

Staff Paper

NAVIGATING PRODUCTION CONTRACT ARRANGEMENTS

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Abstract or Summary

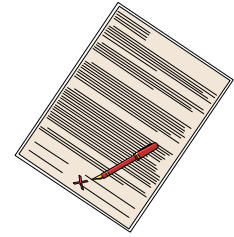
This paper is targeted for producers who are interested in learning the basics about pork production contracts. It discusses such things as what a production contract is, how they work and presents a set of questions to evaluate before signing a contract.

15 pages

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Navigating Production Contract Arrangements¹

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INTRODUCTION

While not a new idea, interest in and use of production contracts have grown rapidly in the past decade. While much of the growth may be attributed to changes taking place in the structure of the pork industry – changes in technology, size, and geographic location, producers are also using production contracts as financial and production management tools. Producers have provided a number of reasons for entering into production contracts, everything from contracts being less risky than independent production to better capital access with a contract in hand. No matter what the reason for considering a contract, a necessary first step to determine if contract production is for you is to consider how it fits in with your overall farm business strategy and individual circumstances. To help frame the issues involved with contracting, this presentation focuses on the economic, legal, and environmental impacts of a pork production contract from a contract producer’s perspective. Five issues are addressed. First, some general background is provided on the role, use, and extent of pork production contracts. Second, production contract types and designs are outlined and discussed. The third section presents an economic evaluation of contracting, including issues of profitability and liquidity. Legal issues and environmental issues are addressed in the fourth section. Finally, a producer checklist, further resources and a first-year financial analysis for a sample finishing contract are detailed to help farmers determine if contract finishing could benefit their farming operations.

PRODUCTION CONTRACTS AS PART OF A VERTICALLY COORDINATED PORK SYSTEM

For quite a while, the menu of buzzwords in the pork industry has included structural change and vertical coordination. Changes in structure and type of coordination have resulted in a more tightly coordinated pork production system, one that is well suited to address the dynamic nature of today’s industry. Vertical coordination is occurring at many levels and in multiple ways, contracting is just one way to achieve a coordinated pork production system. By way of definition, *vertical coordination* just implies that that two or more stages of production or marketing are under the control of one firm. *Vertical integration* is a method of coordination which involves control exercised by *ownership* of two successive stages (e.g., Premium Standard Farms). In contrast, *contract coordination* occurs when an individual or firm, referred to as the contractor, establishes a legal agreement with a producer that binds the producer to specific production or marketing practices. However, one individual or firms does not own all of the inputs involved in production or marketing and different individuals own and contribute various inputs into the coordinated system.

Contract coordination can fall into two broad categories. First, the commitment between the contractor and the producer may require only that the producer sell the product to the contractor. This type of agreement, referred to as a *sales* or *marketing contract*, generally allows the

¹This paper was originally prepared for the 1999 National Pork Producers Council Pork Academy. A related paper designed for individuals less familiar with both the pork industry and contracting is “Contract Finishing for New Entrants in Pork Production,” AEC Staff Paper #97-15 by L. Martin, D. Rozeboom and G. Schwab.

producer to make all managerial and production decisions. Second, a contract may specify both marketing and production practices, thereby making the agreement a *production contract*. Borrowing from Hamilton (1995), an agricultural production contract involves a “legally binding agreement of a fixed term, entered before production begins, under which a producer . . . agrees to feed and care for livestock or poultry owned by the contractor until such time as the animals are removed in exchange for a payment based on the performance. The legal nature of this relationship is referred to as a bailment, which implies that although the contract grower is entrusted with possession of the animals, he or she has no property ownership in them (Hamilton).

Agricultural production contracts of this nature are increasingly used in the pork production system. Nationally, production contracts may account for as much as 30 percent of total pork production. However, significant differences exist, both by phase of production and by geographic region. For instance, NASS reported that the total number of hogs under contract, owned by operations with over 5,000 head, but raised by contractees accounts for 30% of the total hog inventory (USDA Hogs & Pigs Report, March 1999). However, industry experts suggest a much greater degree of contract production exists in Southern and Southwestern states. For instance, in North Carolina, approximately 80% of total production is contract finished.

Historically, production contracts have existed in three different categories of the pork production system: farrow-to-finish, farrowing units producing feeder pigs, and finishing operations. Recently, two additional categories of contracts have emerged – specialized nursery units which care for early-weaned pigs and wean-to-finish contracts that combine the nursery and finishing phase under one room. Of these categories, the most common contract is for the finishing phase.

Even if one considers only finishing contracts, there is no such thing as a “standard” contract. Contracts are as varied as the people involved and may easily be altered at the start of the business relationship to better meet the needs of the grower and contractor. This is particularly true if the contractor is a pork producer in the process of expanding his operation or actively recruiting contract growers. Many producers may not recognize the potential for negotiation and believe a decision must be based on the initial contract. On the flip side, the contract grower may have less opportunity to negotiate if there are a limited number of contractors in the region, or if the region is in a stage of maturation or contraction.

While recognizing that contracts can be and often are unique, still it is worthwhile to provide a background as to how many contracts share responsibilities and inputs in pork production. The contract farmer’s major contributions include labor and housing, a substantial capital investment. In return for these inputs, the farmer is compensated at a rate predetermined in the contract. This rate is generally tied to measures of animal performance, such as feed conversion ratios, mortality rates and number of animals, but the rate may also be based on animal or building space. Furthermore, this contractual rate of pay typically does not rely on market price of pigs/hogs or

on major input prices such as feed.² Table 1 provides a description of how many general responsibilities are shared in contract arrangements.

TABLE 1.
GENERAL BREAKDOWN OF CONTRACTOR AND GROWER RESPONSIBILITIES

Item	Contractor	Grower
Land, access road, buildings, equipment and water		X
Manure handling, storage, and disposal capacity		X
Sows, SEW or feeder Pigs	X	
Feed ingredients, processing and delivery	X	
Veterinary services and medication	X	
Fuel, electricity, and telephone		X
Facility repairs and supplies		X
Marketing and transportation of all swine	X	
Labor: production and maintenance		X
Labor: supervisory and specialists	X	

HOW IS GROWER PAYMENT DETERMINED?

Since a contract farmer's contractual payment is not based on feed and animal prices, the risk associated with variability in his or her income should be less than that of an independent producer. In fact, the primary reason given by producers for choosing contract farming is the combination of less market risk and a less variable income (Rhodes and Grimes). Research shows that as much as 90% of the risk in the finishing phase of pork production may be shifted to the contractor (Martin). However, the contract design will greatly influence the degree to which a contract farmer reduces the risk of income variability.

Production contracts tie grower compensation to performance in one of two ways. The first uses an absolute performance standard and the second uses a relative performance standard. Broiler chicken contracts tend to be relative performance contracts, but almost all swine contracts are based on absolute performance. Under an absolute performance contract, a farmer earns a piece-rate based on a measure of productivity such as pounds gained, pigs weaned or hogs marketed. It is a common practice to include incentive bonus payments to reward or penalize growers for individual effort. When evaluating contracts, individuals should recognize that most contracts (for a given region) have approximately the same average payment per pig or hog, but the means of reaching that payment will vary. Important things to keep in mind are how much variability there may be from one payment to the other, whether or not above-standard labor and management are rewarded, and the potential risk-sharing involved due to uncertainty in pounds gained, head delivered or pigs per space. Because finishing contracts represent the most common

²Here, an obvious exception would be a profit-sharing agreement or a cost-plus contract.

contract category and to simplify the discussion on contract design, the focus of this section will be on finishing contracts and then extend to cover other production phases.

Finishing Contracts

Although individual contracts will vary according to regions, three representative finishing contract designs include payment based on pounds gained, on head marketed and on pig space. Such payment designs might appear similar to the contract payments listed below (A-C). The values associated with the piece-rate are representative of payments used, but are not meant to be recommended rates:³

(A) Payment Per Pound Gain + Potential Bonus:

$$\text{Grower Payment} = \$0.05 \times (\text{pounds gained}) + \text{feed conversion bonus} + \text{mortality bonus}$$

(B) Payment Per Hog Marketed + Potential Bonus:

$$\text{Grower Payment} = \$10.00 \times (\text{head marketed}) + \text{feed conversion bonus} + \text{mortality bonus}$$

(C) Payment Per Square Foot or Per Pig Space:

$$\text{Grower Payment} = \$4.00 \times (\text{square feet available in barn}) + \text{any potential bonuses}$$

or,

$$\text{Grower Payment} = \$32.00 \text{ per pig space per year} + \text{any potential bonuses}$$

Bonuses or performance incentives are an important feature for both parties involved in the contract. Without them, the contract farmer is not encouraged nor rewarded for doing his or her best. On the flip side, bonuses do expose the grower to some potential income uncertainty. Clearly understanding the bonus schedule can be a challenge. When negotiating contracts, it is worthwhile to simulate best-case/worse-case scenarios to make certain that all parties involved fully understand the potential impact bonuses can have on grower payment. A critical requirement for a bonus to be effective is for the bonus to be based on a measure that the grower can influence, such as feed conversion or mortality. If the grower cannot impact the measure, there is no incentive for improved performance and the grower is exposed to a risk outside of his or her control.

Feed conversion bonuses are commonly included in contracts and used to encourage growers to monitor and adjust feed distributions, climate controls and other production features under the day-to-day management of the grower. As feed is the largest cost to the contractor, bonuses paid to a grower for feed savings can be a win-win situation. One example of a feed conversion (pounds of feed/pound of gain) bonus would be \$0.50 for each one-tenth improvement between a standard feed conversion ratio and the grower's actual feed conversion ratio multiplied by the number of animals marketed. Standard ratios may be anywhere from 3.0 to 3.4. Likewise, the incremental value may be less than or greater than \$0.50. For example, if the standard feed conversion ratio in the contract is 3.2, but the herd had a 2.9 feed conversion, then the grower

³Values and figures are used in order to provide a basis for discussion. Actual contract payments will differ depending upon regional production costs, competition and investments in facilities.

would receive a \$1.50 bonus (50 cents for each 1/10 point difference) on each animal marketed. Likewise, a grower may be penalized for feed conversion performance worse than the absolute standard.

Mortality bonuses may be earned if the death loss is less than expected. A 2% death loss standard frequently appears in contracts. Bonuses may be paid based on all animals in the group, on only a certain number of animals, or on pounds gained. For example, a mortality bonus may increase the payment on only those “extra” animals that were expected to be lost, but instead survived. Using this case, in a 1000-head finishing barn with 1020 pigs placed and an expected death loss of 2%, one would expect about 20 hogs to die. If instead, only 12 did (mortality = 1.2%), then a mortality bonus would be earned on the eight “extra” hogs. The additional per head payment for these animals could range from \$10.00 to \$50.00.

Alternatively, a mortality bonus may be determined by the pounds gained by all animals in the barn. For instance, a 1% death loss would get an extra \$0.01 per pound produced, a 1.5% death loss would result in a \$0.005 per pound bonus and a 2% death loss would mean no bonus. Again using a 1000-head finishing barn and assuming 1020 feeder pigs are initially placed, a 1% death loss in this example means the grower receives an additional \$0.01 for every pound of gain, or approximately \$2,020 [(1010 head) x (200 lb./head) x (\$0.01/lb.)].

There are a number of incidences when a contract based on square feet or pig space may be more attractive to the contractor and/or grower. Contractors may prefer to use this type of agreement if they are less concerned with performance incentives and more concerned with having the flexibility to use the finishing facility at various capacity levels. Growers may choose this type of contract if they prefer a more certain income and/or feel there is very little they can do to affect herd performance. Bear in mind, however, that the grower will likely be accepting a *lower*, but more certain income. In other words, the farmer will have less risk, but also less income.

Farrowing Contracts

Farrowing contracts are less prevalent than finishing contracts for a number of reasons. As with other agricultural commodities, firms tend to directly own and control those stages of the production-marketing chain that are most crucial to their firm. Because labor is more specialized and intensive at the farrowing stage, and both short-term and long-term investment and management decisions are more critical (e.g., genetic selection and carcass-merit buying programs), contractors tend to exercise greater control of this stage by directly owning and operating sow production units.

With a farrowing contract, breeding animals are placed in a contract grower’s facility and the grower provides the day-to-day management and care for the animals. As with finishing contracts, payment designs follow a piece-rate with payment typically based on the number of pigs weaned. Alternatively, payment may be tied to the number of sows. One should exercise caution with this latter payment and be certain if the “sow” measure includes only productive sows or also includes all mated sows as well as unmated sows (replacement gilts). Bonuses may be based on the number of pigs/sow/year above a benchmark or a mortality measure. Feed conversion bonuses, however, show up less often in farrowing contracts.

Because farrowing contracts involve greater financial investment as well as more specialized labor, these contracts tend to be written for longer periods and provide a higher return to the contract grower. On the other hand, the grower's income has the potential to be more variable because he or she is sharing in a greater amount of the production risk. Unlike finishing contracts, farrowing contracts imply full-time employment for the contract grower. Farrowing contracts are used to produce either early-weaned pigs that are then moved to either a nursery or a wean-finish unit, or feeder pigs that are moved to a finishing unit.

Nursery Contracts and Wean-to-Finish Contracts

Weaned pigs may be placed into specialized nursery units prior to placement in a finishing facility or directly placed into a wean-to-finish facility. Contract payments at the nursery level tend to be based either per animal transferred or per pig space. Because the contractor may want a great deal of flexibility in placing and removing pigs, a contract payment based on pig space (or square feet) is becoming more common at this production phase. Bonuses, particularly those based on mortality, are still attached to the payment design. Since grower payment is not tied to pig flow and pigs numbers, often the contract grower is provided with a certain income (with the exception of the bonuses) and the contractor is afforded the flexibility for managing pigs flows. This flexibility is particularly important for new contractors who are "ironing out the kinks" in production. Again, just as with the finishing contracts, since the contract nursery grower is assuming less production risk, his or her contractual payment will most likely be less than under a per animal transferred basis.

Contracts for wean-to-finish (WTF) are relatively new and have features common to both nursery and finishing contracts. In the Midwest, WTF contracts are evolving as a blend of the two contracts and include mortality and feed conversion bonuses as well as payment based on the number of animals. In addition, many WTF contracts are guaranteeing the producer a minimum income. Part of the rationale for this has been the steep learning curve involved with managing WTF rooms. By providing the grower with a base income, growers are not financially penalized as they learn the best way to micro-manage young pigs in large areas.

MANURE MANAGEMENT AND THE VALUE OF MANURE NUTRIENTS

An increasingly important factor in contract analysis is the assessment of manure nutrients. Depending on the situation, swine manure can be either a resource or cost of production. Contracts generally specify that the contract grower is responsible for complying with all state and federal regulations governing manure management (as well as dead animal disposal). If the grower can utilize the manure nutrients in crop production or through brokering, there may be a value attached to the manure. Proposed contracts may involve a *manure credit*, where the total budget proposed by the contractor includes the value of the manure nutrients (K, P, and N). However, depending on the individual circumstance, the manure credit may or may not be appropriate. Evaluating the nutrient content of manure is an important step in assessing the economic and environmental opportunities of a production contract. The amount and value of swine manure can vary with, among other things, the size of animals, nutrient concentrations in the diet, amount of feed waste, animal feed intakes, water intake, bedding, manure handling and storage system.

Alternative sources of planning data for nutrients excreted in swine manure include the Midwest Planning Service (MWPS) and observations from various research studies (samples provided in Table 2). A range of nutrient values is obtained whenever manure is collected from different sources and tested. A manure nutrient analysis provides the best farm-specific information for proper management of nutrients. In evaluating a potential contract arrangement, it may be useful to request from the contractor/owner written results of several nutrient analyses the owner has completed on manure samples taken from units already in production.

**TABLE 2. NUTRIENT PRODUCTION ON A PER MARKET HOG BASIS
GROWTH FROM 50 TO 250 POUNDS LIVE WEIGHT**

	Pounds		
	Total Nitrogen	P ₂ O ₅	K ₂ O
MWPS-18, 1985 ^a	8.26	5.90	6.37
Minnesota, 1994 ^b	6.42	3.74	2.81
Pork Industry Handbook ^c	4.80	3.60	2.94
Cromwell and Coffey, 1994 ^d	5.46	3.43	Not provided

^aMidwest Planning Service. 1985. *Livestock Waste Facilities Handbook*. 2nd Edition. MWPS-18.

^bWagnar, T., M. Schmitt, C. Clanton, and F. Bergsrud. 1994. "Livestock Manure Sampling and Testing." Minnesota Extension Service Bulletin FO-6423-B.

^cSutton, A.L., D.H. Vanderholm, and S.W. Melvin. 1979. "Fertilizer Value of Swine Manure." *Pork Industry Handbook*. Michigan State University Extension Bulletin E-1128.

^dCromwell, G. and R.D. Coffey. 1994. "Future Strategies to Diminish Nitrogen and Phosphorus in Swine Manure." Proceedings of the 1994 North Central Regional Animal Science Extension Specialists Workshop, University of Missouri, Columbia.

A final manure management topic deserving consideration is the estimation of total manure volume produced in a finishing building each year. This estimation is critical for sizing manure storage facilities and for calculating an accurate enterprise budget. Like manure nutrient production, total volume of manure produced varies from farm to farm. For a 1000-head finisher, estimates can vary from 400,000 to 750,000 gallons per year, depending on: the amount of water used to clean buildings between groups, feeder type (wet-dry feeders decrease water waste), number of waterers per pen, type of waterers, drinking water delivery pressure and volume.

PROFITABILITY AND LIQUIDITY ISSUES

Understanding payment designs and evaluating manure nutrients are critical steps in assessing contracts, but in the end, the question comes down to "Can money be made with the contract?" Really, there are two questions. First, what are the returns on the investment in the facility and to the grower's labor and management? Second, how will the grower's cash flow be affected?

To discuss issues of profitability and liquidity, consider the steps a prospective contract farmer might follow to analyze a production contract. The contract payment stipulates that the farmer will receive five cents per pound of gain, plus bonuses for a low feed conversion ratio and a low mortality rate. The grower is required to construct a new finishing facility designed to house

1000 market hogs. Coupled with site preparation and a new well, the total cost of this investment is \$157,000.⁴

Prior to signing the contract this farmer does several things to improve his understanding of the contract and the contractor. First, he has checked with other contract farmers to find out how satisfied they are with both the contract and the contractor. While doing so, he checked the production numbers to see what he may expect for feed conversion, weights and number of hogs placed, and death loss. He learns that more than 1000 pigs are placed in the finishing barn, so that after accounting for death loss and culls, approximately 1000 hogs will be ready for market. After requesting budgets from the contractor and other sources, he develops an enterprise budget for his first-year. This illustrative example appears in Appendix 1.

Several features of the enterprise budget merit discussion. First, there are a number of production assumptions based on the contract specifications and the farmer's estimate of how hogs will perform in his barn. Since this proposed contract is based on pounds of gain, it is necessary to have an estimate of the placement weight and removal weight. Furthermore, the contract itself should specify a weight range for placement and removal. If not, the producer runs the risk of having hogs kept in his facility to heavier weights. Although he would receive a higher payment due to the increased pounds gained, it may also cause higher feed conversion ratios and fewer groups (or turns) per year.

In the budget presented here, a value is placed on the manure. A description of how this value is calculated is included in Appendix 1. Because the farmer may not be paying for N, P, and K, it is unclear whether the farmer's cash flow is affected. Consequently, two columns are presented in the enterprise budget, one which focuses on profitability and one directed towards liquidity. Likewise, the interest payment affects the farmer's profit evaluation, while both the principal and interest payments impact his cash flow.

After working through several scenarios, the farmer is positioned to answer the original two questions. First, under this contract, he realizes that even without the manure nutrient cost savings, the contract will cash flow. Second, including the value of manure, there is an estimated rate of return on farm assets of nearly 12 percent after accounting for his own labor and management. Recognizing that this is a representative first-year analysis, he proceeds to do a best-case/worst-case scenario, as well as projections for future years.

As the next step in the decision process, the farmer evaluates the contractor and decides whether or not this is an individual or firm with whom he wishes to do business. This involves evaluating the contractor's financial position and may include looking at the contractor's balance sheet, as well as determining the contractor's position and reputation in the community and industry. Is the contractor likely to be in business in five years? Will he be in business in ten or twenty years? Likewise, are there other contractors in the area with whom he could contract? As a final step in evaluating the production contract, the farmer consults with his lawyer to make certain he has not exposed himself to any unnecessary legal risks.

⁴Contractors may neglect to account for site preparation (which may include roads) and well costs when providing prospective contract growers with initial budgets.

CONTRACT TERMS AND LEGAL ISSUES

Most contracts are written from the perspective of the contractor with the contractor's interest in mind. In addition, the legal jargon can be difficult for the layman to interpret. Nevertheless, while recognizing that a contract cannot account for every possible contingency, there are certain elements that should appear in a pork production contract. These include:

- **Length of the contract:** Contract length can vary from one herd to multi-year agreements. Finishing contracts tend to be the shortest in length while farrowing contracts the longest. Growers typically require 7-10 years to repay building investments, but contracts may not be written for this length. While this may pose a risk to the grower, it should also be recognized that market and industry conditions change and that predicting appropriate payments over an extended period is quite difficult. Locking in a long-term contract may introduce additional risks if inflationary factors erode the real value of the contractual payment or if the farmer is unable to accept more desirable business opportunities down the road.
- **Condition for contract termination and renewal:** How and when can either party terminate or renew the contract? How much notice is required? How are renegotiations handled?
- **Payment determination:** The contract should clearly state how, when, and by whom the contract grower will be paid. Bonuses should be clearly specified and the producer needs to determine whether penalties can be applied for below standard performance.
- **Conditions for delivery and marketing:** It is unreasonable to expect the contract to specify exact numbers, weights and dates. However, it is reasonable to have weight ranges for animal placement and removal reported in the contract, as well as a guaranteed minimum number of animals or building capacity. Most contractors will guarantee that at least 90 percent of building capacity will be used. In addition, the number of animals moved through the facility in a year should be addressed. Of course, if the payment structure is based on building capacity, animal flow is not a concern since the contract grower will be compensated regardless of whether or not the integrator places animals in the facility.
- **Responsibilities of each party:** It is critical that the responsibilities of each party are defined in the contract. Not only does this include major inputs such as those outlined in Table 1, but also the responsibilities for such items as loading and unloading animals, insurance on animals, insurance on facilities, manure management, dead animal disposal, etc. If special record-keeping software is required, the responsibility for and the expense incurred should be detailed.
- **Independent contractor status:** A production contract will describe the grower as "an independent contractor". This removes the potential for the contract grower to be considered as an employee, partner or part of a joint venture with the contractor and defines the business relationship.

While this list does not encompass all possible provisions of a production contract, it does include key elements to consider. An additional checklist of questions is provided below. For further information on contract elements and legal issues, individuals are referred to two publications. First, the National Pork Producers Council *Guide to Contracting*, published in July 1996. Second, an excellent resource available to farmers and lenders is "A Farmer's Legal Guide to

Production Contracts” by Neil D. Hamilton, Distinguished Professor of Law and Director of the Agricultural Law Center at Drake University Law School.

Contract production may be an attractive option to farmers who are interested in stabilizing their incomes and reducing risks associated with market price fluctuations. Some production contracts, such as those for finishing facilities, may also provide farmers with an opportunity to utilize extra labor and available acres. However, just as contract farming may not be the right choice for all farmers, all production contracts are not the same. It would be well worth an individual’s time to explore the various types of contracts out there to determine how his or her farm can best fit into a coordinated pork production system.

QUESTIONS TO EVALUATE IF YOU ARE CONSIDERING A HOG FINISHING CONTRACT

1. What is the length of the contract and how can it be terminated?
2. Who holds title to the manure?
3. Who is responsible for dead animal disposal?
4. Do you have to accept all animals, or can you reject those animals that you feel are unhealthy?
5. Do you respect the knowledge and experience of the contractor’s representative who supervises your farm?
6. What is the reputation of the company or individual offering the contract?
7. If you produce grain, will the contractor purchase any of it to use as feed?
8. Do you fully understand how your contract payment is calculated?
9. How variable will your payments be?
10. When will you be paid and by whom?
11. Will you be penalized if you have less than “average” or “standard” productivity measures (i.e., feed conversion or death loss)?
12. Who provides labor for loading and unloading animals?
13. Does the contract clearly state how many animals are in the agreement, when the animals will be delivered and marketed?
14. Will the manure nutrients be a benefit or a cost to you?
15. How much control do you have over the animals’ performance (e.g., feed efficiency, and mortality) and is contract payment tied to performance?
16. Does the contract clearly state the weight of the feeder pig (or a weight range) at time of placement and weight (or range) at time of removal? For contracts based on pounds gained this is critical.
17. Can the grower raise other hogs or other livestock?
18. What happens if the owner or integrator exits from the pork production business?
19. Who provides for insurance on animals?
20. Does the contract offer you a reasonable return on your labor and management?

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APPENDIX 1: FINANCIAL ANALYSIS

The following section provides financial analysis for a potential hog finishing contract. A first year sample enterprise budget is developed for a contract based on a per pound payment. This is designed to be a conservative contract, paying about \$11.45 per market hog (finishing contracts are ranging in the \$10-15 range, depending on the region, cost of facilities, etc.) The example budget analysis provided here is just that, an example – it is included to provide farmers with a *framework* for analyzing contracts. Individuals will want to use their own values for manure credit, contract payment, amount financed, and such.. Before diving into the financial analysis provided in the following pages, it is worth describing important factors considered in developing the budget.

Manure Credit and Custom Manure Application Rates: In order to calculate manure nutrient value and application expense, it is assumed that 1020 feeder pigs are placed in the barn to ensure that the number of hogs, after accounting for death loss, will approximate capacity. Based on a 2.0% mortality or death loss and just over 2.94 turns per year, 2942 pigs are produced per year. In one year, the pigs will produce about 520,000 gallons of manure (420,000 gallons of urine and feces plus 100,000 gallons wastewater). Total nutrient production per year would be:⁵

		Total Nutrient Production		
8.26 #	Total Nitrogen per pig	x	2942 pigs per year	= 24,301 # Total N
5.90 #	P ₂ O ₅ per pig	x	2942 pigs per year	= 17,358 # P ₂ O ₅
6.37 #	K ₂ O per pig	x	2942 pigs per year	= 18,741 # K ₂ O ₅

So what is the value of these nutrients? Roughly, the value (before assessing pumping and hauling charges) is estimated to be:

24,301 #	Total N	x	\$0.25/#	= \$6,075.25
17,358 #	P ₂ O ₅	x	\$0.25/#	= \$4,339.50
18,741 #	K ₂ O	x	\$0.11/#	= \$2,061.51

This means that the total annual value of manure nutrients from the hog finishing unit is approximately \$12,476. In addition to the manure nutrient value, there is also an assumed expense for custom manure injection. Custom manure application rates vary, typically between \$0.005 to 0.015 per gallon of manure, and depend on the total volume of manure removed, hauling or pumping distance, and application method. In this budget, a rate of \$0.0075 is used. It is further assumed that the manure from a single finishing unit is hauled a maximum of one mile and “knifed” into the soil.

⁵Based on MWPS data.

Labor: the value of the grower's labor and management depends on total hours of labor, which depends on the tasks performed. In this illustration, labor provided by the grower includes:

- Daily observation of feeders, waterers and ventilation equipment.
- Daily observation and treatment of animals for health problems.
- Power washing and disinfecting of facility and feeders prior to receiving a new group (turn; 10 to 14 hours/ 1000-head unit).
- Maintenance of facility equipment, roads, and utilities.
- Implementation of odor, rodent, fly, and animal control measures.
- Maintenance of boot wash pans at building entries.
- Shower-in/shower-out.
- Dead animal disposal.
- Unloading feeder pigs at arrival (8 hours).
- Loading market hogs (8 hours).

The hours of labor to operate a 1000-head finisher facility is estimated to average 1.5 hours/day for each day the barn is filled. Twenty additional labor hours also are included in the budget to account for the time involved in loading/unloading animals and preparing the facility between turns. This implies an estimate of 550 annual labor hours.

**Appendix 1. Enterprise Budget for a Sample Contract Finisher -- Base Payment per Pound Gained
(Base Payment \$0.05/lb., FC = 2.9, Mortality = 2.0%, 80% of Investment Financed)**

Sample Contract: \$0.05 per Pound Gained + Potential Bonuses
Feed Conversion Bonus: { 10 * (3.2 - FC) * (0.50) } * Hogs Finished
Mortality Bonus: \$25.00 head for each additional hog above 98% livability

Assumptions:

Building Capacity:	1000	Base Payment per Pound Produced (\$ per lb.):	0.05
Pigs placed per Group:	1020	Average Feed Conversion:	2.90
Percent Mortality:	2.00%	Maximum Feed Conversion for Bonus:	3.20
Average Weight at Placement:	50	Feed Conversion Bonus (\$ per tenth)/head:	0.50
Average Market Weight:	250	Maximum Mortality Rate for Bonus:	2.00%
Interest Rate:	9.50%	Mortality Bonus (per "extra" hog):	25.00
Property Tax Rate (mill per thousand):	20	Days from first Placed to Last Removed:	118
Property Insurance Rate:	0.50%	Days Empty Between Groups:	6
		Average Daily Gain (ADG):	1.69

Calculated Values:

Hogs Finished per Group:	999.60
Groups per Year:	2.94
Ave. Payment per Hog:	\$ 11.45

				<u>PROFITABILITY</u>	<u>LIQUIDITY</u>
			Price/ Unit	Annual Amount	Cash Flow
Income	Quantity	Unit			
Live Market Hogs:	2942	hog	\$11.45	\$33,686	\$33,686
Value of Manure (Nutrient Cost Savings):					
Nitrogen (Total) (8.26# @ \$0.25/lb.):	2942	hog	2.065	6,075	?
Phosphorus (100% utilized) (5.90# @ \$0.25/lb.):	2942	hog	1.475	4,339	?
Potash (100% utilized) (6.37# @ \$0.11/lb.):	<u>2942</u>	<u>hog</u>	<u>0.701</u>	<u>2,061</u>	<u>?</u>
Total Income	2942	hog	\$15.69	\$46,161	\$33,686
Operating Costs:					
Electricity (\$100/mo.):	12	month	\$100.00	\$1,200	\$1,200
LP Gas:	750	gallon	0.75	563	563
Repairs: Bldg. & Equipment:	2942	hog	0.80	2,354	2,354
Supplies & Misc.:	2942	hog	0.40	1,177	1,177
Custom Manure Injection:	<u>520,000</u>	<u>gallon</u>	<u>0.0075</u>	<u>3,900</u>	<u>3,900</u>
Total Operating Expenses:				\$9,193	\$9,193

					<u>PROFITABILITY</u>		<u>LIQUIDITY</u>
Facility Ownership Costs:							
Interest							
Interest payment:	\$125,600	loan amount	9.50%		\$11,932	P & I	\$20,004
Operating Loan:							
Property Taxes @ 20 mill per thousand	\$75,000	assessed	0.020		1,500		1,500
Farm Insurance: insure @ .5%:	\$157,000	invested	0.005		785		785
Total Facility Ownership Costs:					\$14,217		\$22,289
					-----		-----
Total Cash Farm Expense:					\$23,410		\$31,482
Net Cash Farm Income:					\$22,751	Cash +/-	\$ 2,204
Less Depreciation:					(\$10,383)		
Net Farm Income:					\$12,367		
					=====		

Total Farm Net Worth (Assets - Liabilities): \$31,400
Value of Operators Labor and Management (550 hours @ \$10/hr): \$5,500

Rate of Return on Farm Assets: 11.97%
Rate of Return on Farm Equity: 21.87%

Investment Assumptions:

Building Capacity: 1000 head
Interest Rate: 9.50%
Percent Financed: 80.00%
Years of Loan: 10

Item	Initial Investment	Expected Years of Life	Annual Depreciation	Annual P & I Payment	First-year Interest Payment	First-year Principal Payment
Building	\$150,000	15	\$10,000	\$19,112	\$11,400	\$7,712
Site Preparation	2,000	15	133	255	152	103
Well	5,000	20	250	637	380	257
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Total:	\$157,000		\$10,383	\$20,004	\$11,932	\$8,072

Note: Please remember that these are estimated values based on a "typical" contract --- individual performance, costs and contract payments will vary.