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UNDERSTANDING SWINE PRODUCTION

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PREFACE

This paper is one of a series published by Volunteers in Technical Assistance to provide an introduction to specific state-of-the-art technologies of interest to people in developing countries. The papers are intended to be used as guidelines to help people choose technologies that are suitable to their situations. They are not intended to provide construction or implementation details. People are urged to contact VITA or a similar organization for further information and technical assistance if they find that a particular technology seems to meet their needs.

The papers in the series were written, reviewed, and illustrated almost entirely by VITA Volunteer technical experts on a purely voluntary basis. Some 500 volunteers were involved in the production of the first 100 titles issued, contributing approximately 5,000 hours of their time. VITA staff included Betsey Eisendrath as editor, Suzanne Brooks handling typesetting and layout, and Margaret Crouch as project manager.

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UNDERSTANDING SWINE PRODUCTION

by VITA Volunteers Vernon Meyer and Douglas Henderson

I. INTRODUCTION

Swine production provides red meat for the human diet, uses less feed than is required to produce beef or lamb, and is also a source of bides and cooking fat. Swine are also scavengers, and can make productive use of many materials that would otherwise be wasted.

Pigs (young swine of either sex weighing less than 120 pounds), were domesticated in China as early as 4900 B.C. Biblical writings mention them as early as 1500 B.C., and there are references to the keeping of swine in Great Britain in 800 B.C.

Today, swine are raised throughout the world. Their numbers are particularly high in countries that are heavy producers of corn, barley, and potatoes. Countries that have surplus dairy by-products such as buttermilk and whey also produce many hogs (domesticated swine weighing more than 120 pounds, raised for market). The only places where swine production is not suitable are where religious law (as in Islam and Orthodox Judaism, for example) or strong tradition forbid the consumption of pork. Even in such places, small operations serving special markets are sometimes permitted.

Climate is not generally a limiting factor except where it threatens feed supply. Swine are raised in both warm and temperate climates, although young pigs must be kept warm, and sheltered from weather extremes.

Swine production around the world is extremely varied. Wild pigs are hunted. Single pigs are cared for and fed, to yield food for festivities or for routine family fare. Swine can be produced efficiently in very small numbers for home or family farm use, or in larger numbers for marketing. Large-scale production is more likely to succeed where cooperative marketing is possible.

The technology of swine production is well developed. Feeding, management, housing, health, and marketing systems vary greatly within and between countries. In parts of the world where labor is cheap and capital is scarce, labor intensive systems tend to be used, while production methods in industrialized countries tend to be nore capital intensive. Hogs in some areas are raised primarily on forage, while elsewhere large numbers are produced in total confinement without green feed.

There are many types, breeds, and systems of breeding. Purebreds, hybrids, and crossbreds furnish most of the world's pork supply in various grades or quality. Crossbreeding accounts for about 90 percent of swine production in the United States and Great Britain.

ADVANTAGES OF SWINE PRODUCTION

Swine production has many advantages:

o Swine convert feed to meat more efficiently than cattle or sheep do. A beef steer requires about nine pounds of feed to produce a pound of beef, a lamb requires about eight pounds, while a hog requires from four to five pounds of feed per pound of liveweight.

o Swine are prolific, commonly producing two litters per year and from six to twelve pigs per litter.

o Swine excel in yield of useable carcass compared to other

animals that produce red meat. Dressing yield is from 65 to 80 percent for swine, but 50 to 60 percent for cattle, and 45 to 55 percent for sheep and lambs.

o Hogs can convert some wastes and by-products into meat. Examples are garden waste and some types of garbage. (Garbage such as food and garden scraps should be cooked before being fed to hogs to help prevent the spread of disease.)

o Very little labor is required.

o It is possible to get by with a small investment for buildings and equipment.

o Returns come quickly. A gilt (young female swine) may be bred at eight months, and the pigs are ready for slaughter six months after farrowing.

o Hogs are an excellent source of home-processed meats. This is due to their ease of dressing and to the superior curing and keeping qualities of pork.

DISADVANTAGES OF SWINE PRODUCTION

There are also drawbacks:

o A hog's diet must rely more heavily on concentrates, which are expensive, than on roughage, which is cheaper.

o Production requires fairly careful management to achieve good results.

o Swine are very susceptible to numerous diseases and parasites.

o Swine cannot utilize pasture as effectively as can cattle or sheep.

CHANGES IN SWINE PRODUCTION

Type of Hog

During the late nineteenth and early twentieth centuries, family farms in western Europe and North America preferred a hog that produced large amounts of lard, since this was the common fat at the time. Now, however, people in many countries use other fats for cooking, and so a meatier, more heavily muscled carcass, or a leaner, bacon-type carcass is preferred. The demand for cooking fat in any country is a major factor in determining what type of hog to raise.

Production Methods

Swine production methods today vary widely. Very broadly speaking, there are two approaches: the pasture system, in which the animals are allowed to range over suitable pasture and the confinement system, in which the animals are kept in pens or other enclosures.

Fifty years ago in the United States, confinement systems were not possible. Pasture feeding was necessary to provide the nutrients that cereal grains did not supply. Today, protein and mineral supplements can provide swine with optimal nutrition even when they do not have access to forage. This has made possible the development of confinement systems. In developed countries, many swine producers have confinement buildings with controlled ventilation and other environmental controls. Automation has replaced hand feeding. Scientifically balanced diets are provided for each stage in the life cycle. Slotted floors have come into common use. Liquid waste disposal has improved, and wastes are collected and applied to the land as fertilizer for crops.

The result of these changes has been a dramatic speeding up of production. In the nineteenth century, it took eight to twelve months to produce a market hog; today, a hog can be ready for market in less than six months. And it is now possible to produce several crops of hogs per year; as many as four to six crops are common on many farms.

PRODUCTION SYSTEMS

Pasture System

Hogs are raised in the field on pasture with portable shelters. This system is used if land is not needed for other crop production. The pasture may be rotated each year to break disease and parasite cycles and to reseed the pasture. This is

usually a warm-climate operation. In the northern cornbelt of the United States it is used for only one farrowing a year. If a second farrowing is produced, the pigs are finished in an enclosed lot at the farmstead.

Resources, Materials, Equipment Needed

A fenced lot with portable feeders, portable waterers, and minimum shelter with some bedding are the only resources needed. An A-frame or similar portable shelter is usually used for each sow and litter.

Labor Needed

The labor required averages between 24 and 40 hours per sow and litter.

Energy Use

No fans or heaters are used with this system, so the only energy needed is that used to transport feed and water to the pasture lot.

Cost

Cost per sow for one-litter pasture systems (1983 U.S. costs) averages about $450 for buildings and equipment, and another $450 for breeding stock and operating costs. For a two-litter pasture system, costs would be about double.

Advantages

Pasture systems require simpler skills and management than confinement systems do. Costs for pasture system shelter and equipment are lower than those for the permanent facilities involved in a confinement system. Energy costs are also lower, and the swine are less subject to crowding and social stress.

A pasture operation is also more flexible than a confinement operation, expecially a confinement operation with elaborate facilities. As the price of corn rises in relation to the market price of hogs, there comes a point at which it is more profitable to sell the corn than to use it as feed for the hogs. Simple production methods, in which the high-cost items are feed and labor, allow the producer to respond as he sees fit in this kind of situation, because his capital is not tied up in elaborate facilities.

Disadvantages

Fewer pigs per litter can be saved in the pasture system. Weather problems are greater, since the hogs do not live in a controlled environment. It is harder to catch the pigs for treatment, ear notching, and clipping of eye teeth.

Maintenance Requirements

Fencing, feeders, and shelters must be kept in good repair.

Typical Schedules

Gilts may be farrowed once a year--in warm weather, often on pasture. The investment in buildings and equipment can be very small, but it is charged to only one group of sows and litters. Or one group of sows may be farrowed twice a year, usually in April and October in the Northern Hemisphere. If one of the farrowings is in cold weather, more investment in buildings and equipment is required; costs are charged to twice as many litters.

CONFINEMENT SYSTEM

Confinement seems to have the most benefit for small pigs, which require a particularly stable and controlled environment to do well. Hogs are raised in buildings designed to provide the best possible environment, to save labor, and to promote ease of sanitation.

Two Pens

If pigs are farrowed, nursed, weaned, and started in one pen until they reach about 60 pounds and 12 weeks of age, they can be moved to a finishing unit for the next 12 weeks. Four litters a year can be raised this way in two pens in this type of facility Some producers farrow three times per year--in temperate climates, skipping a midwinter litter to leave more time for slower pigs to reach 220 pounds and to avoid severe weather for farrowing and very hot weather at the end of finishing.

An alternative is to put half of the sows into the stalls for farrowing. Litters with the largest pigs are weaned and moved to a nursery pen when stalls are needed for farrowing. The second group of sows and litters stays in the stalls until weaning. About two litters are grouped into each nursery pen, often after sorting by weight and vigor.

Four Pens

For large herds and six or more farrowings per year, it is common to divide production into four stages, with a different enclosure for each stage: stalls where farrowing takes place and pigs are field until weaning; nursery or starting pens; growing pens, for pigs to weights between 75 to 125 pounds; and finishing pens, for pigs up to market weight.

Resources, Materials, Equipment Needed

Buildings for Farrowing. Farrowing in an enclosed building allows the manager to control the environment. Baby pigs must be kept warm, dry, and free from cold drafts. A newborn pig needs an environment of about 90 [degrees] F, then is content with about a 2 [degrees] drop per day to 70 [degrees] F. The sow is more comfortable at about 60 [degrees] F.
To give mother and baby each its own preferred temperature, it is necessary to provide supplemental heat in the creep area, which is a pen constructed to exclude larger animals while permitting young animals to enter and obtain feed.

Farrowing stalls. Farrowing stalls provide the best protection of small pigs from injury (particularly for the first week or two) and require less bedding, floor space, and labor than pens do. It is more difficult to catch pigs in a stall. The stall area may be used to grow weaned pigs.

Many producers provide water and feed in each stall, while others release the sows twice daily. Feeding in stalls is especially recommended for larger herds. Farrowing stalls are commonly built from one-inch lumber, 3/4-inch exterior plywood, or one-inch galvanized pipe. Solid barriers between the farrowing stall pens can reduce drafts. Oak or other hardwood is preferred, to prevent animal damage.

Nursery Pens. Nursery pens are used from the time the pigs are weaned at three to six weeks of age. The pigs are fed in these pens until they reach a weight of about 40 pounds. These pigs need to be kept at temperatures of from 75 to 85 [degrees] F when first weaned, depending on age at weaning. Wire-mesh floors on raised decks seem to provide the best environment.

Growing Pens. The growing stage is the period between the nursery stage and a weight of about 100 pounds. Feed conversion is highest at 60 [degrees] F, but this optimum environment for growing pigs may require a large investment in buildings and equipment.

Growing pens may be: pens in a separate building, pens in a

combination growing-finishing building, subdivided finishing pens, or full-sized finishing pens.

Finishing Pens. Finishing is the stage from pig weights of about 100 pounds to market size. Pigs are finished on pasture, shelter, and dry lot, open-front buildings, or incomplete confinement. Although finishing pigs can stand low temperatures, fastest growth with least feed occurs at temperatures of about 55 [degrees] F and at relative humidities of 50-80 percent.

Labor Needed

For confinement systems, required labor ranges from 11 to 21 hours per sow and litter.

Energy Use

Confinement systems may require supplemental heat and energy to operate ventilating fans. Adequate insulation can minimize fuel costs, and some natural ventilation can replace fans.

Costs

The higher cost of the confinement system makes it important that the facility be fully used. A multiple farrowing schedule should be used to keep the buildings operating at design capacity, with shutdowns only for major cleaning and sanitation.

Cost per farrowing space for a high investment confinement unit

(1983 U.S. costs) is $895 for buildings and equipment, and $600 for breeding stock and operating costs.

Advantages

Where labor costs are high and capital is not too expensive, the confinement system is advantageous because it substitutes capital for labor. It makes possible automatic feeding and a controlled environment. It uses less land than a pasture system does, reduces the distance that feed and water need to be transported, allows manure to be more efficiently collected for use as fertilizer, and makes it easier to sort and pen groups for size and uniformity.

Disadvantages

Compared to pasture production, confinement production demands greater management skill and a higher investment with less flexibility. Swine in confinement are also more vulnerable to disease.

Maintenance Requirements

All automatic equipment, such as fans, heaters, and feeding equipment, need routine maintenance.

Typical Schedules

Two or more groups of sows are each farrowed twice a year.

In temperate climates confinement buildings are essential for this schedule. Because the facilities are charged to many pigs, the cost per pig may be the lowest of all possible schedules.

III. DESIGNING THE SYSTEM RIGHT FOR YOU

Capital, labor, land, feed, producer skills and preferences, and climate are all factors influencing the choice of a system.

Four Common Choices

Four common production systems are compared here. All four systems produce pigs and carry them to market weight (around 200-240 pounds).

1. One-Litter Pasture System

In this program, gilts are farrowed once, then marketed. All pigs are raised and sold as market hogs, except for a new group of gilts, which is saved back to continue the production cycle. The system makes good use of fenced cropland that is farmed in rotation, and building and equipment investments are minimal. However, it is risky, especially with regard to animal performance and product price. Predators and weather pose a constant threat to young animals; and because each year's crop is sold in one short period, there is always the danger of a depressed market. Therefore, a one-litter has an element of risk, but needs supporting enterprises to provide income when it fails.

2. Two-Litter Pasture System

This system is suitable when you need a livestock enterprise to add business volume or utilize salvage resources. The system operates on a six-month cycle, with saws farrowing in late winter and late summer. These farrowings can be scheduled to use labor that is available during periods of little crop production activity. Essentials to success are herdsmanship skill and cropland suitable for hog pasture.

3. Low-Investment, Low-Intensity Confinement System

This system is most often used when the production of hogs is secondary to the production of other crops. The hog production operation is maintained with seasonal labor and resources (feed, buildings, fences, materials-handling equipment, etc.) that are not needed for the primary activity. Buildings are simple in design, with a minimum of environmental control and labor-saving devices. Farrowings are usually scheduled to avoid the peak labor periods for crop production. A popular four-times-a-year farrowing sequence in the Northern Hemisphere is December and February, June and August. Although the sow herd may glean grain fields and graze available pasture, this confinement system does not keep good land out of crop production.

4. High-Investment, High-Intensity Confinement System

This system uses specialized buildings and equipment, including

self-cleaning (slatted or flushed) floors, liquid manure handling, automatic ventilation, and automatic feed distribution. Because this is a confinement system, it frees the land for the production of other crops. However if the large investment that the confinement facilities involve is to pay off, the facilities must be put to full use. There must be at least six farrowings a year, at regular intervals, and hog production must take precedence over other crops in the allocation of available resources. This kind of high intensity farrow-to-finish production is very demanding, and may be more manageable if the unit is large enough to justify employing two or more operators.

FEED FOR SWINE

The basic energy sources for swine are cereal grains: Corn (maize), milo (sorghum), barley, wheat, and their by-products. Cereal grains are high in carbohydrates, as well as palatable and easily digested. But they usually contain less protein, minerals, and vitamins than swine require; therefore, they must be supplemented with other feeds to increase consumption of these nutrients to recommended levels. Although somewhat bulkier than the cereal grains, grain by-products have much the same characteristics as the grains from which they originate.

Corn contains less protein but more energy than the other cereals. The composition of corn, like that of all other cereals, is influenced by variety, growth conditions, method of harvesting, and storage. Because of its abundance and readily available energy, corn is used as the base cereal when the the

nutritional value of other cereal grain is given. Milo, or grain sorghum, is very similar in quality to corn and can completely replace corn in swine rations. Its energy value is about 95 percent of the value of corn (except for some bird-resistant varieties, which may offer only be 80-90 percent of the energy value of corn). Table 1 shows the relative feeding values of a number of feeds.

Table 2 lists feed requirements in terms of corn equivalent for each of the four production systems described above.

LABOR REQUIRED

Production systems vary in quantity and quality of labor required. Pasture systems and low-investment confinement systems tend to require hard physical labor and to expose the operator to mud, manure, and inclement weather. High-investment systems that use slatted floors and handle manure as a liquid virtually eliminate manual labor, but the work is confining, and odors may be obnoxious. Pasture systems provide margin for error: the space and green vegetation that they offer permit the operator to be late or inexact and still avoid problems of nutrition, cannibalism, and disease. As intensity of production increases, so does the required level of technical skill. Operators of high investment, high-intensity systems need to be skilled in production scheduling, use of medications, and building and equipment repair. Table 3 shows amounts of labor required.

SIZE OF OPERATION

When the swine operator is intended to produce a significant income, the minimum sizes shown in Table 4 are suggested.

TABLE 1. Relative Feeding Values(1)

Ingredient (air dry)	Metabolizable energy value vs. corn(3) cal/lb	Relative feeding value vs. corn(3)	Maximum recommended percent of complete rations(3) Gestation	Lactation	Grower-finish Starter	Grower-finish finish	Remarks
Animal fat (stabilized)	3,550	210-220	5	5	5	10	High energy, reduces dust
Barley (48 lb/bu)	1,275	85- 95	80	80	25	85	Corn substitute, lower energy
Beet pulp, dried	1,020	70- 80	10	10	0	0	Bulky, high fiber, laxative
Corn (yellow)	1,500	100	80	80	60	85	High energy, low lysine
Corn (high lysine)	1,520	100-105	90	90	60	90	Lysine analysis recommended
Millet (proso)	1,227	90- 95	80	80	60	85	Low lysine
Milo (grain sorghum)	1,425	95-100(4)	80	80	60	85	Low lysine
Oats (36 lb/bu)	1,200	80- 90	70	15	0	20	Low energy, partial grain substitute
Oats (high protein)		90	70	30	20	50	Low energy, partial

grain substitute
Potatoes (220 D.M.) 370 20- 25 80 0 0 30 Should be cooked, low protein
Rice Grain 1,074 75 40 15 0 20 Low energy, low lysine,
Rye 1,300 90 20 20 0 25 Possible ergot toxicity, low palatability
Spelt 1,182 85 40 15 0 25 Low energy, low lysine
Triticale 1,450 90- 95 80 80 20 85 Possible ergot

Wheat, hard 1,500 100-105 80 80 60 85 Low lysine

Wheat, soft 1,500 90- 95 80 80 60 85 Low lysine

Wheat, high protein 1,500 100-105 80 80 60 85 Low lysine

Whey, dried 1,445 100-110 5 5 20 5 High lactose content, variable salt content

(1) Based on an air dry basis unless otherwise noted. High moisture

(2) Feedstuffs must be converted to an air dry equivalent of 88-90s dry matter to determine energy and substitution rates. Complete data on all ingredients not available.

(3) When fed at no more than maximum recommended percentage of

complete ration.

(4) Higher levels may be fed although performance may decrease.

(5) Some "bird resistant milos" are 80-90s vs. corn.

Table 2. Feed Requirements and Feed Conversion Rates for Various Pork Production systems(*)

Feed Conversion Feed per Unit of Production			
Production System	Bushels of Corn Equivalent	Pounds of Pur- chased Feed	Pounds Feed per cwt. Produced
	Per Sow Unit	Per Wt. Gain	
One-litter pasture system	100	1050	410
Two-litter pasture system	202	2350	400
Low-investment confinement system	203	2495	406
High-investment confinement system	197	2550	400

(*) Relative feeding values of some other feedstuffs are given in

the following table.

Table 3. Estimated Labor Requirements in Swine Production

Production System	Hours of Labor per Unit of Production Direct	Total per sow unit
One-litter pasture system	12	16
Two-litter pasture system	36	48
Low-investment confinement system	34	45
High-investment confinement system	22	28

Table 4. Suggested Size of Swine Production Operations

Number of Pigs Produced Sows per Year	
One-litter pasture system	50 335
Two-litter pasture system	25 375
Low-investment confinement	60 900

system

High-investment confinement 100 1500
system
MARKETING

Choosing a market is one of the important decisions a hog producer must make before sale of slaughter hogs. The market selected may affect income and profitability.

Prices vary among markets. Marketing costs, such as selling charges, transportation, also vary. Shrinkage, or the difference between the original weight of livestock and that after it has been prepared for market, will also affect the price. Consequently, hog producers need to be aware of alternative markets and to choose the one which yields the greatest net return.

In the United States, about 70 percent of the nation's hogs are sold by producers themselves. That is, the producer negotiates directly with a buyer, and the price is established in the direct negotiation. The main advantages of direct marketing from producer to packer are that hogs are farm fresh, handling and shrinkage are kept to a minimum, and transportation costs are reduced.

Some producers, about 29 percent in the United States, choose to sell through public markets. Producers who choose this method may feel they themselves do not have sufficient skills to negotiate with buyers, or they may want to support public markets

for the good of the industry.

Marketing Cooperatives

Some producers choose to market as a group, called a marketing organization. The basic purpose of these marketing organizations is to negotiate either higher base prices or higher quality premiums than are generally paid for hogs. The marketing organization usually agrees to supply the slaughter plant with a specific number of hogs either daily or weekly. Some unique techniques for evaluating hog quality have been developed by these organizations. One group bases hog premiums on a sample cut-out of a producer's hogs rather than individually evaluating each hog or group of hogs as they are marketed.

The major advantage of cooperative marketing organizations is that they can reduce buyer procurement costs while bettering the bargaining position of producers, thereby improving net returns for both seller and buyer. Cooperatives have often been able to tailor their marketing program to the needs of the producers, and at the same time to supply buyers with the type of hog desired.

USE OF LOCAL RESOURCES

What building materials are available locally will influence the choice of construction. The type of feed and bedding available will determine some of the equipment and facility to include in the operation.

POSSIBLE PROBLEMS

Maintaining animal health is one of the biggest problems of pork producers in the United States. A good program of sanitation and preventative medicine is advisable.

With high-intensity confinement systems, cash flow can also raise difficulties. Good financial planning is a must when considering this type of facility.

APPENDIX: SPACE REQUIREMENTS AND SPECIFICATIONS

Appendix TABLE 1. Pasture Space depends on Rainfall and Soil Fertility

10 gestating sows per acre

7 sows with litters per acre

50 to 100 growing-finishing pigs per acre

Appendix Table 2. Shade Space

15-20 feet 2/sow

20-30 feet 2/sow and litter

4 feet 2/pig to 100 pounds

6 feet 2/pig over 100 pounds

Appendix Table 3. Waterer Space

Minimum of two waterers per pen

Pig (12-75 pounds): 10 pigs per waterer

Pig (75-220 pounds): 15 pigs per waterer

Appendix Table 4. Floor and Lot Slopes

Slotted floors: usually flat

Solid floors:

Farrowing Stalls: 1/4" - 1/2" per foot without bedding
1/4" per foot with bedding

Pigs:
1/2" per foot without bedding
1/4" per foot with bedding

Paved lots: 1/2" per foot

Paved feeding floors:
Indoors: 1/4" per foot
Outdoors: 1/2" per foot

Building alleys:
1/2" per foot crown or side slope
1/8" per foot to drains

Appendix Table 5. Per-pig Space Recommendations for Enclosed Housing

Pigs Weight Pound	Area foot 2
Farrowing stalls a 12-30	2-2 1/2
Nursery pens b 30-75	3-4
Growing pens b 75-150	6
Finishing pens b 150-220	8

a Avoid concrete slats, slats over 2" wide, and partly slotted floors for prenursery pigs.
b For slotted, flushed, or scraped floor.

Appendix Table 6. Shed with Lot

More lot area is often provided to facilitate manure drying.

Weight Pound	Inside ft /hd	Outside ft /hd

Nursery pig 30-75 3-4 6-8

Growing/finishing pig 75-220 5-6 12-15

Gestating sow 325 8 14

Boar 400 40 40

Sow in breeding 325 16 28

Appendix Table 7. Animal Sizes, Pen Capacity, and Stall Sizes

Solid Totally or Partly
Breeding Weight Floor Slotted Floor Animals Stall
Swine Pound ft ft per Pen Size

Breeding
Gilts 250-300 40 24 up to 6
Sows 300-500 48 30 up to 6
Boars 300-500 60 40 1 2'4"x 7'

Gestating
Gilts 250-300 20 14 6-12 1'10"x 6'
Sows 300-500 24 16 6-12 2'0"x 7'

a Or flushed open gutter. Open gutter not recommended in breeding because of slick floors.

Appendix Table 8. Feeder Space

Sows: 1'/self-feed sow, 2'/group-fed sow.

Pig (12-30 pounds): 2 pigs per feeder space
Pig (30-50 pounds): 3 pigs per feeder space
Pig (50-75 pounds): 4 pigs per feeder space
Pig (75-220 pounds): 4-5 pigs per feeder space

Appendix Table 9. Water Requirements

Animal Type Gal/hd/day

Sow and litter 8
Nursery pig 1
Growing pig 3
Finishing pig 4
Gestating sow 6
Boar 8

Appendix Table 10. Ventilation, cfm/hd

Cold Mild Hot
Weight Weather Weather Weather
(pounds) Rate Rate Rate

Sow and litter 400 20 80 500

Prenursery pig 12-30 2 10 25
Nursery pig 30-75 3 15 35

Growing pig 75-150 7 24 75
Finishing pig 150-220 10 35 120

Gestating sow 325 12 40 150(*)
Boar 400 14 50 300

(*) 300 cfm for gestating sows in a breeding facility.

Appendix Table 11. Slot Widths

For slotted floors. Wire mesh, metal, or plastic slats preferred in farrowing and prenursery.

Slot Widths (inches)	Concrete Slat Widths (inches)
Sow and litter	3/8	4
Prenursery pig	3/8	Not Recommended
Nursery pig	1	4
Growing-finishing pig	1	6-8
Gestating sows or boars:		
Pens	1	6-8
Stalls	1	4

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Production (10 fact sheets)
Breeding and Genetics (4 fact sheets)
Herd Health (19 fact sheets)
Housing (21 fact sheets)
Marketing (7 fact sheets)
Management (4 fact sheets)
Nutrition (10 fact sheets)
Pork and Pork Quality (2 fact sheets)
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