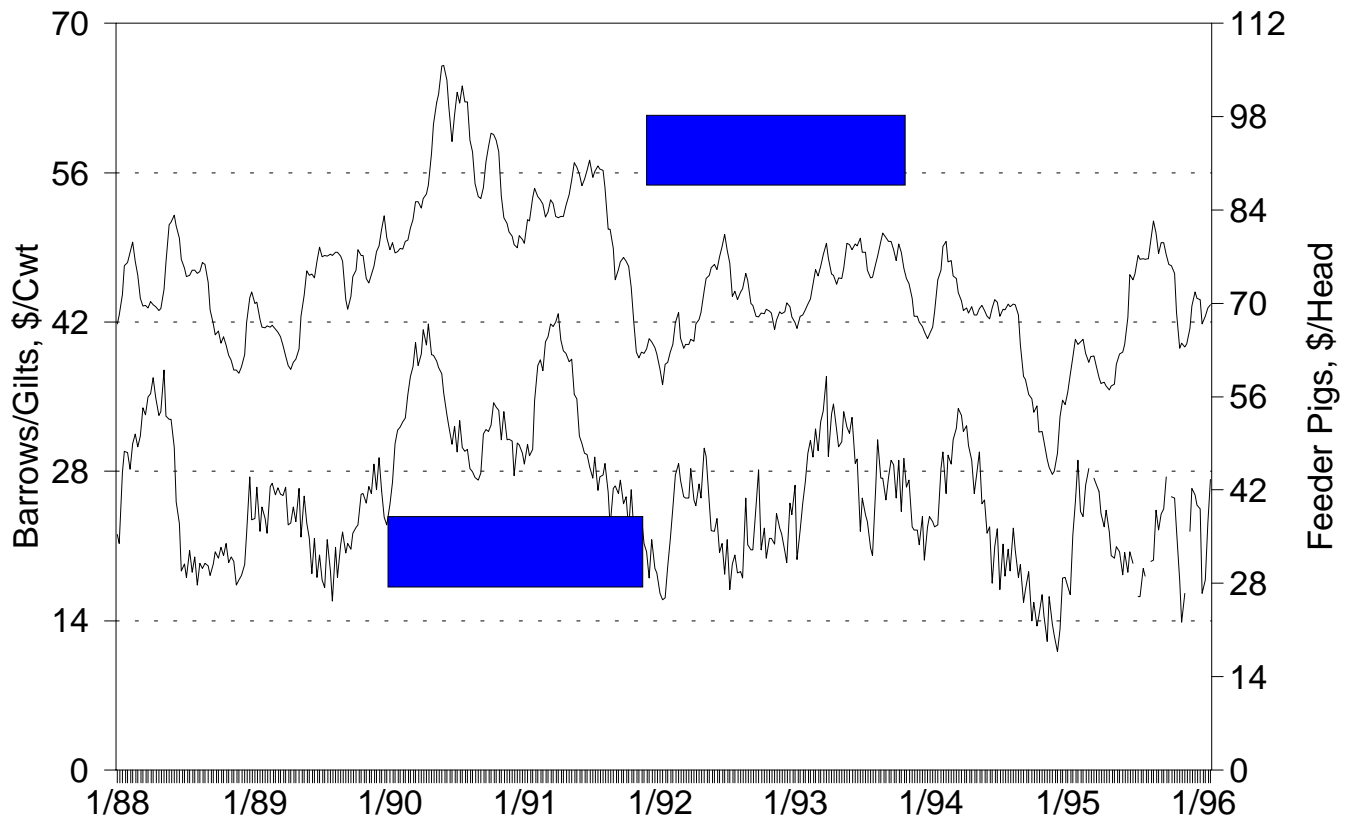
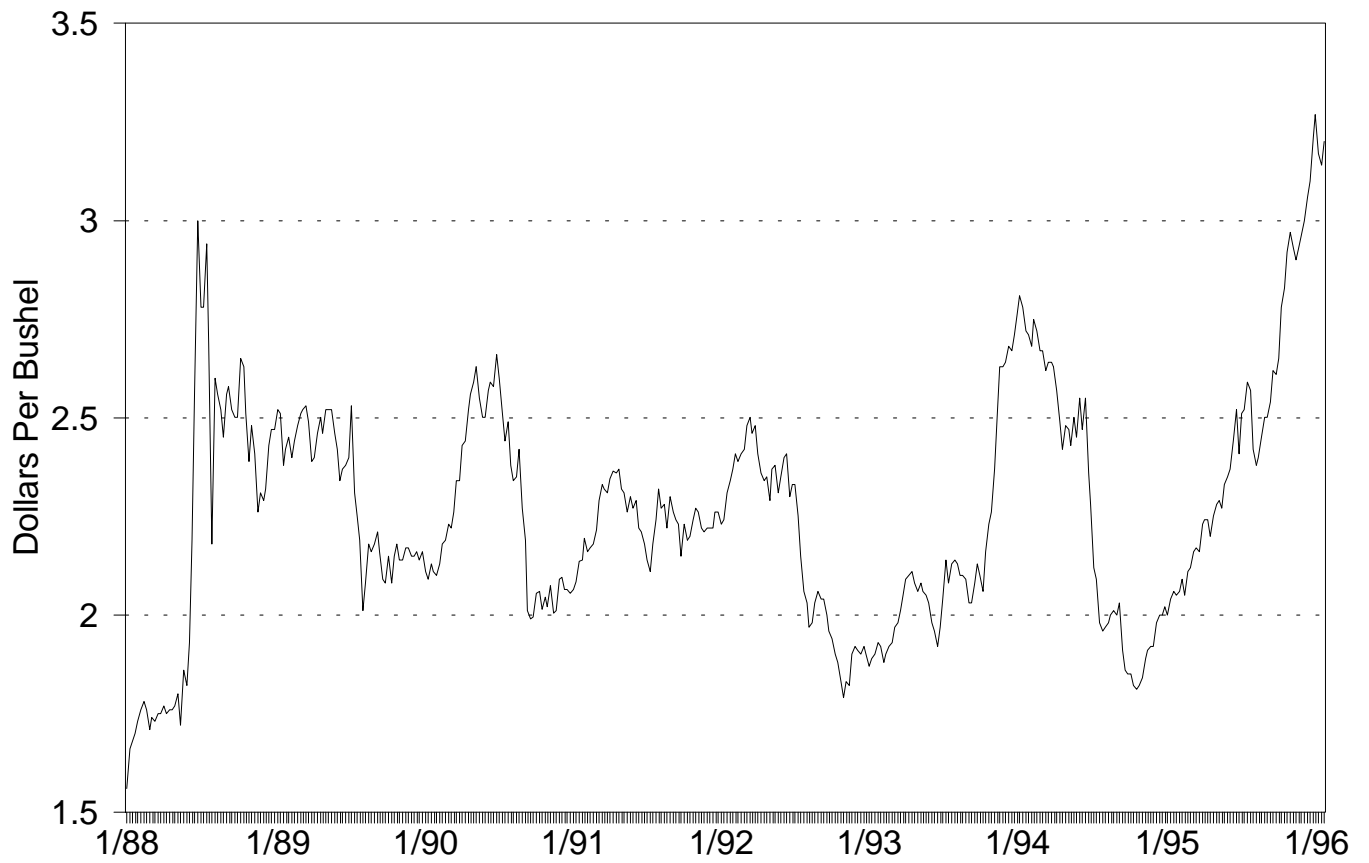


Figure 4. Cash Corn Prices
North Central Iowa, 1988-Present



Another approach to pricing is to attempt to mimic actual Iowa feeder pig auction prices as closely as possible. Historically, feeder pig prices have been more volatile than market hog prices. Finishers have bid up feeder pig prices during times of high market hog prices and/or cheap feed, while at other times large declines in feeder pig prices have resulted from smaller market hog price declines. Several feeder pig and weaner pig pricing formulas have been suggested by John Lawrence of Iowa State University to give a more satisfactory sharing of profits and losses over time than a fixed price would provide¹⁴, based on regression equations:

Feeder pig price per hundredweight =

$$\text{Equation 1)} \quad -6.16 + 2.10 \times \text{live hog futures} \quad r^2=0.44$$

$$\text{Equation 2)} \quad 32.85 + 2.73 \times \text{hog futures} - 27.90 \times \text{cash corn price} \quad r^2=0.70$$

The feeder pig prices used were US, 1-2, 40-50 pound feeder pigs at Iowa auctions. The hog futures prices used were the Chicago Mercantile Exchange live hog futures prices for the contract four months out. The corn prices were for north central Iowa corn.

Note: The live hog futures contract is being replaced by a carcass hog contract based on a standard carcass yield of 74 percent. The carcass price equivalents to equations 1 and 2 are:

$$\text{Equation 1)*} \quad -6.16 + 1.55 \times \text{carcass hog futures}$$

$$\text{Equation 2)*} \quad 32.85 + 2.02 \times \text{carcass hog futures} - 27.90 \times \text{cash corn price}$$

The equations were estimated using weekly data from January 1975 through December 1985. This time frame covers two complete hog price cycles.

Several other formulas were reported in the survey, and are summarized in Table 11. One interesting point which Table 11 brings out is that a typical weaner pig pricing formula is 66 or 67 percent of the futures price, which at \$45 gives a price of \$30 per weaner pig. Feeder pigs are typically priced at about 95 percent of futures, or \$43 per feeder pig. This provides a gross return to the nursery of \$13 per pig, compared to a nursery cost of \$18 per pig calculated in Table 8. This seems to indicate that it is not profitable to purchase weaner pigs at typical prices and sell them at typical feeder pig prices. It would be necessary to retain ownership through finishing in order to capture the full benefits of the finishing performance assumed in the budget. The 95 percent feeder pig formula may be geared to a lower level of finishing performance, or perhaps smaller lot sizes that do not fit as well into an all in/all out finisher.

¹⁴John D. Lawrence and Jennifer Schmidt, "Alternative Feeder Pig Pricing Formulas," in the Journal of the American Society of Farm Managers and Rural Appraisers, Vol. 58, No. 1, June 1994. See also John D. Lawrence, "Pricing and Valuing SEW Pigs," unpublished mimeo, for a discussion of weaner pig pricing.

Table 11. Pig Pricing Approaches for Situations Where Ownership of Pigs is Transferred Farrowing-to-Nursery and Nursery-to-Finishing, With Owner In Each Stage Supplying All Inputs

<p>Early Wean Pigs</p>	<p>Three approaches were identified. They leave the farrower with 1) no hog price risk, 2) some risk, and 3) more hog price risk:</p> <p>1) Fixed price in the range of \$27-\$33/pig</p> <p>2) Price/pig equal to a percentage times the hog futures price/cwt, such as 60%-70% (example: $0.66 \times \\$45 \text{ futures} = \\$29.70/\text{pig}$).</p> <p>3) Price/pig equals the hog futures price/cwt minus a constant number in the range of \$12-15 (example: $\\$45 \text{ futures} - \\$13.50 = \\$31.50/\text{pig}$). Some include a minimum and maximum window such as \$27-\$37.</p> <p>The pricing formula derived from the PigNet financial analysis is weaner pig price = $-0.729 - 1.376 * \text{corn price/bu.} - 0.0215 * \text{SBM price/ton} + 0.859 * \text{market hog 170 day futures price/cwt}$.</p>
<p>Feeder Pigs</p>	<p>Two approaches reported are:</p> <p>1) Price/pig equals a percentage of futures (example: $0.95 \times \\$45 \text{ futures} = \\$42.75/\text{pig}$) This is the Lawrence equation 1.</p> <p>2) Two-part payment - First part is a fixed price per 40 pound pig with adjustment for weight variation (example: \$40/40 lb. pig plus/minus \$0.30/lb). The second payment is a profit split at close-out.</p> <p>The modified Lawrence equation 2, by comparison, is $(32.85 + 2.02 \times \text{carcass hog futures} - 27.90 \times \text{cash corn price})$. There were no reports of this formula being used.</p>

Publications Available on Networking and Segregated Early Weaning in Swine Production

A great deal has been written over the past few years about networking, the segregated early weaning technology which seems to be a major driving force behind the development of networks, and related topics. Information about networking arrangements and adoption of segregated early weaning (SEW) technologies is being made available in many different formats by various state extension services, in swine magazines and academic journals, and by the National Pork Producers Council. The Minnesota Pork Producers Association leadership has expressed interest in assembling a library of this information which can be made available to producers.

As a start toward the library suggested by MPPA, the Minnesota Extension Service Swine Focus Team members picked out those “favorite” publications that we felt contained unique information which producers might find useful. We sorted these publications by subject matter category, and then wrote a brief description of each publication’s potential value to swine producers. Publications we selected are listed on the following pages. The subject matter categories are:

	<u>Page</u>
I. Technological and structural changes occurring in the swine industry which may be driving the trend toward networking and SEW	35
II. General information about forming a network	37
A. Materials specifically about information-sharing networks	40
B. Marketing networks	41
C. Production networks	42
III. Legal issues to consider when forming a network	43
IV. High health - general information	46
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A. Economics	49
B. Nutrition	50
C. Management	50
D. Facilities	51
E. Valuing SEW pigs	51
VI. Information about specific diseases	52
VII. Genetics and breeding systems	52
VIII. Marketing	53
IX. Production contracting	55
X. Financial management	58
XI. Environmental issues	59
XII. Personnel management	60

How do you get copies of the publications themselves? Check "Source" which shows where each publication was published. The following line says "Availability:" and either "Order directly" or "In Swine Center packet". The publications marked "Order directly" are fairly large bulletins, notebooks, and one videotape. They can be ordered directly from the following organizations at the addresses shown below:

NPPC (National Pork Producers Council)	1(800)456-7675
Attn: Ordering Department	(515)223-2600, Ext. 621
P.O. Box 10383, 1776 N.W. 114th St.	Or Fax: (515)223-2646
Des Moines, IA 50306	

USDA Agricultural Cooperatives Service	(202)690-0357
USDA RBS, AG Box 3255	
Washington, DC 20250-3255	
Attn: Sylvia Tyler	

Purdue Cooperative Extension Service	(317)494-6794
Media Distribution Center	or Fax: (317)496-1540
301 South 2nd Street	
Lafayette, Indiana 47901-1232	

Iowa State University Extension
Ames, Iowa 50011-1070

Commercial Agriculture Program	(314)882-4553
University Extension	
University of Missouri	
Columbia, Missouri 65211	

Publications marked "In Swine Center packet" are fairly brief publications such as extension fact sheets and articles from back issues of the swine magazines. These fact sheets and articles may be available from your county Extension office or library. We also plan to assemble a packet of reprints of these publications which will be available from the Swine Center office for a nominal charge to cover the cost of duplication and mailing. All of the publications marked "In Swine Center packet" will be available together in this packet. Reprint packets of individual sections will also be available. Sorry, we will not be able to provide reprints of individual publications, one at a time. There is a charge for the packets to cover the cost of duplication and handling.

To order, call or write to:

Swine Center	Phone (612)625-8781
385 An Sci/Vet Med	FAX (612)625-1210
1988 Fitch Avenue	email longt001@maroon.tc.umn.edu
St. Paul, MN 55108	

Information Available on Networking and Segregated Early Weaning

Technology - general information

Author: Bitney, Larry

Title: How Big Does My Swine Enterprise Need to Be?

Source: Proceedings, Nebraska Whole Hog Days, 1995

Availability: In Swine Center packet

This article shows that the swine enterprise needs to only be large enough to support a family, and producers don't have to be very big if they are good at managing the pork production business. Market access, buying inputs competitively, producing efficiently, and getting a premium price may justify increases in size, but not necessarily. To survive, smaller producers may need to form networks to achieve the advantages of the very large operations. This involves giving up some independence and relying on skills of others.

Author: Boehlje, Mike, Kirk Clark, T.R. Cline, Kenneth Foster, Jeffrey Hale, Chris Hurt, Don Jones, Steve Nichols, Allan Schinkel, Wayne Singleton

Title: Positioning Your Pork Operation for the 21st Century

Source: Purdue Cooperative Extension Service, Mar, 1995

Availability: Order directly

"How-to" manual for producers looking to reorganize and expand. Introductory comments about the changing industry and strategic options for producers. Budgets for 1200-sow, 600-sow, 300-sow and 150-sow farrow-finish units. Details are provided on assumptions, specifications and building layouts. Budgets of the impacts of all-in/all-out, SEW, split sex phased feeding, AI and genetics. Discussion of marketing issues, financial structure, manure management and networking.

Author: DiPietre, Dennis and Swine Focus Team

Title: Missouri System of Swine Production (notebook)

Source: U of Missouri, July 1994

Availability: Order directly

"How-to" manual for producers looking to reorganize and expand.. Budgets for 1200-sow, 600-sow, 300-sow and 150-sow farrow-finish units plus a 1200-sow weaner pig unit. Discusses pig flow, performance goals, site selection, breeding stock selection, facility design and operation, health, feed requirements by stage, and general management considerations.

Author: Fussell, Leonard W., DVM

Title: Poultry Industry Technologies Potentially Useful for Swine Industry

Source: Proceedings, American Association of Swine Practitioners, pp. 455-62, 1992

Availability: In Swine Center packet

Production practices and methods of disease control used in the poultry industry may be useful to the swine industry. The first four pages of the paper describe economically important diseases facing the poultry industry. The author admits that these diseases are not applicable to the swine industry. The last portion of the paper provides a cursory description of a variety of management practices employed in the poultry industry. 7 pages.

Author: Goodwin, Rodney and Scott Burroughs

Title: Genetic Evaluation: Terminal Line Program Results

Source: National Pork Producers Council,

Availability: Order directly

This 312 page book provides a summary of results for the largest, most comprehensive genetic evaluation program ever conducted in the US. The summary compares seedstock populations, representing sire lines only, for crossbreeding use[not pure line use]. Sire line performance for 40 different traits are summarized. Also, genetic heritabilities and correlations among all traits are reported, including the effects of the "stress" gene on all 40 traits. Information on how to use these results in combination with seedstock supplier programs to select breeding stock is given. .

Author: Lawrence, John

Title: Swine Industry Myths

Source: Proceedings, Nebraska Whole Hog Days, 1995

Availability: In Swine Center packet

This article addresses popular myths about current trends in the pork industry and gives examples of producers who are competitively positioned for the future.

Author: Lawrence, John
Title: What's Happening in the Pork Industry?
Source: Proceedings, Nebraska Whole Hog Days, 1995 Availability: In Swine Center packet

This article summarizes the changes that are occurring in the pork industry. These changes are driven by economic forces that are unlikely to reverse or slow down. Existing producers must find a way to meet consumer and packer demands more efficiently than other producers. The primary challenges for producers are accessing information, technology, markets and maintaining high quality human resources.

Author: Leman, A.D.
Title: Application of Technology in U.S. Pork Production from 1985 to 2000
Source: Hoffman LaRoche Paper, Availability: In Swine Center packet

This paper presented a futuristic look at the U.S. swine industry when it was written in 1985. However, in 1995, the paper provides a historical accounting of what thought-leaders in the pork industry were thinking in 1985. Mostly, the reader can see how many of the predicted trends came true and how the industry may have changed course between 1985 and 1995. 12 pages.

Author: McFarlane, Jim
Title: Facilities: What Works, What Doesn't
Source: NPPC National Pork Lenders Conference, 1994 Availability: Order directly

A review of the economic importance of feeder selection, adopting energy saving heating, and cooling and ventilation technologies. Discusses ranges in building costs/pig space and the importance of vapor barriers, rodent proofing, electrical safety, fire safety and insurance to protect facility investment. Some discussion on manure management technologies and community relations. 9 pp.

Author: Rhodes, V. James
Title: Industrialization of Hog Production
Source: Review of Agricultural Economics 17(1995):107-118, Availability: In Swine Center packet
May 1995

A comprehensive overview of the recent changes in the swine industry. Considers changes in size, location and number of producers. Provides summary of the forces of structural changes, vertical integration and the implications for the economy. Finally, policy alternatives are considered in response to concerns of environmental impacts and impacts on family farms.

Author: Vinson, Ralph D.
Title: Economics of New Technologies
Source: NPPC Pork Academy Proceedings, June 1994 Availability: In Swine Center packet

An overview of the economic importance of adopting new technologies including: better genetics, breeding and gestation facilities, AIAO, multi-site production, SEW, split sex feeding, and phase feeding. Economic estimates and a few assumptions are given. Example input and output sheets are provided for a 600 sow split-sex farrow-to-finish model using University Extension-Commercial Ag Swine Program: PigVenture. 13 pp.

Author: Wegehenkel, Roger
Title: MoorMan's Outdoor Swine Technology (MOST)
Source: NPPC Pork Academy Proceedings, June 1994 Availability: In Swine Center packet

A very detailed description of the outdoor, management-intensive swine production system designed by the MoorMan Company. Descriptions of breeding/gestation, farrowing, nursery, and finishing areas are included. Land, fencing, feeders, waterers, and layout requirements are also described. A brief summary of animal performance and costs is included. There are no drawings or sketches of the system. This paper is written for a producer audience. 11 pages.

Forming a network - general information

Author: Anderson, Curtis W

Title: Networking in the Citrus Industry

Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993 Availability: Order directly

A long term perspective from Sunkist, a 100 year old cooperative specializing in citrus products. Provides a historical overview, and a current situation report. A brief overview of how Sunkist is structured and the responsibilities of members.

Author: Anderson, Erik Klindt

Title: Networking in the Danish Pork Industry

Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993 Availability: Order directly

Begins with a brief overview of the Danish pork industry. Reports that Denmark has strict environmental and corporate farm laws. All slaughterhouses are cooperative, and own several related enterprises. Summarizes the important activities of the "Federation of Danish Pork Producers and Slaughterhouses" which is designed to reach optimal solutions on a common basis. Also includes an overview of the Danish Pig Meat Improvement Program.

Author: Boehlje, Michael and David Lins

Title: Alternative Financial/Organizational Structures of Farm and Agribusiness Firms

Source: North Central Regional Extension Publication No. 568, April 1995 Availability: In Swine Center packet

Suggested for producers or groups looking to reorganize and expand the business. Discusses choices in legal organization (sole proprietorship, partnership, corporation, limited liability company, land trust, cooperative), business arrangement (independent, contract producer, joint venture, etc.), leasing options, sources of equity and debt (loans and bonds). Gives an examples of how a single farming operation might employ a variety of these options. Considers objectives of maintaining control, maximizing returns, minimizing risks and achieving goals in maturity, permanence and liquidity. 20 pp.

Author: Braaksma, August W

Title: Group Financial Arrangements

Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993 Availability: Order directly

Begins with a brief history of Robobank Nederland, a top 50 bank located in the Netherlands, and Robobank, North America. Considers the major developments in the swine industry and provides two scenarios of how group financial arrangements may work.

Author: Cummings, Alison

Title: Networking: Helping Swine Producers Meet Their Objectives

Source: Harvest States Agri-Vision, summer 1995 Availability: In Swine Center packet

A look at how one coop, Harvest States, has helped three different groups expand their swine operations. Two of the operations are group coops and one is a farm family. A discussion of why each of the expansions took place, including quotes from participants. A general overview of why changes are taking place and how each individual responds is part of the introduction.

Author: DiPietre, Dennis

Title: Concept of Networking

Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993 Availability: Order directly

Provides a concise overview of networking. Considers the current environment and how this has created an opportunity for networking. Suggests networking permits smaller independent producers to gain economies of larger producers and also obtain access to markets, information, technology and financing. Defines what networking is not, and provides example of successful networking.

Author: Doyle, Becky
Title: What is Necessary to Remain Competitive?
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

A thought piece on what is required to be successful in the pork industry. One important factor is to recognize that pork is a consumer oriented business. Must consider trends in trade and away-from-home food consumption. Small producers have difficulties influencing these markets, but suggests this can be accomplished through networking.

Author: Ely, Gerald
Title: Organizing a Producer Group or Co-op
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Outline of cooperative issues. Includes a definition of cooperatives, principles of cooperatives, benefits to farmer-owners, the importance of management, member obligations to cooperatives and steps to organizing a cooperative.

Author: King, Mike
Title: Is a Producer Network in Your Future?
Source: Pork '94, Mar 1994
Availability: In Swine Center packet

Interpretation: Introductory article to a Staff Report consisting of four articles on producer networks. The four articles give examples of working networks, their advantages and disadvantages, how to organize and finance, and legal considerations. "Cooperative Selling in Iowa" discusses group marketing through Quality Pork Marketing, Inc. based in Postville, IA. "Pigs Add Value To Corn" discusses how a group of farmers organized to run a gilt multiplier as ValAdCo in Renville County, MN. "Creating a Demand for Manure" discusses the initial phase of a network to find markets for hog manure in Ohio. "Informal Structure Broadens Appeal" discusses Top Notch, an organization in the formative stages which is operating with only a gentleman's agreement to produce F1 replacement gilts. Use: Good introductory material for producers interested in networking. Covers concepts and general principals of each network. Limitations: Somewhat limited on details.

Author: Kullmann, Donald L
Title: Networking in the Dairy Industry
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

An example of networking in the dairy industry (Prairie Farms Dairy) is used as an illustration of how networking might be applied in the swine industry. Provides an extensive history of Prairie Farms Dairy. Suggests that success depends on hard work, capital, risks, sacrifice and loyalty and that some individuality will be lost. Further, pork producers must maintain some control of their product from the farm to the consumer.

Author: Lawrence, John
Title: Networking
Source: NPPC National Pork Lenders Conference, 1994
Availability: Order directly

Defines networking, briefly describes three categories of producer networks, discusses some of the advantages and disadvantages of producer networking, and describes some of the elements that lenders should know when working with clients considering networking. 10 pp.

Author: Lawrence, John
Title: Producer Networking: What Is It, and Is it For Me?
Source: Proceedings, Nebraska Whole Hog Days, 1995
Availability: In Swine Center packet

This paper defines the term and concept of networking; describes three types of producer networks including information networks, marketing networks, and production networks; and discusses some of the advantages and disadvantages that should be considered by producers evaluating the use of networks for their operation.

Author: Lawrence, John D
Title: Benefits and Limitations of Producer Networking
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Considers that networking may be both vertical (between different sectors of the pork industry) or horizontal (within the same sector). Producers should first consider the objectives of the network in the context of their own operation. Discusses potential benefits of networks, including capturing technologies, economies of size, improved quality and market access. Considers basic limitations of networks, including: commitment, sharing responsibility, complexity of business procedures, and potential loss of markets.

Author: Lerwick, Jim
Title: Group Production Plans and/or Business Arrangements: Feeder Pig Co-ops and Beyond
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Explains that the reason to join networks is the limit of capital, expertise or management time. Suggests secondary advantages are gained from technology and productivity. Provides a summary of difficult issues which must be addressed, benefits found, and some suggestions to help producers considering working cooperatively to be successful.

Author: Miller, Marlys
Title: Six Steps to Organizing a Network
Source: Pork '94, Mar 1994
Availability: In Swine Center packet

A practical look at lessons learned through experience. These six steps act as a practical guide in setting up a successful network. Several pitfalls are identified if you try to skip a step. Two sidebars on "Rules for Long-Term Success" and "The People Factor" are valuable additions. This is a general overview only.

Author: National Pork Producers Council
Title: Networking II Conference: Competitive Positioning for Pork Producers
Source: Proceedings NPPC Networking II Conference, St. Louis, Missouri, Dec 6-7, 1994
Availability: Order directly

A collection of individual papers ranging from the concept, benefits and limitations of networking, to ways to organize and effectively utilize a variety of different types of networks. Presenters include pork producers, veterinarians, economists, and other industry professionals. 176 pp.

Author: National Pork Producers Council
Title: Networking: Competitive Positioning for Pork Producers
Source: NPPC, Video Tape,
Availability: Order directly

A short video (approximately 15 minutes) giving a brief overview of the definition of networking, advantages and disadvantages of networking and examples of different types of networks that have been formed in the pork industry.

Author: Reiners, Sadie
Title: Economic Aspects of Producer Group or Co-ops
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Begins with information about the St. Paul Bank for Cooperatives. Provides examples of newly created value-added cooperatives working with the bank, and other examples of how producers are networking and factors producers should consider prior to forming a network or cooperative.

Author: S.E. Nebraska Feeders Supply Co.
Title: Our Experience With Producer Networking
Source: Proceedings, Nebraska Whole Hog Days, 1995
Availability: In Swine Center packet

A collection of transparency copies from the presentation given at the 1995 TIPS Conference showing examples of why integrated pork systems work, identify items that independent producers can do to obtain a competitive advantage, and types of network groups.

Author: Snyder, Wayne
Title: Coordination and Cooperation with Agribusiness
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993 Availability: Order directly

Considers the key factors of success from the perspective of an agribusiness firm. Suggests producers must consider behaving like larger firms through networking, must access new technologies, consider market agreements, and production agreements to access multiple site production. Outlines some of the expected benefits. Asserts that contracting is a form of networking, not just work for pay.

Author: South Dakota Pork Producers Council
Title: Network Development Checklist
Source: South Dakota Pork Producers Council, 1995 Availability: In Swine Center packet

Four-page mimeo with questions about capital contributions, how business decisions will be made, and dissolution.

Author: South Dakota Pork Producers Council
Title: Network Development Checklist
Source: , 1995 Availability: In Swine Center packet

Three page list of things to consider if setting up a network, such as how capital contributions will be handled and how business decisions will be made.

Author: United States Department of Agriculture
Title: How to Start a Cooperative, Cooperative Information Report No. 7
Source: USDA Agricultural Cooperative Service, Sept 1993 Availability: Order directly

Fairly detailed discussion of the most important elements to consider when forming a cooperative. List of steps involved in setting up, rules for success, and sample financial statements and legal documents. 51 pp.

Author: United States Department of Agriculture
Title: Is a Co-op in Your Future? Cooperative Information Report 10
Source: USDA Agricultural Cooperative Service, Oct 1991 Availability: Order directly

Very brief list of steps involved in setting up a cooperative (potential members meet, steering committee meets, determine if it can succeed, implement the business plan, board of directors meet). Cartoon illustrations are designed to be made into a slide presentation. 34 pp.

Information networks

Author: Hollis, Gilbert
Title: Information Networking
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993 Availability: Order directly

An overview of Pork Illinois, Inc., an information networking group that was founded March 25, 1975 in Springfield, Illinois. Provides a history of the organization and a brief summary of the by-laws which have been crucial to the success of Pork Illinois.

Author: Schuiteman, Jan
Title: Information Networking
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993 Availability: Order directly

Discusses a number of networking projects, including centralized gilt production, centralized breeding and off-site farrowing systems, coordinated marketing, central purchasing, and knowledge management. Emphasizes a coordinated marketing program, which set out to compare the packer purchasing contracts of five major packers. Provides a summary of the results of their research on carcass performance and pricing.

Author: Yeske, Paul
Title: Information Networking
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Discusses the information networks formed by a veterinary clinic. Provides a listing of the important factors to help make an information network successful. Most of the groups are relatively loosely organized to allow for flexibility as new developments arise.

Marketing networks

Author: Baum, David H
Title: Group Marketing
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Provides an overview of Quality Pork Marketing, Inc., a marketing co-op begun in 1992 in Postville, Iowa. Provides data on costs of beginning and maintaining the marketing network, and includes limited summary data on prices obtained by Quality Pork Marketing, Inc.

Author: Brauer, George
Title: Group Marketing and/or Purchasing
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Provides a very brief overview of L.G. and Midwest Co-ops, which is an organization designed to coordinate marketing and purchasing of swine producers. Major point is that volume purchases are an important way to reducing costs because mark-ups are generally lower on large scale purchases.

Author: Ellinghuysen, Richard
Title: Group Production Plans and/or Business Arrangements: Feeder Pig Co-ops and Beyond
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Explains that management is crucial to the success of any business. Provides a summary of the National Farmers Organization, "a not-for-profit farm organization of independent producer-members which develops and carries out marketing strategies designed to enhance the price of agricultural commodities". Provides a brief summary of their GroupMarketing+ program, and some data to support the benefits.

Author: Hooker, Phil
Title: Group Marketing and/or Purchasing
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Provides a brief overview of Cooperative Pork Services, which is a co-op founded in Tennessee in 1990. The co-op began strictly as a swine marketing co-op but expanded into purchasing. Suggests that the major problem of starting a cooperative is getting committed people. Explains how the co-op was formed and considers factors which led to its success.

Author: McMahon, Karen
Title: Marketing Group Numbers Grow
Source: National Hog Farmer, Nov 15, 1994
Availability: In Swine Center packet

Reports on the operations of a market network. Provides some information on the returns producers are receiving from marketing alliances. Finds producers must improve the quality of pork. Does not advocate one type of genetics, but knowing when hogs are finished to a packers specifications is crucial in pricing. Concludes producers will find it necessary to form alliances to packers if they wish to avoid being a residual supplier on the packer's terms.

Author: National Pork Producers Council
Title: Leveraged Marketing: A Competitive Strategy for the '90's
Source: National Pork Producers Council, Feb 1993 Availability: Order directly

This brochure provides a summary of how to begin a marketing network. It provides information on who to contact for specific questions, a discussion of the possible advantages, government regulations, personnel considerations, and possible advantages. Also included is a sample constitution and by-laws for a marketing network. Packer names and addresses are provided as possible contacts.

Author: Tynon, Richard, James Mintert, Mike Tokach, Ted Schroeder, Michael Langemeier
Title: Group Marketing of Hogs: Organization, Successes and Guidelines
Source: Cooperative Extension Service, Kansas State University, Publication MF-1104, Jan 1994 Availability: In Swine Center packet

Begins by summarizing the results of a survey on why marketing groups were organized, their goals, organizational structure, membership requirements, marketing group leader responsibilities, services provided by the group to members, record keeping fees charged, impact of group marketing on prices received and advantages and disadvantages of group marketing. Also provides key factors for success of marketing groups.

Production networks

Author: Lazarus, W.F. and Johnston, L.J.
Title: Sow Pools in a Swine Production System
Source: Waite Library, Department of Applied Economics, University of Minnesota, St. Paul, MN 55108, September 1995 Availability: Order directly

"Sow pools" refer to a centralized breeding/gestation facility linked to several individual farms. The sows are transported to the individual farms for farrowing and then return to the central facility for rebreeding. Popular in Sweden. This publication describes the advantages, disadvantages, and things to consider if setting up a sow pool, and includes a set of partial budgeting worksheets for analyzing the economics.

Author: McKean, J.D., D.S. Bundy, J.D. Harmon, P.J. Holden and J.D. Lawrence
Title: TeamPork Community Nursery Handbook
Source: EDC-16, Iowa State University Extension, Ames, Iowa, January 1995 Availability: Order directly

"How-to" manual for producers who are interested in combining smaller groups of early weaned pigs from individual farms into efficiently-sized groups of high health pigs for finishing. Discusses business organization, operations management, facilities and manure management, financial feasibility, and communications issues. Includes budget information for the nursery phase. Limitation - while the University of Minnesota has reported good results with this system using close age segregation and strict isolation, several Minnesota producers who have tried co-mingling pigs from individual farms in central nurseries have reported difficulty achieving performance targets.

Author: Watson, Curt
Title: Group Financial Arrangements
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993 Availability: Order directly

Explains the basic structure of ValAdCo, a cooperative swine production operation located in Renville County, Minnesota. Includes a brief history of ValAdCo and some of its growth plans. The basic organization is one with shareholders, but all shareholders are farmers due to the necessities imposed by the Minnesota corporate farm law.

Author: Winkelman, Nathan L
Title: Networking the Family Farm - Pork Producers Working Together to Stay Independent
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

An overview of the business operations of Evergreen Partners, a network of 22 shareholders near Morris, Minnesota. Evergreen Partners is a limited partnership. Includes a summary of breeding programs, and general production practice. Suggests there are seven major benefits to partners of Evergreen Partners.

Legal

Author: Anonymous
Title: IPPA Swine Contract Approaches
Source: Iowa Pork Producers, Availability: In Swine Center packet

Interpretation: The contract text was prepared by a committee of Iowa Pork Producers Association members. This can be a valuable tool to use in the discussion process of determining whether contracting should become a part of a farm operation. The text is presented in an educational format rather than in a legal format. When presented in this format it becomes a tool that can be taken to an attorney by a producer for final preparation of the legal documents. Use: 1) As an educational tool to better understand the issues that arise under swine contracts and the options that are available to address these issues. 2) As a checklist of the issues that should be addressed in a swine contract. 3) As blocks of contract text to assemble a contract. 4) As a contract form by crossing out the text you do not want, filling in the applicable blank lines, and attaching an addendum with an special provisions that are desired. Limitation: The Iowa Pork Producers Association believes that market forces should determine the extent to which swine contracts are used. But a market only works properly when all of the participants have adequate information about market factors. This booklet is part of IPPA's efforts to help producers get the information they need to make intelligent decision about swine contracts. Legal advise should be sought to develop the final version to the contract.

Author: Bostrom, Brent
Title: Policy and Legal Implications
Source: NPPC Networking: Competitive Positioning for Pork Producers, Dec 1-2, 1993
Availability: Order directly

Overview of the legal aspects of forming cooperatives. Begins with the principles of cooperatives, reasons for using the cooperative model to organize pork producers, examples of how producers have used cooperatives, other forms of networking, and finally considers how to find the right structure for cooperation.

Author: Bostrom, Brent D.
Title: Alternative Business Structures: Making Your Choice from the Entities Menu
Source: Doherty-Rumble-Butler Law Firm, Availability: In Swine Center packet

Interpretation: Once it has been determined that a networking venture is going to be conducted, and that it will be conducted through some form of business entity, the participants in the networking venture need to decide which form of business entity to use. Making that decision is a little like visiting a restaurant to order a meal. There are lots of choices, they are similar in some respects, they are different in other respects, and you will not always know how the choice you are making will turn out at the time you make the choice. The purpose of these written materials is to help explain, in a general fashion, some of the different "menu" selections available in the "restaurant" of different business entities. Hopefully, the information provided about entities such as partnerships, corporations, cooperatives, and limited liability companies will prove helpful to those considering a networking venture. Use: Teaching and decision tool for use by all segments of the agricultural community interested in networking in the hog industry. Limitation: This document will not answer all the necessary questions that can arise when formulating a network. Any decisions that may be arrived at by persons using this document should be discussed with the proper legal advice.

Author: Dahl, Dale C.

Title: A New Look at Farm Business Organization

Source: Minnesota Agricultural Economist, No. 681, Summer 1995
Availability: In Swine Center packet

Summarizes features of various legal forms of business organization used in agriculture and presents recent data regarding economic characteristics of some of these farm business types. Includes a brief discussion of the new forms of "limited liability companies" adopted in Minnesota in 1992, and "limited liability partnerships" created in 1994 in Minnesota. Limitation: each situation is sufficiently unique to call for the counsel of an attorney and tax advisor.

Author: Feitshans, Theodore A.

Title: Legal Aspects of Contracting

Source: Tar Heel Economist, Mar 1988
Availability: In Swine Center packet

Interpretation: 1) Contract farrowing payment schedules including pig production bonuses. 2) Criteria for the cooperative grow/finish hog contract program & examples of payments under different conditions. 3) Estimated construction costs for a cooperative grow/finish hog contract program & estimated returns under average, low and high situations. 4) Cooperative financing requirements. Use: This is another source of information to use when working with hog clientele in the decision process. Limitation: Much of the information contained is of the generic type and it should be reworked to reflect actual figures that a producer may have. Legal advice should be sought when developing the final version of any contract.

Author: Hamilton, Neil D. and Greg Andrews

Title: State Regulation of Contract Feeding and Packer Integration in the Swine Industry

Source: White Paper 92-4, Drake University Law School
Agricultural Law Center, Nov 1992
Availability: In Swine Center packet

Interpretation: The Agricultural Law Center conducted a survey of state laws and other selected states involved in pork production, to determine the extent to which states have enacted laws and regulations relating to contract production of swine and vertical integration of packers into swine production. All fifty states were contacted and information collected, however, only the information from 25 states is included in this document. Use: This can be a reference and a quick explanation source of the laws that affect contract production of swine in various states. Minnesota has done the most as far as passing laws that directly affect contract production. Limitation: To be an effective document it should be continually updated with the current law changes.

Author: Harris, Philip E. & Bock, Allen C.

Title: Agricultural Issues No. 15, 16 & 18.

Source: Farm Income Tax School Workbook, 1995
Availability: In Swine Center packet

Interpretation: This is a response to the questions that have surfaced on Hog & Crop Tax Issues. Some of the conclusions that relate to the hog industry are; 1) S Corporation income is passive income for the passive loss rules under I.R.C. Section 469. 2) Shareholder meetings to review corporate operations are not taken into account in determining whether the shareholders are materially participating in gestating and farrowing activities since they pay a manager to manage the operation (Temp. Reg. Section 1.469-5T(b)920(ii)(A)). 3) Retired shareholders that continue to deal, buy and sell his or her share of the pigs is considered a dealer in pigs and files a Schedule C, which is self-employment income. Use: This can be used with producers, tax practitioners, lawyers, bankers and agricultural professionals. This should be an important tool to use in making a decision to join in a multiple ownership venture. It is also a must to know this information when doing tax planning for your farm operation. Limitation: The final test of these issues is the test of an IRS audit, which to my knowledge there are no cases that have been tested that deal with these specific issues.

Author: Harryman, William R.
Title: Production Contracts
Source: Farm Economics Facts & Opinions, University of Illinois Extension, June 1994
Availability: In Swine Center packet

Interpretation: One of the many changes that is taking place in agriculture is that of contract production. This document attempts to discuss the general areas that affect contract production. It is not designed to fit the swine industry, although most of what is contained in the document will fit the swine industry. Use: This document may be used with all producers that are entering into some type of contract production. Its main purpose is to start the process of putting together a workable contract agreement. Limitation: This is a generic document intended to cover a variety of situations.

Author: Kelley, Christopher
Title: Preparing and Using Production Contracts
Source: Agricultural Law Update, American Agricultural Law Association, Mar 1995
Availability: In Swine Center packet

Interpretation: The use of production contracts was once confined to the poultry and specialty crop sector, it is now being used throughout American agriculture. This article discusses the pro's and con's of entering into production contracts. Use: (See also an expanded article of Preparing and Using Production Contracts will appear in the Hamline Law Review in 1995.) This document is most certainly a good document to use with producers as an organizational guide in discussing contract production. Limitation: This article does a thorough job of the various areas that should be in a contract. However, it does not offer sample contract language. Any contract that is entered into would have to be written from the start.

Author: King, Mike
Title: A Primer on Finances, Legalities and Structure
Source: Pork '94, Mar 1994
Availability: In Swine Center packet

Interpretation: You've weighed the pros and cons of networking and decided it's the way to go. You've even found like-minded producers who want to join forces. Now comes the reality check--getting the financial, legal and human resources to make it all work. Use: This document can help in the organizational process, especially the later stages of contract production. It appears to have a step by step process outlined as to how a producer should proceed. Limitation: It is still not a comprehensive document and it will need additional documents to completely finish your networking plan.

Author: Minnesota Legislature
Title: Minnesota Corporate Farm Law (500.24 Corporate and Partnership Farming)
Source: MN Statutes, 1994
Availability: In Swine Center packet

Text of the law itself. 11 pages.

Author: Orsi, Sylvester
Title: Limited Liability Company: An Organizational Alternative for Small Business
Source: Nebraska Law Review, Vol. 70, pp. 150-81., 1991
Availability: In Swine Center packet

Interpretation: Discusses nontax state law provisions including formation, management, finance and dissolution. Discusses the basis for obtaining partnership classification for federal income tax purposes. Limitation: Legal advice should be sought in deciding on a form of business organization. Based on 1992 amendments to the Minnesota corporate farm law, limited liability companies cannot engage in farming in Minnesota.

Author: United States Department of Agriculture
Title: Sample Legal Documents for Cooperatives, Cooperative Information Report 40
Source: USDA Agricultural Cooperative Service, Oct 1991
Availability: Order directly

Interpretation: The report is intended to assist persons organizing new cooperative, managers and directors of existing cooperatives, and their professional advisers to develop and update the important legal document of cooperatives. Use: This document provides the sample language to be used as a starting point; the wording is not to be copied without review and thought. Although this document is designed for use with cooperatives, it most certainly can be a tool to use in developing organizational language, contracts and working agreements amongst producers. Limitation: This document is designed to be used by cooperatives with large numbers of patrons. Generally, cooperatives are not used by producers as the organizational tool.

High health - general information

Author: Dalby, Karsten Vagner DVM
Title: High Health: Risk, Advantages, Technologies
Source: Proceedings, Minnesota Swine Conference for Veterinarians, pp. 339-47, 1991
Availability: In Swine Center packet

This paper provides an overview of the Danish SPF system, which was begun in 1971.

Author: Davies, Peter R.
Title: Definition of High Health
Source: Minnesota Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, 1992
Availability: In Swine Center packet

This is an article for those looking for an introduction into the area of swine health and the level thereof. It is a confusing area because of the many definitions (e.g. SPF, high health, SEW, etc.) but this article defines and clarifies terms.

Author: Davies, Peter R.
Title: Establishing Herds of High Health Status--Should "Snatch Farrowing" be Considered?
Source: Minnesota Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, 1992
Availability: In Swine Center packet

Snatch farrowing is defined as "a procedure whereby piglets are removed from medicated synchronized sows immediately after birth and transferred off-farm to synchronized surrogate sows." The author describes a case study of a herd in Australia which used snatch farrowing as part of a control program for swine dysentery.

Author: Dial, Gary D., Barry S. Wiseman, Peter R. Davies, William E. Marsh, Tom W. Molitor, Robert B. Morrison, and David G. Thawley
Title: Strategies Employed in the United States for Improving the Health of Swine
Source: Minnesota Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, 1992
Availability: In Swine Center packet

A comprehensive review paper, complete with 132 citations. The first part of the paper addresses the topic of improving the health status of swine herds. The discussion is organized under several major headings which include "on-farm disease management", "elimination of specific agents from populations", and "procedures to establish populations free of multiple agents." The second part of the paper addresses maintenance of high health status of swine populations. In this part the discussion is arranged under the headings of "geographic information systems", "biosecurity", and "disease monitoring."

Author: Harding, John C.
Title: Defining the Problems Associated with High Health Herds: When is High Health too High?
Source: Allen D. Leman Swine Conference, University of Minnesota, Proceedings Vol. 20, pp. 27-29., 1993
Availability: In Swine Center packet

This article describes the management implications of having and maintaining herds with relatively high health. These may include a lackadaisical attitude, a false sense of security, lack of attention to the pigs' environment, and preoccupation with biosecurity and the possibility of a health break.

SEW - general information and health issues

Author: Clark, Kirk
Title: Concept of SEW and the Rules to Make It Work
Source: NPPC Pork Academy Proceedings, June 8, 1995
Availability: Order directly

This presentation discusses the rationale of segregated early weaning and some important rules to follow to ensure its effectiveness. Factors considered are weaning age and what diseases are reduced by earlier weaning, guidelines to achieve and maintain a high level of biosecurity, guidelines to maintain segregation of pig groups, and preparation of the gestating sow for SEW.

Author: Clark, Kirk L.
Title: SEW Breaks Disease Cycle
Source: National Hog Farmer, Blueprint Series for Top Managers, Fall 1994
Availability: In Swine Center packet

Written for producers, this paper describes, in laypersons' terms, some of the scientific justification behind SEW. Common viral and bacterial diseases for which SEW has been credited effective as a control measure are discussed. The author states that, at the time of writing: "Strep. suis is the only bacterial agent that can't be eliminated from the progeny of infected carrier sows."

Author: Clark, L Kirk
Title: Health Management for the 21st Century
Source: Allen D. Leman Swine Conference, University of Minnesota, Proceedings Vol. 21, pp. 128-31., 1994
Availability: In Swine Center packet

This article describes current methods available to upgrade the health status of swine herds. It focuses on all in-all out and SEW and has a literature review on these topics. Details are given on the infectious agents that were eliminated and the performance achieved under experimental conditions.

Author: Conner, Joseph F.
Title: Segregated Production Systems for Modern Hog Operations
Source: Pork Summit '94, pp. 15-22., April 1994
Availability: In Swine Center packet

The article reviews the current knowledge on segregated early weaning (SEW) and describes various large systems that can be set up to use SEW. It gives practical tips on making SEW work and presents a financial analysis of SEW.

Author: Dial, Gary and Barry Wiseman
Title: Is it as Easy as 1,2 or 3? Single vs. Multiple Site Production Schemes
Source: Tips for Swine Producers, Iowa, Minnesota, South Dakota, Nebraska Cooperative Extension Service, 1993
Availability: In Swine Center packet

Provides a comprehensive background/history of MEW and how MEW evolved into modified medicated early weaning[MMEW] which in turn has given way to off-site, early weaning technology as a means to improve herd health and performance. Factors affecting the success of off-site early weaning programs are discussed, including the applications of off-site technology. Also covered are several factors that can potentially negatively influence the economic success of off-site, early weaning programs.

Author: FitzSimmons, Mark
Title: Multiple Uses of Off-Site Weaning Technology
Source: Minnesota Swine Conference for Veterinarians, University of Minnesota, Proceedings Vol. 18, pp. 137-9., 1991
Availability: In Swine Center packet

This paper presents brief summaries of five examples of off-site weaning. Suggested potential benefits of OSW are opportunities for expansion and for improving herd genetics. Measurable improvements in herd health status were not observed in all cases.

Author: Heuser, Walter
Title: Depopulation and Repopulation with High-Health Stock
Source: Minnesota Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, 1992
Availability: In Swine Center packet

Brief notes emphasizing the need for proper planning during depopulation/repopulation of swine herds.

Author: Hill, Howard
Title: Segregated Early Weaning Unfolds
Source: National Hog Farmer, Blueprint Series for Top Managers, Fall 1994
Availability: In Swine Center packet

Interpretation: An overview of Segregated Early Weaning (SEW). The article reviews the evolution of SEW and the disease control benefits it has. A contrast between present traditional systems and SEW is made. The article helps evaluate the potential benefits of a SEW system. SEW is presented as an alternative that needs to be considered in any moderately sized operation.

Author: Miller, Marlys
Title: Early Weaning: A Way to Expand
Source: Pork '94, Nov 1994
Availability: In Swine Center packet

Interpretation: A summary of experiences and results on three farms which have switched to modified medicated early weaning (MMEW). Switch enabled them to increase litters through their farrowing facilities. Explains the protocol developed by veterinarian Scott Dee for management and low cost medication. Also discusses the use of feeding mats in the nursery. Use: Good background reading for producers and consultants interested in learning about MMEW. Fairly complete discussion on management and buildings, Limitations: Details on medication are sketchy.

Author: Molitor, Thomas and Barry Wiseman
Title: Immunological Basis for High Health Status Pigs
Source: Minnesota Conference for Veterinarians, University of Minnesota, Proceedings Vol. 18, 1991
Availability: In Swine Center packet

A brief chronology of the evolution of MEW, followed by a discussion of the immunological basis of the technology. The significance of endotoxin in the release of tumor necrosis factor (TNF) and interleukin 1 (IL-1) which cause fever and weight loss in diseased animals is discussed and used as justification for the adoption of MEW. It is proposed that the beneficial effects of MEW are the direct result of a substantial reduction of endotoxin levels in the air.

Author: Prevedell, Donna and Jan Tayloe
Title: Learning to "SEW" - Pork Style
Source: Checkoff, Apr/May 1994
Availability: In Swine Center packet

Interpretation: Discussion of protocol for Segregated Early Weaning (SEW) developed for the National Genetic Evaluation Program. Some explanation of the theory and reasons for benefits and use. Detailed listing of protocol. Use: Good reference for the protocol if producers and consultants are interested in SEW. Limitations: Performance summary has limited numbers to base decision to adopt on.

Author: Straw, Barbara
Title: Vaccinate, Medicate or Segregate: All-in, All-out Management and its Effects on Health, Medicated Early Weaning Programs and Disease Control Plans
Source: Techniques for Improving Profitability Seminars for Swine Producer, South Sioux City, Nebraska, Sept 1991
Availability: In Swine Center packet

A discussion paper which includes a work list of considerations for using MEW/multiple site production. A total of 17 tables, showing data from published experiments are use to illustrate the advantages of all-in/all-out production, multiple site production, regular sanitation, single source pigs, medication and vaccination.

Author: Walker, Roger
Title: Segregated Early Weaning and Finishing Pig Performance
Source: U of M Swine Day Proceedings, Jan 1995 Availability: In Swine Center packet

This research project relates the relative growth advantages of SEW pigs versus their conventionally weaned litter mates. SEW pigs achieved a 20% growth advantage in the nursery and a 5% growth advantage in finishing. Complete isolation of the SEW pigs during finishing was unable to be maintained and it is suggested that the SEW pigs would have had a 12 to 15% growth advantage during finishing if isolation would have been complete. One part of the experiment showed that nursery growth advantage is easily lost if SEW pigs are commingled with conventional pigs during finishing. The author also stated that further research needs to examine the effect of vaccinations on the growth performance of SEW pigs.

Author: Wiseman, Barry
Title: Pathogens Eliminated with Modified Medicated Early Weaning
Source: Minnesota Swine Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, pp. 223-31., 1992 Availability: In Swine Center packet

Although somewhat dated, this article is still one of the few experimental trials documenting the elimination of specific infectious agents by segregating pigs at weaning (and in this experiment, medicating sows and piglets). Three weaning ages are used (10,15,20 days) and pigs were commingled from 15 herds with different health status. The procedures employed were extremely effective at eliminating infectious agents from the pigs with younger age being most effective.

Author: Yeske, Paul
Title: Making SEW Work in the Herd
Source: National Hog Farmer, Blueprint Series for Top Managers, Fall 1994 Availability: In Swine Center packet

This article is written for producers wishing to implement SEW as either a disease eradication or disease control measure. Topics discussed include pathogen identification, vaccination policies, medications, pig transportation, and nutrition. The importance of monitoring the effectiveness of a SEW program, once in place, is stressed.

Author: Yeske, Paul
Title: On-Farm Medicated Early Weaning
Source: Minnesota Swine Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, 1992 Availability: In Swine Center packet

This paper presents a case study involving a 950-sow herd which expanded its nursery capacity with a 500-head off-site nursery and an additional 3,000-head off-site finishing facility. Hot nursery performance data are presented as a before-and-after comparison (11 groups each.) There were apparent beneficial effects associated with the MMEW protocol. However, the lack of contemporary controls limit the interpretation of these data.

SEW - economics

Author: Anonymous
Title: Economics of Weaning Age
Source: Pig Topics (Pigtales), June 1994 Availability: In Swine Center packet

A retrospective analysis of the Pigtales production database is presented. Summary data from 345 herds with average weaning ages between 15 and 13+ days are presented. Standardized data were used as the basis for an economic model of net profit by weaning age.

Author: DiPietre, Dennis
Title: Consider Costs and Benefits of SEW
Source: National Hog Farmer, Blueprint Series for Top Managers, Fall 1994 Availability: In Swine Center packet

Non-technical discussion for producers just thinking about SEW. Discusses questions to be asked before adopting SEW. Includes a partial budget example. Written from standpoint of a single business entity - does not discuss networking with other producers.

SEW - nutrition

Author: Dritz, S.S., M.D. Tokach, R.D. Goodband, and J.L. Nelsenn
Title: Growth Performance and Dietary Economics of Pigs Raised in Multiple-Site Segregated Rearing Systems
Source: Abstracts, American Society of Animal Science, Midwest Section, American Dairy Science Association, Midwest Branch, April 1995
Availability: In Swine Center packet

This demonstration project compared the growth of segregated early weaned pigs and their conventionally weaned littermates in the nursery phase. At 50 days of age, SEW pigs averaged 52.14 lb and non-SEW pigs averaged 27.5 lb. In a larger scale project, high, medium and low complexity diets were used to compare the feed cost of rearing and finishing SEW pigs that were weaned at either 9 or 19 days of age. Pigs weaned at 9 days of age had a higher feed cost than the 19 day weaners. The high complexity feeding regimen had a higher total cost than the medium or lower regimen. However, medium and low complexity regimens resulted in no significant difference in feed cost. Diet economics coupled with the fewest days to market indicate that the medium complexity regimens were the most economical.

Author: Stahly, Tim
Title: Impact of Immune System Activation on the Growth and Nutrient Needs of Pigs
Source: Pork Summit '94, April, 1994
Availability: In Swine Center packet

This research project investigated differences in performance and lysine requirements for pigs with highly challenged immune systems (High IS) versus those with little challenge to their immune systems (Low IS). The Low IS pigs were derived through Medicated Early Weaning and the High IS pigs came from a conventional weaning system and were managed to allow maximum exposure to foreign antigens. Low IS pigs performed better in all growth and carcass traits measured. Responses to various dietary amino acid regimens were dependent upon the pigs immune system status. Because of their greater capacity for muscle growth, pigs with a low level of IS activation required .1 to .3 percentage units higher dietary lysine concentrations over each 20 pound increment of growth from 12 to 250 lb body weight in order to optimize efficiency of feed utilization compared with High IS pigs.

Author: Tokach, Mike
Title: How to Feed Early-Weaned Pigs
Source: National Hog Farmer, Blueprint Series for Top Managers, Fall 1994
Availability: In Swine Center packet

This magazine article is quite extensive and details the popular phase feeding regimens from Kansas State University. It gives the ingredients and typical cost of an on-farm mixed SEW diet for pigs weighing from 5 to 11 lb, a transition diet from 11 to 15 lb body weight, a phase 2 diet from 15 to 25 lb body weight, and a phase 3 diet from 25 to 50 lb body weight.

Author: Tokach, Mike, Steve Dritz, Bob Goodband, and Jim Nelssen
Title: How to Feed Early Weaned Pigs
Source: NPPC Pork Academy Proceedings, June 8, 1995
Availability: Order directly

This article is essentially the same as the previous entry. It is quite extensive and details the popular phase feeding regimens from Kansas State University. It gives the ingredients and typical cost of an on-farm mixed SEW diet for pigs weighing from 5 to 11 lb, a transition diet from 11 to 15 lb body weight, a phase 2 diet from 15 to 25 lb body weight, and a phase 3 diet from 25 to 50 lb body weight.

SEW - management

Author: Loula, Tim
Title: Managing the Early-Weaned Sow for Optimal Reproductive Performance
Source: Minnesota Swine Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, 1992
Availability: In Swine Center packet

This short paper describes some management practices that may help improve reproductive performance of sows when litters are weaned at 8 to 16 days of age. Recommendations result from the experiences and observations of the author in his veterinary practice. A producer audience is the focus of this paper. 6 pages.

Author: Rogers, John C.
Title: Management of the Early-Weaned Pig
Source: Minnesota Swine Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, 1992
Availability: In Swine Center packet

This presentation discusses the environmental needs of the early weaned pig. Factors considered are building design, water delivery, ventilation, general management, health status, feeder design, and feed. The presentation offers valuable tips for start-up SEW units.

SEW - facilities

Author: Murphy, James P.
Title: Designing the Early-Wean Nursery
Source: National Hog Farmer, Blueprint Series for Top Managers, Fall 1994
Availability: In Swine Center packet

Covers the planning and design of an early-wean nursery. Starts with beginning question of age in and age out. Topics covered include site considerations, building design, ventilation, manure management, feeding, bio-security and transportation. Contains management ideas for after the building is in operation.

Author: Pohl, Steven
Title: Converting From Farrowing House to Nursery
Source: Pork '95, April 1995
Availability: In Swine Center packet

Interpretation: South Dakota extension agricultural engineer explains the principles of evaluating an existing farrowing facility for conversion to a nursery using a client as an example. Guidelines for insulation, ventilation, and space are reviewed. Use: Good ideas to begin decision-making for producers and consultants interested in converting buildings. Limitations: Details on actual conversion are limited.

SEW - valuing pigs

Author: Anonymous
Title: Swinex's Fair Pay Formula
Source: National Hog Farmer,
Availability: In Swine Center packet

Suggests pig pricing formulas based on percentages of cost, for an SEW situation where one producer individually owns the farrowing unit and breeding herd, others own nurseries and perhaps others own finishing space. Includes typical cost figures. Considers adjusting pig prices based on finishing performance. Suggests a formula based on hog futures.

Author: Dhuyvetter, Kevin C.
Title: Estimating the Value of SEW Pigs at Various Stages of Growth
Source: Paper presented at the 1996 annual meeting of the American Association of Swine Practitioners, 1996
Availability: In Swine Center packet

Reviews the different methods for determining a value for pigs in the absence of a relevant market price quote. Includes a set of budgets split out into the farrowing phase, nursery and finishing phase, with three performance levels for each. Derives formulas for pricing weaner pigs and feeder pigs based on corn, soybean meal and market hog prices.

Author: Dipietre, Dennis D. and Rick Tubbs
Title: Valuing Weaned Pigs Through a Budgeting Process
Source: Proceedings American Association of Swine Practitioners, Chicago, Illinois, Mar 1994
Availability: In Swine Center packet

Discusses difficulty of pricing pigs with special characteristics (high lean, disease status, environmental requirements) in auctions or based on simple pricing formulas. Includes a budgeting exercise for producers thinking of co-investing in a central farrowing unit and then doing the nursery and finishing individually. Written in a moderately technical style.

Author: Lawrence, John
Title: Alternative Feeder Pig Pricing Formulas (& Pricing and Valuing SEW Pigs unpublished appendix)
Source: Journal of the American Society of Farm Managers and Rural Appraisers, Vol. 58, No. 1, June 1994
Availability: In Swine Center packet

The JASFMRA article suggests two approaches for pricing feeder pigs: a) mimicking auction prices by using a analysis of historical Iowa feeder pig auction prices on IA-MN hog prices and corn, and b) cost-plus pricing, what the finisher "should pay" based on expected profit, or a profit sharing formula. A separate appendix discusses the difficulty of pricing SEW pigs and suggests pricing them at a per head price that is 60 percent of the 26 week out hog futures contract.

Information about specific diseases

Author: Korslund, John A.
Title: Herd Health Trends and Tips
Source: unpublished mimeo, Mar 1, 1995
Availability: In Swine Center packet

Notes of a pork producer's presentation advocating the adoption of SEW as part of an overall health management strategy. Includes some recommendations, based upon personal experience, for controlling PRRS, Strep suis, Salmonella cholerasuis, mange, and roundworms.

Author: Pijoan, Carlos and Lucina Galina
Title: An Update on Streptococcus suis
Source: Allen D. Leman Swine Conference, University of Minnesota, Proceedings Vol. 20, pp. 35-37., 1993
Availability: In Swine Center packet

Author: Rapp-Gabrielson, Vicki J.
Title: Haemophilus parasuis: The Association of Serovar with Prevalence, Pathogenicity, and Immunogenicity
Source: Allen D. Leman Swine Conference, University of Minnesota, Proceedings Vol. 20, pp. 31-33., 1993
Availability: In Swine Center packet

There is the field impression that Streptococcus suis and Haemophilus parasuis are more clinically problematic in high health herds than in traditional health herds. The two articles "An Update on Streptococcus suis" and "Haemophilus parasuis: The Association of Serovar with Prevalence, Pathogenicity, and Immunogenicity" are summaries on the current knowledge of these two organisms.

Genetics and breeding systems

Author: Christian, Lauren
Title: Using the Genetic Evaluation Research to Select Breeding
Source: NPPC Pork Academy Proceedings, June 8, 1995
Availability: Order directly

This 312 page book provides a summary of results for the largest, most comprehensive genetic evaluation program ever conducted in the US. The summary compares seedstock populations, representing sire lines only, for crossbreeding use[not pure line use]. Sire line performance for 40 different traits are summarized. Also, genetic heritabilities and correlations among all traits are reported, including the effects of the "stress" gene on all 40 traits. Information on how to use these results in combination with seedstock supplier programs to select breeding stock is given.

Author: Dee, Scott A., Robert B. Morrison and HanSoo Joo
Title: Eradicating Porcine Reproductive and Respiratory Syndrome (PRRS) Virus Using Two-Site Production and Nursery Depopulation
Source: Swine Health and Production, Sept/Oct 1993
Availability: In Swine Center packet

There has been much published since this article but this paper describes the first observations that PRRS virus could be eliminated from the growing sections of herds by a partial depopulation. The authors have detailed descriptions of the methods employed to eliminate PRRS and to confirm its absence.

Author: Goodwin, Rodney
Title: Stress Gene Effects on Pork Production
Source: NPPC Pork Academy Proceedings, June 8, 1995 Availability: Order directly

Covers background information on the HAL stress gene and how it effects pork production. Results from two large research projects [National Barrow Show Progeny Test and NPPC Terminal Line National Genetic Evaluation Program] are discussed and provide a comparison of 3 pig genotypes [Normal-NN, Carrier-Nn, Mutant-nn] for growth performance and carcass-muscle quality traits. HAL gene frequency data for several breeds is given.

Author: See, Todd
Title: Using EPDs in Your Operation
Source: NPPC Pork Academy Proceedings, June 8, 1995 Availability: Order directly

Explains the concept of Expected Progeny Differences [EPDs] for determining estimates of genetic merit in swine selection programs. Describes when and how EPDs can be used for evaluating herds and planning breeding programs. Tables are included showing how EPD values are reported and, depending upon selection priorities, which animals should be selected. Also, covers using EPDs to estimate the economic value of individuals [ie. How much one could afford to pay or, which individual is the best buy] for improving a given performance trait. A section of this paper contains information on managing risk when using unproven sires with low EPD accuracies.

Author: Thacker, Brad J.
Title: Introducing Disease-Free Germplasm
Source: Minnesota Conference for Veterinarians, University of Minnesota, Proceedings Vol. 19, 1992 Availability: In Swine Center packet

A discussion on the advantages and disadvantages of hysterectomy-derived pigs, embryo transfer, and artificial insemination as methods of introducing new genetic material into high health herds practicing strict biosecurity.

Marketing

Author: Dalhman, George and R. Shane Glenn
Title: Financial Analyst View of Publicly Traded Meat Packers/Processors
Source: NPPC Market Access Situation Analysis, Mar 1995 Availability: Order directly

A financial analysis of Hormel Foods, IBP, and Thorn Apple Valley, Inc.. Suggests that all three major packers are financially sound, but that IBP and Hormel are especially well positioned to take advantage of consumer driven changes in the pork markets.

Author: Fleming, Bill
Title: Packer Contracts Grow As Producers Seek Security
Source: National Hog Farmer, May 15, 1995 Availability: In Swine Center packet

The strength of this article is the advice in what to consider when evaluating whether a packer contract is for you. It has specific points to consider before you sign a contract with a packer. The article discusses the benefits to both the packer and producer in signing a contract. Limited information is given on contracts available, both packers involved and content of specific contracts. Producer views are shared as an intro to the article.

Author: Gould, Paul E.
Title: Slaughter Capacity
Source: NPPC Market Access Situation Analysis, Mar 1995 Availability: Order directly

An overview of pork processing capacity. Considers which plants might be available for producer purchase, which firms might enter pork processing which are not now major players, and which areas of pork processing might require additional capacity. In general ample capacity exists in all meat types.

Author: Hayenga, Marvin
Title: Pork Slaughter Capacity: An Evolving Picture
Source: NPPC Market Access Situation Analysis, Mar 1995 Availability: Order directly

Presents results of a survey of the ten packers with the largest slaughter capacity. Findings suggest there is ample slaughter capacity. Raises concern that independent producers may not have access to plants as long term commitments increase, reducing the capacity available for independents. Recommends improving carcass quality to make hogs attractive to processors.

Author: Lawrence, John
Title: Long-Term Marketing Agreements
Source: NPPC Pork Academy Proceedings, June 8, 1995 Availability: Order directly

Introduction to long term marketing contracts offered to swine producers. Includes description of two common types of long term agreements and other contract terms. The motivations for packers and producers to enter the contracts are discussed. Market implications of wide-spread use of long term contracts is considered.

Author: Lawrence, John
Title: Mapping the Route to Better Prices: Developing a Marketing Plan
Source: NPPC Pork Academy Proceedings, June 8, 1995 Availability: Order directly

Examines key components of developing and implementing a marketing plan for pork producers, including an example. Discusses ways to manage risk and defines two types of risks associated with marketing. Introduces concepts of a marketing plan employing the analogy of traveling and reading a road map. Briefly summarizes tools for managing price risk. Objective-based marketing plan template is included.

Author: McMahon, Karen
Title: Untangling the Maze of Packer Prices
Source: National Hog Farmer, Feb 15, 1994 Availability: In Swine Center packet

General overview of how packers price hogs. Factors to consider include standard yield of packers, method of measuring carcass fat and carcass sort discount. Provides a summary of differences in values based on actual sales of 80,000 hogs to four anonymous packers. Recommends group marketings, and keeping detailed sales records.

Author: Meeker, David and Steve Sonka
Title: Pork Chain Quality Audit: Progress Report
Source: National Pork Producers Council with the National Pork Board, Des Moines, Iowa, April 1994 Availability: Order directly

A lengthy and comprehensive collection of several reports and papers related to the current status, recommendations and long range plan for improving pork quality throughout the food chain. Major sections include: Defining the Commitment to Quality, The Pork Chain, Following the Chain, Related Research, An Economic Assessment of Enhancing Quality Management in the Pork Industry and A Long Range Plan for the Pork Industry. Sections of this report briefly address producer networking, high health strategies, genetic variation, and general economic implications of quality enhancement and management to the industry. 233 pp.

Author: Meyer, Steve
Title: An Economist's View of Hog and Market Prices
Source: NPPC Pork Academy Proceedings, June 8, 1995 Availability: Order directly

Presents the basic economics of the hog-pork industry and illustrates the pricing mechanism. Introduces the concepts of consumer demand, price elasticities, and hog supply. Defines marketing services in the hog-pork sector, and the retail-farm price ratio. Finally, includes a description of how each of these concepts interacts to result in changing hog and pork prices.

Author: Schuiteman, Jan DVM
Title: Marketing Contracts: Marketing to Your Customer's Customer (The Packer)
Source: Proceedings, Minnesota Swine Conference for Veterinarians, pp. 361-4, 1992 Availability: In Swine Center packet

Considers the key factors packers desire: leanness, quality, uniformity, volume. Lists important features of a contract: base price, lean premium, sort discount, delivery time. Presents actual carcass data.

Author: Zumbach, Steven
Title: Legal Considerations of Producer/Packer Arrangements
Source: NPPC Market Access Situation Analysis, Mar 1995 Availability: Order directly

Interpretation: This paper considers some options that producers may take in securing ownership in packing and/or processing facilities for pork products. Use: This is an educational tool to use with producers/packers seeking to be involved in the production and processing of pork. Limitation: This is a very brief paper outlining some of the apparent considerations that need considerable amount of research and thought put into them before any group proceeds to pursue the involvement of pork producers in the packing and/or processing business.

Production contracting

Author: Anonymous
Title: Contracting: Does It Pay or Not?
Source: Pork'90, April 1990 Availability: In Swine Center packet

Reviews a 1989 University of Missouri survey of contract payments to growers. A wide variation in contract payment plans is given. Article gives a basis to start contract evaluation.

Author: Anonymous
Title: Elusive Bonus: Before contracting, take an honest look at your own ability
Source: National Hog Farmer, July 15, 1989 Availability: In Swine Center packet

Authors assert that many swine production contracts don't pay very well unless targets for death loss, feed efficiency, pigs/sow/year, etc., are achieved to receive bonuses. By comparing typical bonus schedules against actual records from the Iowa State Enterprise Records Program, they show that the odds for achieving bonuses are not high. For instance, in finishing operations, only 25% of all producers managed to produce a pound of pork with 3.3 pounds of feed or less. The authors point out the need for potential growers to be realistic about their ability to achieve bonuses. They also point out that many of the performance measures can be influenced by factors beyond the growers control, such as quality of feed delivered, quality and health of the pigs, and effectiveness of the veterinary and medicine programs.

Author: Anonymous
Title: Hog Contracting
Source: Center for Rural Affairs Newsletter, Mar 1993 Availability: In Swine Center packet

Provides an overview of hog production in the U.S., including size, scope, demographics and contract terms/shortcomings. Information is based upon a survey of contractors and growers[those who finish hogs under contract] conducted by U.of Mo. and Pork 92 magazine.

Author: Bell, Alan
Title: Pros, Cons, Options to Consider
Source: Pork '94, Mar 1994 Availability: In Swine Center packet

Evaluates the profitability and feasibility of contract production and covers the advantages/disadvantages of contracts for both the contractor and producer[grower]. Characteristics of a good contract are outlined and discussed. A worksheet is provided for both a feeder pig finishing and a feeder pig production contract and allows one to compare production costs/returns from operations in Kansas[1983-92] to that of a selected producer's farm.

Author: DiPietre, Dennis
Title: Can It Work? Will It Pay?
Source: Hogs Today, Dec 1993 Availability: In Swine Center packet

DePietre identifies the two important principles of investment analysis as feasibility and profitability and asserts that most skip directly to profitability. Feasibility can be divided into technical and economic questions. Technical feasibility involves legal and environmental criteria. Economic feasibility is assessed with a cash-flow budget. If a project is unable to produce enough cash inflow to service debt and pay all other costs, including a fair return to labor, as well as have a safety margin of extra cash, then it is judged infeasible. Not all feasible opportunities are profitable. However, some infeasible projects can appear very profitable when the outcome is averaged together over the entire life of an investment. This can occur if high returns anticipated in the later years of a contract are not attained because debt load could not be serviced in early years. Evaluation of profitability involves comparison with other potential farm investments.

Author: DiPietre, Dennis
Title: Contracts: Shared Risks and Returns
Source: Hogs Today, Nov 1993
Availability: In Swine Center packet

Contracts must offer a reasonable and fair return for the resources contributed. The inputs for pork production, land, labor, capital, and management risk earn respectively, rent, wages, interest, and profit. DiPietre discusses the relative contributions by the contractor and the grower and methods of achieving fair returns for their contributions. He discusses how a grower can reduce unnecessary risk when entering a contract arrangement.

Author: DiPietre, Dennis
Title: Hog Contract Terms and Benefits Defined
Source: Hogs Today, Oct 1993
Availability: In Swine Center packet

A short analysis of the benefits of contract hog production. The author looks at historical similarities to crop share and labor share leases. Short discussion of benefits to both operator and contractor. Banks also look at financing in a different way when contracts are involved.

Author: Fleming, Bob
Title: Pork Production Contracts
Source: Farm Management Update, Ohio State U. Extension, Dept of Ag Econ, Summer 1994
Availability: In Swine Center packet

Fleming lists the potential advantages of production contracts over independent production as more predictable returns, steadier cash flow, lower investment per head, reduced risk, provided technical support, and providing a method to enter or expand the hog business. Potential disadvantages he cites are less income over time compared to a similar size independent unit, difficulty in contract selection, challenges in meeting contract stipulations, potential environmental risks, owning fixed investments with few other uses, and less management freedom. He suggests issues that should be considered in evaluating contracts.

Author: Harper, Lauren and David Kenyon
Title: Financial Feasibility of Finishing Feeder Pigs Under Production Contract in Virginia
Source: unpublished paper, Mar 1990
Availability: In Swine Center packet

This paper describes a study done in Virginia with the purpose of determining if production contracts for finishing pigs were an attractive investment. The authors reviewed the literature and conducted a financial analysis of a typical contract with per pig payment and bonuses for performance. The paper was written in 1990 and the costs are somewhat dated but the concepts are well presented. There is also a well thought out section describing the limitations of many financial analyses.

Author: Kelley, Christopher
Title: All sides should know pitfalls of agricultural contracting
Source: Feedstuffs, June 6, 1994
Availability: In Swine Center packet

Looks at contracting from a risk management perspective, from both a producers and processors view. The article clarifies what contracts can do. The author talks about the risks created by entering into a contract for both parties. Properly drafting the contract is a critical part of minimizing risks related to the contract. A major portion of the article specifies what should be in an agricultural contract. There is some discussion of the effect contracting is having on today's agriculture.

Author: Kliebenstein, James and Chris Hillburn
Title: Analysis of Pork Production Contracts
Source: Staff Paper 264, Department of Economics, Iowa State University, Mar 1995
Availability: In Swine Center packet

This paper compares three available feeder pig finishing contracts and three feeder pig production contracts, with different bonus provisions. Each contract is described, and comparative results are shown based on a range of production performance applied to each contract. Performance measures for Iowa State University Swine Enterprise Record farms between 1986 and 1993 are included.

Author: Koehler, Robert
Title: Writing Contract/Share Farrowing Arrangements
Source: Unpublished draft, April 1991
Availability: In Swine Center packet

Helps establish a fair share rental rate for contract farrowing using the assumption that sharing of the revenue should be proportional to the level of inputs. A worksheet is included to work through an individual situation. Three sample situations and examples are included. The worksheet acts as a starting point for identification of input costs and negotiating appropriate values of inputs.

Author: Langemeier, Michael R.
Title: Contract Hog Production: An Economic Evaluation
Source: MF-1070, Kansas State University Cooperative Extension Service, July 1993
Availability: In Swine Center packet

Evaluates the profitability and feasibility of contract production and covers the advantages/disadvantages of contracts for both the contractor and producer[grower]. Characteristics of a good contract are outlined and discussed. A worksheet is provided for both a feeder pig finishing and a feeder pig production contract and allows one to compare production costs/returns from operations in Kansas[1983-92] to that of a selected producer's farm.

Author: Lawrence, John
Title: Provisions of a "Good" Swine Production Contract
Source: unpublished paper, undated
Availability: In Swine Center packet

Interpretation: The success or failure of contract production for the individual farmer often depends on the provisions of the contract. The contract should be written clearly and concisely and offer advantages to both parties. This document is most certainly another document that can be used as an organizational guide in discussing contract production. Use: For use with producers with an interest in hog contracting and networking. Limitation: This article does not contain actual contract language that may be of assistance in actually formulating a production contract.

Author: Rummens, Michele, James Kliebenstein, and V. James Rhodes
Title: Investment, Returns and Marketing Practices in Iowa Contract Hog Production
Source: Staff Paper 233, Department of Economics, Iowa State University, Sept 1991
Availability: In Swine Center packet

Examines costs and returns encountered by Iowa growers in contract hog production. The information is based on a national survey conducted in early 1989 and encompasses medium and large producers on all 50 states. The costs and returns reported by growers is shown. Relative occurrence of typical payment systems, fees paid, and timing of payments is reported. Income sufficient to maintain facilities was reported by 96% of the producers while only 40% felt payments were sufficient to replace facilities.

Author: Vansickle, Joe
Title: Contracting: Is It For You?
Source: National Hog Farmer, Sept 15, 1994
Availability: In Swine Center packet

Based on input by John Lawrence of Iowa State University. Producers are cautioned to be sure they are satisfied with the provisions of a contract before signing. Complaints about low returns where the grower furnishes only the building and labor and finances a major part of the building are not unexpected. Contractors will only pay the grower for what they provide. With a heavily financed barn much of the payment will go for debt payments, and the grower may only be paid for the daily labor that is provided. Some growers do not expect a profit from contract feeding until the facility is paid off. Detail is provided on the "Ten Provisions Of A 'Good' Contract."

Financial

Author: Anonymous

Title: Know Your Options for Success

Source: Pork'95, Mar 1995

Availability: In Swine Center packet

Interpretation: Introductory article to a Staff Report consisting of three articles on newer approaches to hog marketing being utilized to reduce risk or improve market access and price incentives. "Hedging: Controlling Prices For a Profit" discusses rationale for hedging and a comparison of futures, options, and forward contracts.

Limitations: If not familiar with terminology and principles, may be difficult to understand completely.

"Producer/Packer Contracts Take Center Stage" discusses the general principles behind packer contracts.

Interviews with agricultural economists John Lawrence (Iowa State) and Ken Foster (Purdue) explain advantages and pitfalls. Limitations: Limited on details because of an unwillingness of packers or producers to share details.

"Group Marketing: More Than Pooling Hogs" discusses the reasons behind group marketing and compares three examples. Commonality is the importance of quality and sharing of information. Limitations: Details are lacking on how to organize and specific price benefits.

Author: Clanton, Cynthia

Title: Nail Down a Fair Building Rent

Source: National Hog Farmer, April 15, 1990

Availability: In Swine Center packet

Interpretation: A good over-all review of considerations to use in determining the rental value of swine buildings from the standpoint of both owner and potential renter. Uses a worksheet developed by Dick Kesler and Dale Lattz, extension farm management specialists at University of Illinois to determine building rental value and example production budgets to illustrate possible returns. Article also suggests responsibilities for equipment and repairs for each party and the essentials of a contract. Excellent job of covering the considerations of the owner and how to calculate building value. Use: A good reference for building owners, hog producers, extension personnel, and consultants. Limitations: Examples are for finishing buildings only. Does not discuss how to determine the production levels and resulting costs of production which can vary tremendously between buildings and play a big part in determining how much the renter can pay.

Author: DiPietre, Dennis, Rick Tubbs, and Lee Fuchs

Title: Characteristics of Long-Term Profitability: An Audit of Swine Production Systems

Source: NPPC Pork Academy Proceedings, June 8, 1995

Availability: Order directly

This paper provides a strategic outline [audit] To follow when planning a swine production system. Sections include: 1] Technical Feasibility Audit- water supply and land area for manure spreading, 2] Site planning/evaluation/qualification/permitting requirements, 3] Financial Feasibility Audit- capital/capacity/collateral positions and loan structure, 4] Long Term Profitability Audit- strategic business plan, legal structure, financing/equity plan, production and financial records, 5] Health Assurance Program, 6] Facility/building types, 7] Nutrition Technology, 8] Personal Management, 9] Throughput, and 10] Cash Flow Audit- marketing, seedstock, cost containment. Each section/sub-section contains a series of pertinent questions/points to ask/consider to ensure success.

Author: DiPietre, Dennis, Rick Tubbs, Lee Fuchs

Title: How to Score Swine Loans

Source: NPPC National Pork Lenders Conference, 1994

Availability: Order directly

Contains an outline listing components of a hog financing credit risk assessment model, description of an evaluation procedure to assess production efficiency, and four papers on cost and performance comparisons from PIC and PigTales databases. 29 pp.

Author: Lash, Alan

Title: Financial Management

Source: NPPC National Pork Lenders Conference, 1994

Availability: Order directly

A detailed description of the process of financial analysis. Financial management components discussed include: primary analysis model, capacity, performance analysis concepts, operating profit, operating efficiency, capital management, evaluating debt capacity, credit limit rule, analyzing assets, and asset turnover and for different types of swine operations. Includes numerous charts, graphs, tables and case studies. 45 pp.

Author: Lawrence, John
Title: Financing Modern Swine Production
Source: TIPS Conference, 1993
Availability: In Swine Center packet

Discusses 1) developing a business plan to unlock the door to capital, 2) financing alternatives for swine production, and 3) impact of production efficiency on debt service capacity.

Author: McMahon, Karen
Title: How to Score a Loan (Lee Fuchs, Farm Credit)
Source: National Hog Farmer, Feb 15, 1995
Availability: In Swine Center packet

Interpretation: This is Farm Credit Services (FCS) analysis and scoring model for hog loans. Lenders that are using something like this are possibly the best lenders to approach since they exhibit interest and a means to evaluate your situation. Use: When preparing a loan package to present to a lender such as FCS, it would be prudent to learn how to calculate these ratios, well before approaching FCS. If you can meet their criteria, perhaps you should not be considering expansion of your hog enterprise. Limitation: A producer must understand these ratios and provide the right information to calculate this information.

Author: Plain, Ron
Title: Strategies to Survive and Thrive
Source: NPPC National Pork Lenders Conference, 1994
Availability: Order directly

Lists and briefly describes 10 strategies to improve profitability through better overall financial management. 6 pp.

Environmental

Author: Menke, Tom
Title: Making Manure an Asset
Source: NPPC Pork Academy Proceedings, June 8, 1995
Availability: Order directly

Provides a generalized overview of manure management issues and concerns. Discusses nutrient analysis of manure, how to match manure analysis to soil test information when calculating the value of manure, manure management plans, and how to reduce nutrient content of manure, if necessary, using anaerobic lagoons. Contains a generalized worksheet for calculating the amount of manure and wastewater generated by a pork production unit. 10 pages.

Author: National Pork Producers Council
Title: Meeting the Environmental Challenge
Source: National Pork Producers Council, Nov 17, 1993
Availability: Order directly

This is a very extensive proceedings of a two-day conference sponsored by the National Pork Producers Council. Papers from 14 authors that are nationally recognized in their field of expertise are contained in the proceedings. Subject matter is divided into five areas: Agriculture's environmental responsibility, Current practices in manure management, Futuristic alternatives, Components of a livestock manure management system, and Planning the manure management system. Many papers provide detailed discussion of topics such as treatment of animal waste, odor management, European view of environmental issues, nutrition to reduce nutrient content of manure, impacts and economics of manure collection, storage, treatment and use, and considerations in planning a manure management system. This proceedings provides the reader with a broad collection of information concerning environmental issues consolidated into one soft cover book. 192 pages

Author: Veenhuizen, Mike
Title: Common Sense Odor Solutions
Source: NPPC Pork Academy Proceedings, June 8, 1995
Availability: Order directly

A very thorough, non-technical review of odor control measures. Discusses sources of odors, design of storage structures to minimize odor emission, site selection including general recommendations on separation distances, and options for treating manure to reduce odor emissions. This paper is written for a non-technical audience. 16 pages.

Personnel management

Author: Maas, Gary

Title: Finding and Keeping the Best Employees

Source: NPPC Pork Academy Proceedings, June 8, 1995 Availability: Order directly

Includes: steps to follow to be an effective supervisor, suggested interview questions, a comparison of lawful and unlawful interview question language, and salary ranges from a 1994 survey.

Author: National Pork Producers Council

Title: Employee Relations Conference

Source: National Pork Producers Council, Nov 29, 1994 Availability: Order directly

Covers a variety of topics including: How to identify your management style. Attracting employees. Legal aspects. Performance appraisals. Example interview questions. Job descriptions and forms. Incentive plans. Family issues. Profit sharing/retirement plans. Insurance benefits. 152 pp

Author: National Pork Producers Council

Title: Employer/Employee Relations in the Pork Industry

Source: National Pork Producers Council, undated Availability: Order directly

Report of a 1991 mail survey of pork producers and employees, with 4,000 responses. Tables describing facilities, backgrounds of employees/employers, job descriptions and evaluations, salaries, hours worked, incentive plans, advancement, and working environments. 36 pp.

Author: United States Department of Agriculture

Title: What the Co-op Manager Does, Cooperative Information Report 16

Source: USDA Agricultural Cooperative Service, April 1993 Availability: Order directly

Brief discussion of the unique challenges involved in working as a manager for a cooperative, where the customers are also the owners. 30 pp.