4HSWM 11

4-H SWINE PROJECT MANUAL BOOK 2

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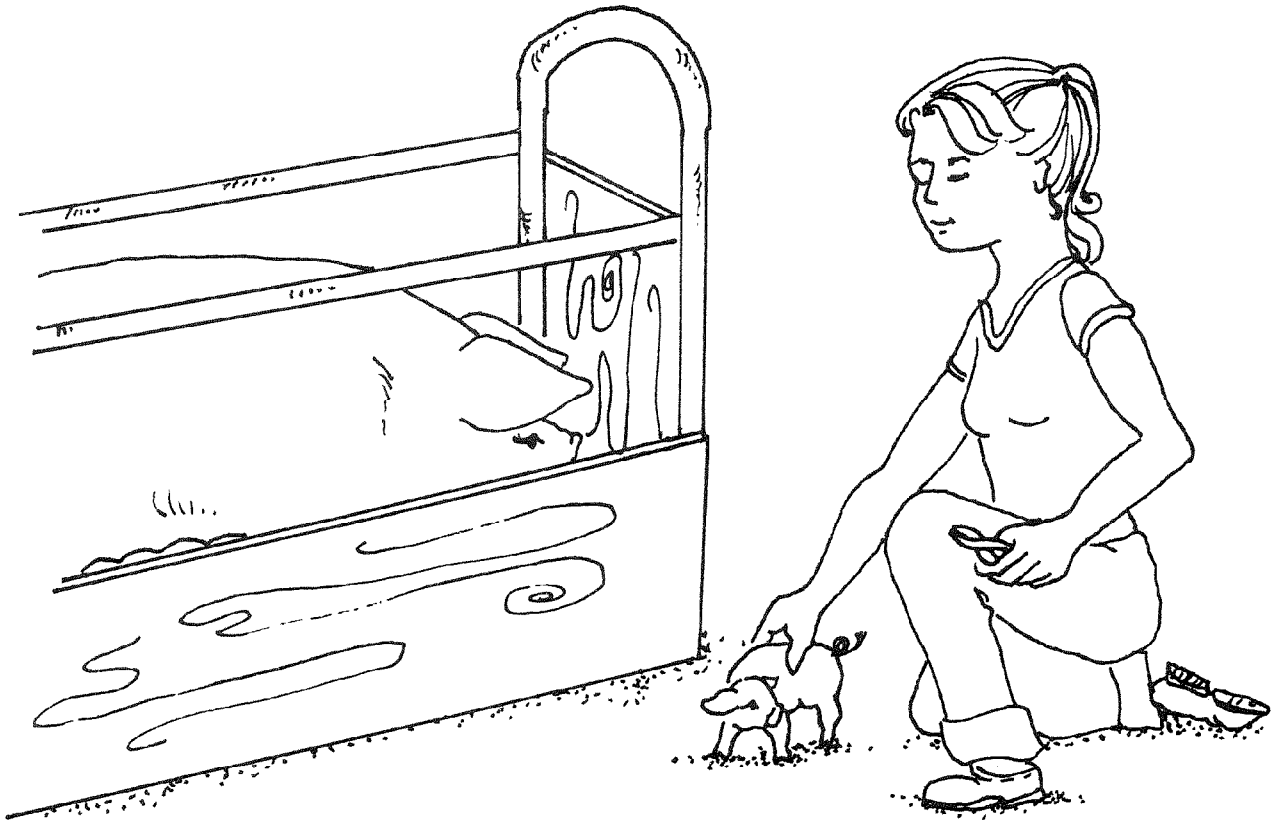

Name _____ Date of Birth _____
Address _____
Grade in School _____ Name of School _____
Years in 4-H _____ Years in Swine Projects _____
Name of local Club _____
Parent or Guardian _____
Local Leader _____
County Extension Agent _____ County _____

Objectives

The purpose of this project is to encourage 4-H members to achieve the following:

1. To acquire an understanding of swine breeding, production and management practices and acquire skills in executing them by owning, caring for and keeping records on one or more head of swine.

2. To demonstrate sound swine breeding, feeding and management practices on the home farm and in the community.

3. To be able to identify the types and grades of hogs and employ efficient methods of marketing.

4. To identify the degree of quality, the wholesale and retail cuts of pork and pork products and understand their importance to human nutrition.

5. To understand the business aspects and economics of purchasing animals, feed, facilities and equipment for a swine project.

6. To develop integrity, sportsmanship, cooperation and ability to speak in public through participation in related activities, such as demonstrations, talks, judging events, tours and exhibits.

7. To develop leadership abilities, build character and assume citizenship responsibilities.

8. To develop an understanding of the values of scientific research and its influence upon the swine and meat industry.

INTRODUCTION

This is the second of three 4-H Swine Project manuals. The first one, 4-H 353, gives basic instructions for starting out with pigs. You should be ready now to learn more about the details that you will need to take care of in a hog raising or breeding project. This manual covers both market and breeding projects, but these projects are more complex challenges for older 4-H members. Try to work independently on your project, but you should ask your parents or leader for advice and help if you need it.

Fig. 1

Tables

A Note To Parents and Leaders

You are the most important influence in a 4-H'ers life. As such you can play very important roles in guiding them through their project, making it a pleasant and rewarding experience. This material provides opportunities to learn and develop with the help of the County Extension 4-H Coordinator and you. Following are some things you can do to help the 4-H'er get the most out of this project:

1. Become familiar with material in this publication.
2. Using the information and talking with the 4-H coordinator, help 4-H'er choose goals that can be fulfilled.
3. Assist in deciding what tools, equipment and supplies will be needed, and help 4-H'er put the project together.
4. Help 4-H'er to understand and learn the tasks necessary to carry out the planned project. DON'T DO ALL OF THE WORK YOURSELF!
5. Review 4-H'ers records occasionally to make sure the records are up to date. This is a very important part of the project and should not be neglected.
6. Discuss the progress of the project and help 4-H'er to recognize the difference between a good job and a bad one.
7. Help 4-H'er to understand where project improvements are needed, and remember - your compliments for a job well done are important.
8. Help 4-H'er to know and evaluate the project and effort expended on the basis of goals and objectives set.
9. Assist 4-H'er with establishing long range goals and selecting projects to meet this challenge.
10. AVOID COMPARING 4-H'ER WITH OTHERS.

Selection of Animals

If you have not done so, think about trying out for your county livestock judging team. Judging improves your skill in choosing profitable meat-type animals and quality breeding stock and also gives you good practice in organizing your thoughts. This will help you learn to speak confidently and will serve you well in the future.

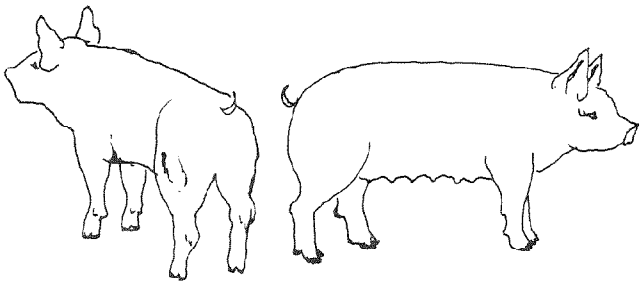

Fig. 2 Fig. 3

In choosing animals you must know what purpose they are to serve. Are you looking for breeding stock or market hogs? Are they to be kept on concrete or in dirt lots? While there are basics common to all types, there are also differences. Muscling and fat are emphasized more in selection of market pigs, whereas with breeding stock the primary concern is structure: Size and scale, strong bone and correct feet and legs.

Market hogs

When selecting market pigs, consider the following points: health, muscle and fat, and structure.

1. **Health.** Before you buy, check the health status of the animal and herd.

2. **Muscle and fat.** Areas to check for muscle are shown in figure 4. Beware of extreme bulge; it could indicate PSS (porcine stress syndrome). This defect may cause an excited hog to die suddenly. The hams, however, should be wider than the shoulders, with muscle carrying down well into the stifle. A loin and rump indicate the presence of desirable long smooth muscle.

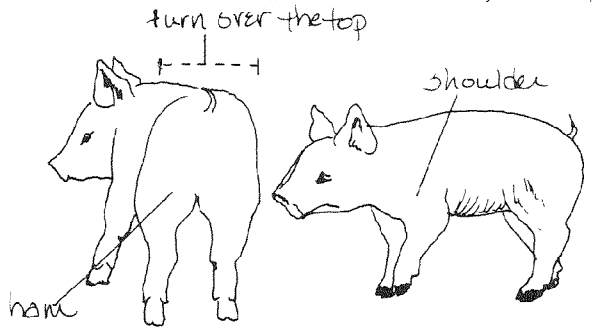

Fig. 4

Although young pigs are not usually fat, signs of future "wastiness" are present. Fat deposit areas are illustrated in figure 5.

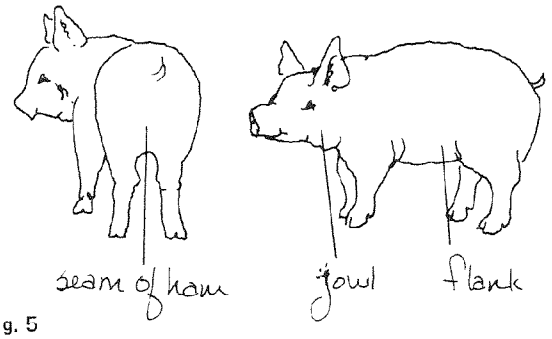

Fig. 5

3. **Structure.** Even though they are fairly minor, do not neglect the following points. An animal should have *sound feet and legs;* he has to be able to get to the feeder and water trough. Also **size** should be considered to an extent. The larger, better hog sells for more than the smaller, better hog. However, it takes more than size to compensate for excess fat. Do not select an animal just because it is large.

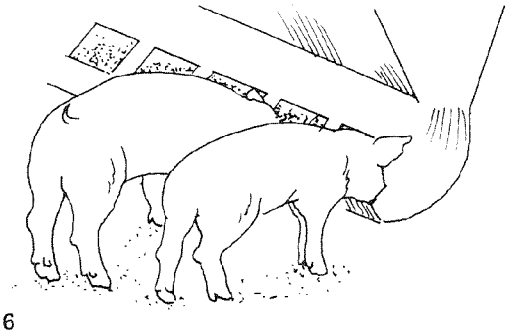

Fig. 6

Breeding Animals

When selecting breeding stock, there are several factors to consider aside from the animal's structure: Health and adaptation to conditions on your farm are very important. For instance, a sound gilt raised on dirt may be unable to adapt to concrete or slats. Think about which *type* of hog you want to market. If you plan to raise purebreds your goals should be stricter because you are supplying foundation stock. The pigs you

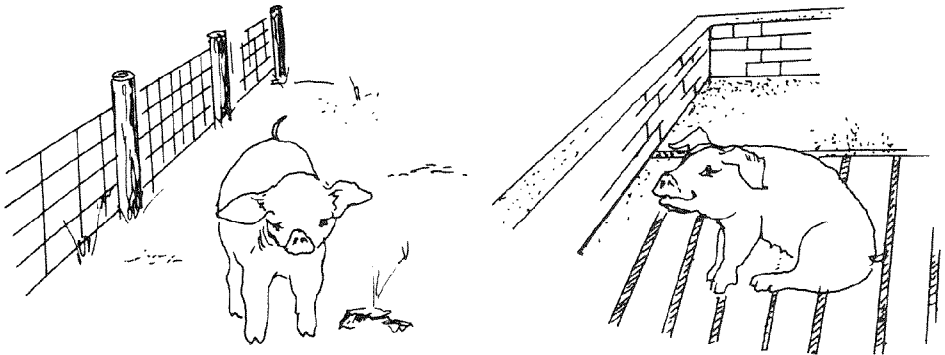

Fig. 7 A pig raised on dirt may not adapt well to slats or concrete.

farrow will be someone else's breeding stock. On the other hand, if you want to sell pigs for slaughter you select breeding stock to produce pigs to meet market demands.

1. **Structure.**

Sound feet and legs have strong bone and some slope to the pasterns. The slope provides springiness which lessens the chance of lameness. Free-striding animals also are less likely to go lame.

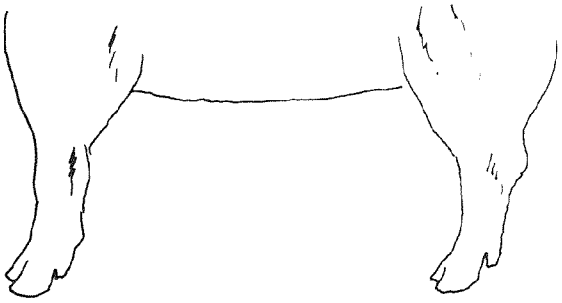

Fig. 8

Size and scale. Gilts should have enough frame to carry a large litter, without being massive and coarse. Boars should have good size without being overweight. Look for the points listed in figure 9.

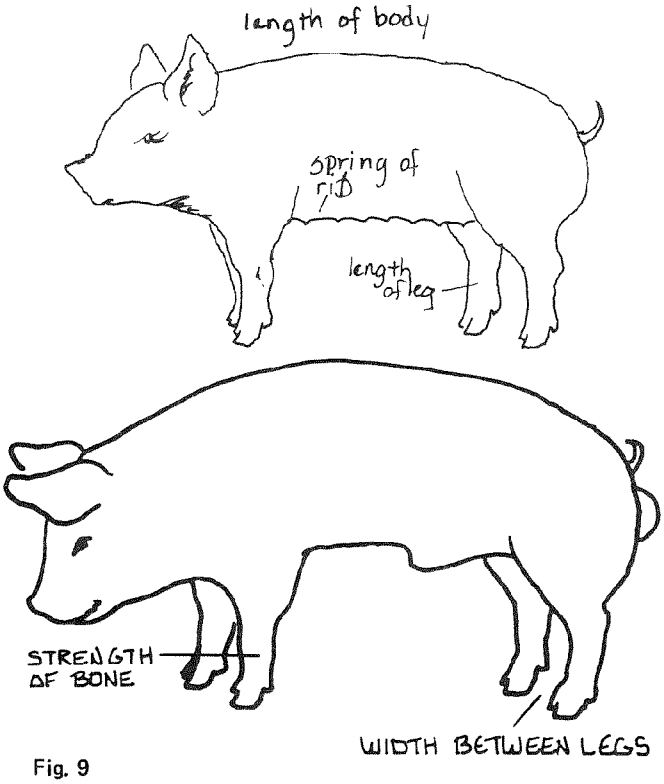

Fig. 9

Gilts should be *feminine and refined;* look for reproductive soundness. Purebreds should display strongly the characteristics of the breed.

Both gilts and boars must have *good underlines* since this trait can be passed on to offspring. A gilt must have twelve sound teats — 14 is even better. Look for and avoid underline defects illustrated in figure 10.

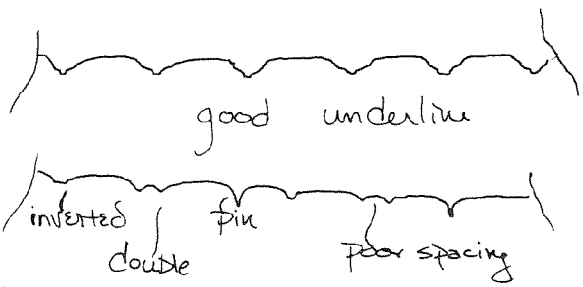

Fig. 10

Table 1

Production Goals

Litter size	10 born alive 9 weaned	
Litter wean weight	100 lbs. at three weeks 180 lbs. at five weeks	
	Gilts	Boars
Age to reach 220 lbs.	165 days	154 days
Back fat thickness*	1.1 inches	1.0 inches
Length*	30 inches	31 inches
Loin eye area*	5.0 sq. in.	5.5 sq. in.
Average daily gain (50-220 lbs)	1.8 lbs.	2.0 lbs.
Pounds feed/pound gain (50-220 lbs)	3.0 lbs.	2.8 lbs.

*at 220 lbs.

While gilts should be feminine, look for massiveness and masculinity in boars. Muscle is also emphasized more in boars, but size and correctness — or balance — are more important. The boar must be sound and able to adapt to conditions on your farm. If possible, get a semen evaluation and breeding test to check libido before adding a boar to your herd.

2. **Muscle and fat.** The importance of muscle and fat versus structure is just opposite that in selection of market hogs. Once again, do not ignore the minor points.

An extremely heavy-muscled gilt may have more trouble farrowing, as will an overweight gilt. In addition, fat gilts tend to lie on more of their pigs when they are small. Look for length and smooth muscling. Avoid gilts with bulgy muscles particularly in the ham (the rounded, "basketball" type) and shoulder. Beware of the smoothness which comes from extra fat. Look at the fat deposit areas in figure 5 and do not let yourself be fooled.

Performance Records

These can make it easier to choose the right animals if you use them correctly. They are the records anyone producing hogs should keep on litter size, average daily gain, weight, etc. Selection of top breeding stock from records before taking a look at the animal saves a lot of time. Recognize that records are only as accurate as the person writing them; keep them up to date and well organized. Take the time to do a good job evaluating the data.

Decide what traits are important and what are acceptable minimum standards. (Table 1.) Improvement can be obtained faster by selecting for carcass traits like length, backfat thickness and loin eye area. Reproductive traits and mothering ability respond more slowly to selective breeding. These include milking ability, litter weaning weight and number of pigs per litter. Do not neglect these qualities, in making your selection. Use your judgement and use conditions in your herd as a guide.

In Table 2, a breeding management schedule is suggested, and with help from parents and leader you can tailor a program to fit your project.

Table 2
Breeding Management Schedule

Birth	Identify litters with 10 or more pigs. Check gilts and boars in those litters for at least 12 sound teats.
Weaning	Separate potential replacements. Keep those from *litters* that meet at least one of these criteria. 1. litter weight = 180 lbs. at five weeks. 2. Each pig weighs 18 lbs. (35-day) 3. Wean ratio* over 100 lbs.
Day 154	Boars that weigh 220 lbs. or better should be checked for back

*Weaning ratio = $\frac{\text{weight of litter}}{\text{days of age}} \times 35$ (five week weaning.)

	fat and estimated loin eye area. Keep those that pass and have good conformation.
Day 165	Follow the above procedure with gilts.
Seven and one half months	Breed gilts on the second and third cycles; if still open, cull along with sows that do not breed back readily.
Eight and one half months	Check libido of boars and evaluate semen before using in the herd.

Questions

1. What is the major difference between selecting market animals and breeding stock?

2. a) Name three characteristics common to good market pigs.

   b) Name three traits common to good breeding animals.

3. Describe differences in choosing gilts and boars.

4. a) Why is bulgy muscle expression undesirable?
   b) Why should you avoid heavy-muscled gilts?
5. How can performance records help in selection?

Activities

Try out for your county Livestock Judging Team.

Nutrition

As you learned in Book 1, there are six nutrients required by animals. In this chapter you will see how this information relates to pigs.

Water means just that! Keep plenty of the wet stuff at hand. It is used as a lubricant, as part of cells, to cushion organs, and to help animals cool off, among other things.

Fig. 11

Protein makes muscle tissue, or meat. Proteins are complex molecules made of building blocks called amino acids. There are more than 20 amino acids in all, ten of them essential. These are ones an animal cannot make himself, so they must be supplied in the diet. That is one reason we eat meat. We need the same 10 animo acids, and meat (from cattle, poultry, hogs, and fish) can supply these basic nutrients. Since meat is not usually fed to pigs, these amino acids must be provided some other way. Most often high quality protein feeds (ones containing most or all of the essential amino acids) like soybean meal or a commercial protein supplement are fed. They should all contain the amino acids listed below. Especially important is lysine, swine cereal grains (which supply the main part of swine diets) are low in this amino acid.

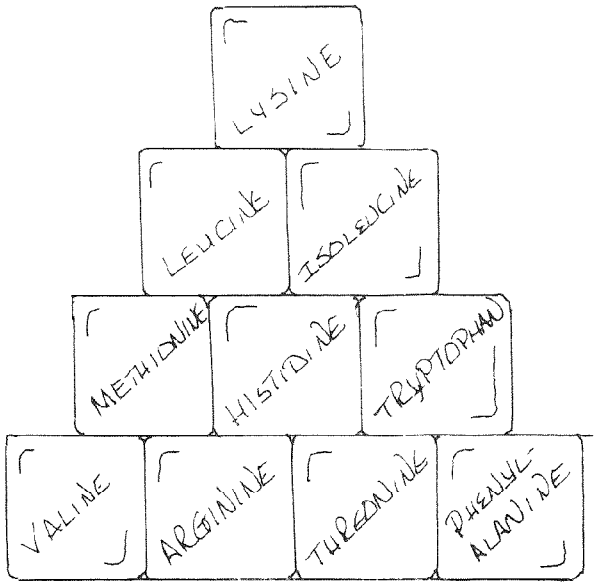

Fig. 12

Energy is supplied by carbohydrates and fat

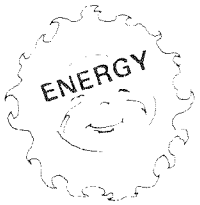

Fig. 13

Most of the energy in the form of the diet are provided by carbohydrates in the form of cereal grains. Although there is 2.5 times as much energy in fat as in carbohydrates fat is also more expensive and harder to work with. Cereals include corn, sorghum, wheat, oats and rye. Corn and sorghum are used most often because of availability and they are usually cheaper per pound on an energy basis. (That means the animal obtains more energy from a pound of these grains than the others.) Oats are used to some extent in sow diets to add bulk and in starter diets to control scours. It is also advisable to add oats to the diet of newly purchased feeders for 10 to 14 days. Do not use over 20% oats in growing-finishing rations.

Though needed in small amounts, **vitamins and minerals** are very important nutrients. Vitamins are needed to help animals use other nutrients properly and for regulation of the body. Minerals are needed to make bones and teeth hard and strong. They are also needed to get things like oxygen (air) from the lungs to the muscles; growing cells; and getting energy out of carbohydrates. There are seven vitamins and eight minerals which should be supplied. If the animal does not receive these he may become deficient. Follow directions on the packages and do not get too enthusiastic. Remember, too much is not good either. Do not overfeed.

Vitamins	Minerals	Trace Elements
Vitamin A	Calcium	Copper
Vitamin B_{12}	Phosphorus	Iodine
Vitamin D	Salt	Manganese
Choline		Zinc
Niacin		Iron
Pantothenic acid		
Riboflavin		

The second set of minerals is called "Trace Elements" because the body needs so little of each one. They are commonly available in one supplement and are known to be deadly if overfed.

Balancing Rations

Although energy is the main contribution, cereals add to the protein, vitamins and minerals in the ration. Nutritionist take this into account when formulating complete rations. Some producers supply protein through soybean meal and feed minerals free-choice. Minerals are placed in a self-feeder or box for the animals to eat what is needed, in effect balancing their own diets. To make sure animals get what they need, however, many farmers buy a protein supplement that includes minerals and vitamins, and feed it along with corn. The supplement may be fed separately or mixed with corn to make a complete feed.

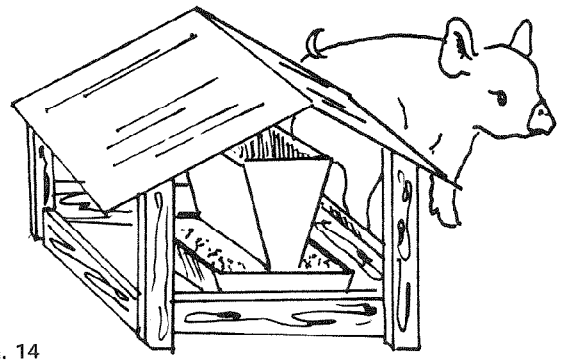

Fig. 14

There are several ways to make sure a ration has everything an animal needs; a formula called Pearson's Square is often used. Following is a step by step explanation of its use.

The following information is needed before using the square:

1. Animal — species, age or weight, use;
2. Nutrient requirements of the animal in (1);
3. Feedstuffs available; and
4. Nutrients in the feeds you decide to use.

Tables following the explanation have this information and your leader can help you learn to understand and apply it.

Example 1.

Balance a ration for finishing hog using corn and a complete supplement.

In all these rations, protein is the most expensive item. Balance for protein, using information in the tables.

According to Table 3, a finishing hog (120-220 lbs) needs 14% CP (crude protein). We learn from Table 4 that corn supplies 8.5% CP and the feed tag on the supplement guarantees 40% CP. This information satisfies the four requirements above and you can balance the ration.

1. Set up the square.

Corn 8.5 \
14 \
Supplement 40 /

2. Subtract through the middle. Numbers will always be positive.

Corn 8.5 \ 26 parts 14 – 8.5 = 5.5 \
14 \
Supplement 40 / 5.5 parts 40 – 14 = 26

3. Add the parts together and divide each by the total.

Corn 8.5 \ 26 ÷ 31.5 = .83 \
14 \
Supplement 40 / 5.5 ÷ 31.5 = .17

TOTAL 31.5

4. Multiply each new number by 100 to get the percentage of each feed for the ration. The completed square looks like this.

Corn 8.5 \ 26 ÷ 31.5 = .83 × 100 = 83% Corn \
14 \
Supplement 40 / 5.5 ÷ 31.5 = .17 × 100 = 17% Supplement

31.5

5. The last step is to check your work by multiplying the amount of protein in each feed by the fraction that feed contributed to the ration. If they add up to the amount of total protein required by the animal, the square was worked correctly.

Corn 8.5 × .83 = 7.1
Supplement 40 × .17 = 6.8

13.9

This rounds off to 14, matching the requirement. The ration has been balanced correctly

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Example 2

Formulate a ration for a lactating sow, using corn and soybean meal, plus free-choice mineral mix in salt form.

You have to allow for the mix first; three percent (3%) of the ration is usually ample. This means you have to stuff the required protein into less feed since there is no protein in salt. This increases the **percentage** protein above that listed in the table.

For lactating sows, the listed requirement is 16%. With the information given above and the protein content of soybean meal (44%) you are ready to tackle the problem.

1. To find the new percentage protein, *divide* 16 by .97 (100%–3% for the mineral mix=97%=.97). This comes out to 16.5%, the number you put into the middle of the square.
2. Now solve the problem like the one in Example 1.

Corn 8.5 27.5 ÷ 35.5 = .77 × 100 = 77% Corn
Soybean meal 44 16.5 8.0 ÷ 35.5 = .23 × 100 = 23% SBM

To check:

.77x 8.5 = 6.5
.23x44 = 10.0

16.5 The ration is balanced.

3. There is now the matter of getting the percentages back to the original level so 3% for the mix can be included. This is done by reversing the procedure. *Multiply* each number by .97.

77 × .97 = 74.7 Corn
23 × .97 = 22.3 Soybean meal

97.0
3.0 Mineral mix

100.0

Example 3.

Balance a ration for a feeder pig using corn, 20% oats and soybean meal.

This one is a little more complicated because there are three ingredients and one of those is a fixed amount. Once again, however, protein is the most important factor. A feeder pig needs 16% protein; corn has 8.5% CP, oats 11% CP and soybean meal 44%.

1. When you have a fixed ingredient, it is best to take care of its part of the ration first.

Thus: 11% CP in oats supplies 20% of the ration's protein.

11 X .20 = 2.2% CP

This amount of protein in the ration is provided by oats. 16% protein is needed in all so

16 – 2.2 = 13.8%

left to provide for in 80% of the ration. (Oats is the other 20%.)

2. As in Example 2, **divide** 13.8 by .80. This gives you 17.25 to place in the middle of the square, now solved as usual.

Corn 8.5 — 26.75 ÷ 35.5 = .75 × 100 = 75% Corn
Soybean meal 44 — 17.25 — 8.75 ÷ 35.5 = .25 × 100 = 25% SBM

Check:
.75 × 8.5 = 6.4
.25 × 44 = 11
17.4 rounded to 17.25 means the ration is balanced.

3. Once again this has to be converted back to the original percentages by **multiplying.**

75 × .80 = 60 Corn
25 × .80 = 20 SBM
100

These are just three examples using the square. They are all fairly easy, but sufficient for most purposes. Practice these and other examples until you are confident, then use the square to balance all rations for your pigs.

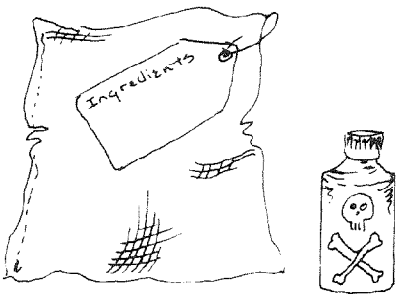


Fig. 15

Feed tags

One other area should be mentioned in this chapter. ***Feed tags and labels of all types are there to read!*** They tell you what is inside and how to use it. This includes the amount of protein, minerals and other nutrients along with any medication. Learn to read tags and labels and **use them.**

Table 3
Protein Requirements of Swine

Animal	Protein Percent (%)
to 12 lbs.	20
13-60 lbs.	18
61-120 lbs.	16
121-220 lbs.	14
Gestating sows	14
Boars	14
Lactating sows	16

Table 4
Protein Levels of Common Feedstuffs

Ingredient	Crude Protein Percent (%)
Alfalfa meal	17
Corn	8.5
Oats	11
Sorghum	8.5
Soybean meal	44
Wheat bran	16

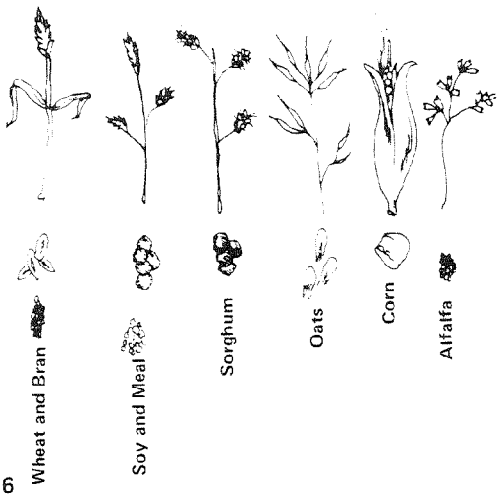


Fig. 16

Questions

1. a) What are the six nutrients required by animals?

   b) Name one function of each.

2. a) What are the ten essential amino acids?

   b) Which is the most important for pigs?

3. What class of nutrients do cereal grains come under?

4. What is used to supplement cereals?
5. T. or F. Overfeeding vitamins is just as dangerous as underfeeding.
6. Balance a ration for 130 lbs. pigs using corn and a complete supplement.
7. Your neighbor just bought a lot of 70 lb. feeder pigs and now they are scouring. He has read that adding bulk to their ration sometimes helps, but he does not know how to balance rations. Balance it for him, using corn, soybean meal and 15% oats. Leave 3% for vitamins and minerals. (This may be too difficult for some members.)

Activities

1. Read about forages for pigs and their uses. Pond and Maner's book listed in *References* is a good source.
2. Find out diseases caused by vitamin and mineral deficiencies. Make a poster to show the club, or take one disease and report on it in detail.

Management

Management is more than caring for your animals. It includes planning for different situations, arranging for facilities, marketing — anything and everything you do. In this chapter, however, attention is focused on breeding herd management and baby pig care.

Before You Start

•Space

Sow on pasture with litter	¼ acre
Sow and litter in confinement	40 sq. ft.
Pregnant sow on pasture	200 sq. ft.
In confinement	25 sq. ft.
Boar (each one penned separately)	¼ acre

•Buildings

Pasture: farrowing hut
Barn: warm, draft-free stall for winter farrowing
Shade: 40 sq. ft. per sow and litter
20 sq. ft. per boar

•Equipment

All items needed for raising market pigs
Heat lamp for baby pigs
Creep feeder
Side clippers
Ear notcher
Scapel and blades (-3 handle, size 11 blades)
Syringes and needles
Shallow pan

•Selection

The first year you have a breeding gilt project you may want to buy a bred gilt. When you have a little more experience you can buy a young gilt and breed her or keep one of the gilts from your first litter.

•Breeding information:

Gestation length	114 days
Heat cycle (estrous cycle)	19-23 days (21 average)
Heat (estrus)	1-5 days (usually 2)
Age to breed gilts	7-8 months
Weight to breed gilts	220 lbs. and up
Age to begin using boars (lightly)	7-9 months

Questions

1. If you have five sows, how many acres do they need?
2. How much shade does a boar need?
3. Name three pieces of equipment needed to care for baby pigs.
4. How old should your gilt be before you breed her?
5. How long is gestation in swine?

Breeding Herd Management

As your herd grows, it is going to take more time, skill and effort to keep a top herd. This is written primarily for those with more than one sow, but members just starting a breeding project should be able to find answers to their questions.

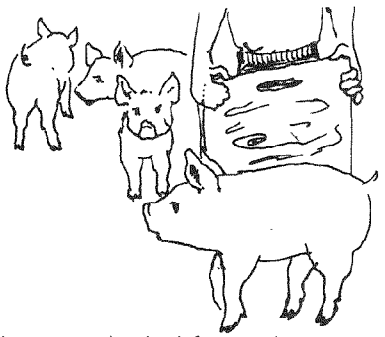


Fig. 17

If gilts are selected from pigs you are feeding, they can be left with market hogs until they reach 220 lbs. At that time, move them into the breeding area, or at least away from market hogs, because they need to be limit fed. Four to six pounds a day of a balanced ration is usually sufficient. Maintain this until three weeks before farrowing. Check the table below for more details.

Table 5 **Feeding**

Animal	Protein %	Amount per day
Gilts	14	5 lbs.
Gestating sows	14	4 lbs.
Lactating sows and gilts*	16	12 lbs.
Boars	14	5 lbs.
Boars during breeding season	14	6-8 lbs.

*Try to avoid feeding the day she farrows. The next day start feeding 4 lbs. of the lactation ration, working up to 12 lbs. over the next few days. Add 1 part oats to 5 parts feed a few days before and after farrowing to prevent constipation.

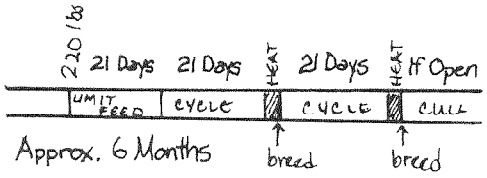


Fig. 18

Gilts may be bred at 220 lbs. (See Breeding information) Waiting until the second heat cycle to breed increases litter size somewhat. If she is not settled on the third cycle, cull her from the herd. As a general rule it is best to keep about 20% more gilts than needed to allow for non-breeders, diseases, etc. If you have a ten-sow herd and want to replace four, keep at least five. Better yet, keep all gilts that meet your requirements and sell extras as breeding stock or as bred gilts.

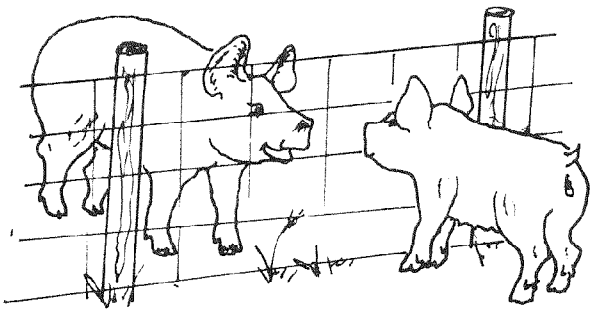


Fig. 19

Two months before breeding allow fenceline contact between gilts and boars. This lessens the chance of reproductive problems and lower conception rates. You may also want to vaccinate for leptospirosis and erysipelas before breeding, or you can wait until mid-gestation.

About two or three weeks before farrowing, start increasing the amount of feed for gilt and sows and add 20% oats or bran as a laxative. If these are not available, or too expensive, a couple of tablespoons of epsom salts a day also works. Keep in mind the dangers of overdoses. Ask advice if constipation persists.

The day of farrowing do not feed, but over the next week or so increase the amount of lactation ration ration (16% CP) from four pounds a day to about 12 lbs. a day, adding one to two lbs. a day Do not let her get fat; cut back some if necessary.

If a sow is culled at weaning, self-feed her for two to three weeks to give her time to dry up and also to put some weight on. This helps bring a better price. If you keep her and plan to breed her later, feed about four pounds a day of the 14% CP ration. Previously, flush feeding was recommended but recent research shows this does not do much good unless the sow is very thin.

Boars may be fed four to five pounds a day of the same ration as gestating sows. During breeding season increase the amount to six to eight pounds a day, depending on how he looks. Do not let him get overweight. This can lower libido and may make him sterile due to overheating. To make him exercise, place water in the back of the pen and feed in front.

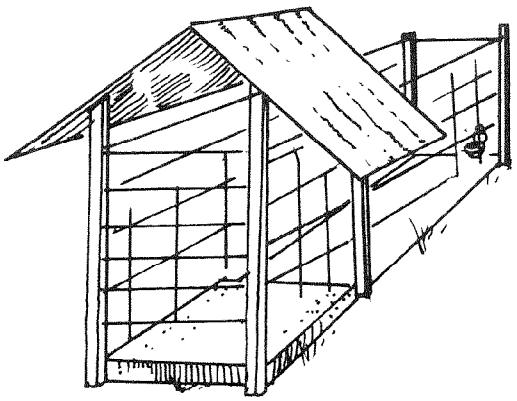


Fig. 20

A semen evaluation can be of great help in testing a boar. Such a test provides information on sperm count, motility, and the number of diseased or deformed sperm. This, along with an indication of desire to breed gives you a good idea of how a boar will perform.

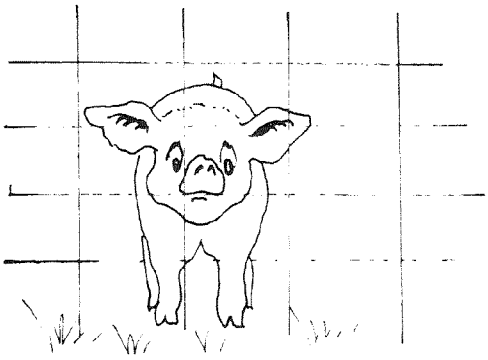


Fig. 21

New animals — gilts and boars — should be kept in isolation pens located at least 1500 ft. from other animals for at least 30 days, to detect any diseases. Use the schedules at the end of the chapter as checklists for the above procedures, and the ones explained in the next section.

Questions

1. How much should you feed a pregnant gilt?
2. How much should you feed a boar?
3. How much oats should you put in a gilt's or sow's feed five days before farrowing?

Baby Pig Care

Care of baby pigs really starts with the sow, covered under Part 1: *Breeding Herd Management.* Actual care of pigs begins when the sow starts farrowing. Keep an eye on her; make sure you can contact someone to help if necessary. Pigs are born about one every 30 minutes. If a sow does not have a pig within an hour of the last, give her 2 cc. of oxytocin. Use this hormone cautiously; an overdose can kill her.

Fig. 22

If she continues to have problems, you may have to pull the pigs. Use a sterile disposable long plastic glove rubbed with lubricant. Gently stick your hand and arm into the vulva and reach until you find the stuck pig. Look at the diagram for reference. Sometimes straightening out the baby is all that is required. Other times you may have to help with the entire litter.

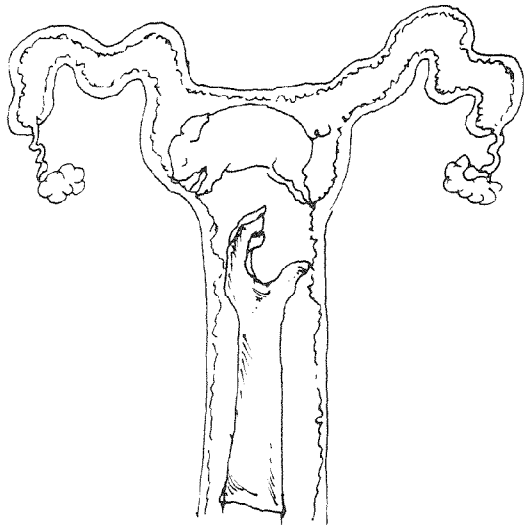


Fig. 23

Any time you have to enter a sow, give her a dose of antibiotic after she has passed the afterbirth, to prevent infection. If milk letdown does not occur, give her 2 cc. of oxytocin if it has been 4 hours since the last dose. Vitamin B_{12} is often given to sows that go off feed at farrowing. Inject 10 cc. every 12 hours until her appetite returns.

Soon after birth, tie off and clip the naval cords of the pigs. Also clip the needle teeth to prevent damage to the sow's teats and to each other.

Fig. 24

Dock the tails. This prevents tail biting in confinement during the growing-finishing stage. There is a fact sheet, *Baby Pig Management Practices (AS-17)* which explains how to do these procedures. If threadworms are in your herd — and

Fig. 25

most herds do have them — treat pigs with Thiabendazole (TBZ) paste. It can be bought premixed, or use the recipe below.

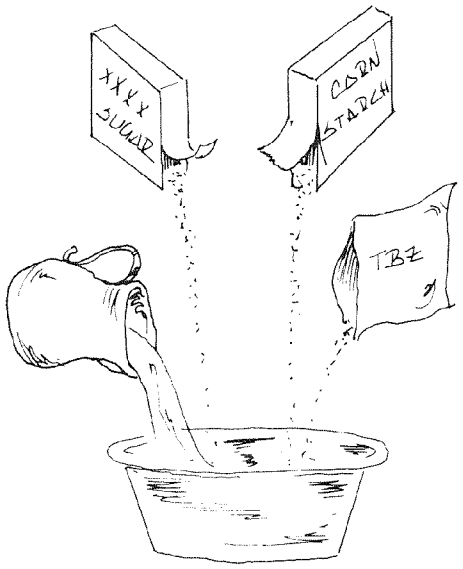


Fig. 26

Add about ⅔ cup water to 4.6 oz. (one package) of TBZ to make a firm paste. Mix 1 lb. each of cornstarch and powdered sugar (one box each) with enough water to make 1 and ⅓ cups starch paste. Mix the two pastes and give to baby pigs: 1 cc. on Day 1 and 2; 2 cc. on Day 10. (You may have to repeat the treatment every 4-5 days if the threadworms are a major problem in your herd.)

Even up litters if you have more than one sow farrowing about the same time. Identify replacement animals by ear notching (see chart) before switching. This practice gives runts a better chance and takes the load off sows with large litters. Make transfers among litters approximately the same age and transfer the stronger males.

Fig. 27

All pigs should receive some form of iron on Day 3. You can give it in oral form or by injection, explained in *Baby Pig Management Practices*. Castrate males at this time also. It causes less stress and they are easier to handle than if you wait until they are older.

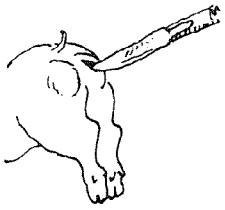


Fig. 28

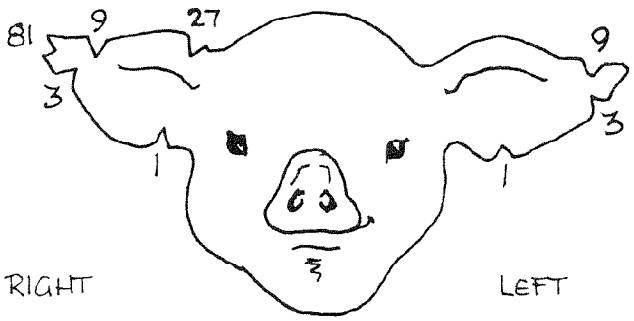


Fig. 29

Ear Notching

Procedure: Notch pig number in left ear, litter number in right ear. All pigs from the same litter must have the same notches in the *right* ear. No pigs from the same litter should have the same notches in the *left* ear. The numbers

represented by notches should add up to the number you want.

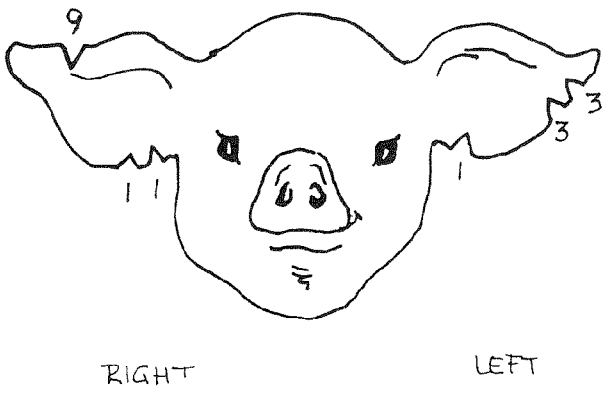


Fig. 30

Example: to notch pig 7 of litter 11, you would need the following notches. *Left ear:* 2 three's + 1 one = seven. *Right ear:* 1 nine + 2 ones = eleven.

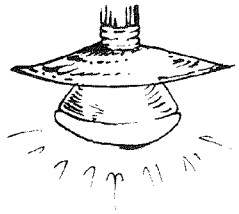


Fig. 31

Make sure pigs are kept warm and dry, in a draft free area. Provide heat lamps and bedding if necessary, but try not to stress the sow by overheating. In many cases a brooder or creep feeder with a heat lamp takes care of this situation. See *Reference* for plan numbers.

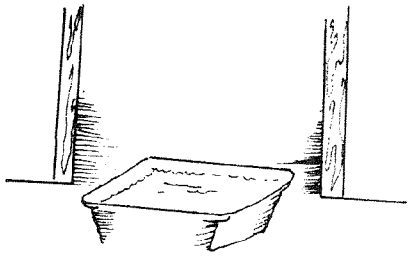


Fig. 32

To help prevent disease, handle pigs as little as possible. Provide a disinfectant foot bath for visitors; a mixture of concentrated iodine and water in a dishpan works fine. It might be a good idea to keep a pair of boots just for the farrowing area.

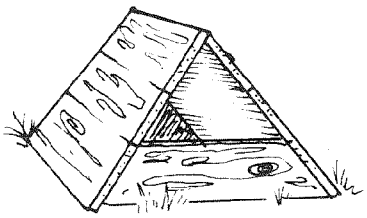


Fig. 33

If your sow is in a hut, block the entrance with a board the first week or so to keep baby pigs in. Thereafter they may be allowed out with their mother. If pigs start scouring, check with your vet. It may be caused by fairly harmless digestive upsets, or fatal TGE (see *Glossary*).

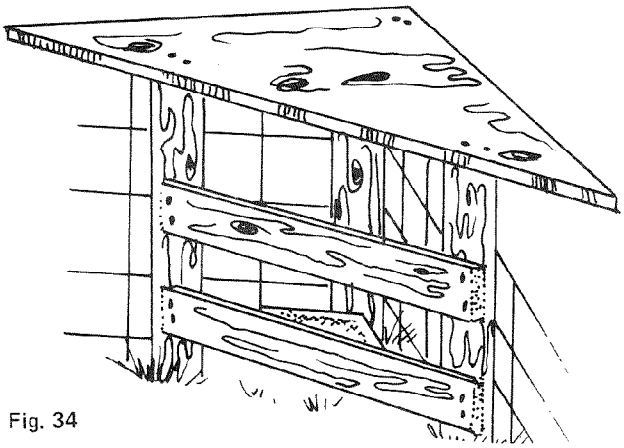


Fig. 34

When pigs are about ten days old, start feeding 20% creep feed. (They may also be allowed access to pasture if you wish.) While a 20% creep feed can be formulated easily, most producers save the time and buy a commercial prestarter. Pigs do not eat much of it so the total cost is not very high. If you are having trouble with threadworms, add TBZ powder to the starter, along with a little iron. If the sow is confined to a crate, creep feed may be offered in a shallow pan set in the pen. Feed what they will clean up in one day and make sure feed is fresh and of high quality ingredients.

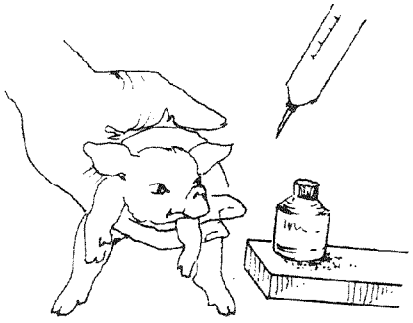


Fig. 35

If atrophic rhinitis is present, vaccinate pigs at seven and 28 days. At eight weeks vaccinate for erysipelas and deworm the pigs.

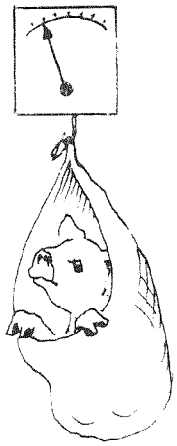


Fig. 36

At weaning, pigs should weigh at least 12 lbs. each. This weight is usually reached at about three to four weeks of age. At five weeks they should weigh about 17 to 18 lbs. Check the records of potential replacements against your goals. Keep those that meet the requirements in separate pens if you can. Otherwise make sure they are well identified.

The first few days after weaning, add oats or bran to reduce scouring. Feed an 18% CP grower until they reach 60 lbs., then finish as market hogs. (as explained in Book 1., 4-H 353).

When possible, move sows instead of pigs to reduce stress. If they are on pasture, move sows rather than pigs to another lot. If you have more sows about to farrow, however, move the pigs as well.

After vaccinating for erysipelas and deworming at eight weeks, you can relax a little; older pigs are able to care for themselves. That does not mean you can ignore them; stay alert and catch problems before they spread.

Questions

1. When should a baby pig be dewormed?

2. When do you wean pigs?
3. How old are pigs when you start creep feeding?
4. What percent protein is in creep feed?

5. Name three baby pig management practices.

6. Draw in the notches for these pigs: Pig 3 in litter 12; Pig 12 in litter 20.

Table 6

Timetables

Breeding Herd

New Animals:
- Test animals for brucellosis, leptospirosis, pseudo rabies before buying and again at the end of quarantine.
- Deworm upon arrival and at the end of quarantine.
- Vaccinate for leptospirosis and erysipelas.
- Evaluate semen.
- Test breed boars using market gilts.
- Spray for lice and mange at the end of quarantine.

Pre-breeding:
- Allow fenceline contact between boars and females two months before breeding.
- Feed females boar feces mixed with feed one month before breeding.
- Pull young gilts off the finishing floor 10 days before you want them to begin cycling.
- Vaccinate gilts for lepto, deworm and spray for lice and mange one week before breeding.

Breeding:
- Breed twice when female is in standing heat -- once in the evening, one time in the morning.
- Check for pregancy by exposing to a boar for a week 21 days after breeding; repeat 21 days later. Cull open gilts and sows.

Gestation:
- Vaccinate for atrophic rhinitis and erysipelas four weeks before farrowing.

	•Deworm and spray three weeks before farrowing.
	•Increase ration to six pounds a day, three weeks ahead.
	•Deworm and spray again one week before farrowing.
	•Wash and disinfect farrowing facilities four to seven days before farrowing.
Farrowing:	•Wash animal thoroughly before placing in facility.
	•Watch sow during labor.
	•Treat with antibiotics if necessary.
Lactation:	•Increase feed two lbs. each day until sow is receiving 12 lbs. a day.
Weaning:	•Vaccinate all but cull sows for leptospirosis.
	•Sell cull sows within three weeks.
	•Rebreed on the first heat if possible.

Pigs

Birth	Tie off navel cord and dip in iodine.
Day 1	Deworm with TBZ. Clip needle teeth. Ear notch. Dock tails.
Day 3	Give iron shots. Give antibiotics if necessary. Castrate males.
Day 5	Deworm with TBZ if Necessary.
Day 7	Vaccinate for atropic rhinitis.
Day 10	Start creep feeding; put antibiotics in feed up through grower.
Day 28	Vaccinate for atrophic rhinitis.
5 Weeks	Wean. Feed starter to 60 lbs.
8 Weeks	Vaccinate for erysipelas and deworm.
60 lbs.	Switch to grower.
120 lbs.	Switch to finisher. Deworm. Spray for lice and mange.

Questions

1. List in order the treatments given to baby pigs the first three days of life.
2. What is Vitamin B_{12} used for?
3. What is used to treat threadworms?
4. What are two methods of reducing the spread of disease?
7. Why should a cull sow be kept a couple of weeks before going to market?
5. T. or F. Pigs are usually moved over to another lot at weaning, while sows remain in the pasture.
6. When should gilts be moved from the finish floor?
8. a) How far should an isolation pen be from other animals?
   b) How long should new animals be kept there?

Activities

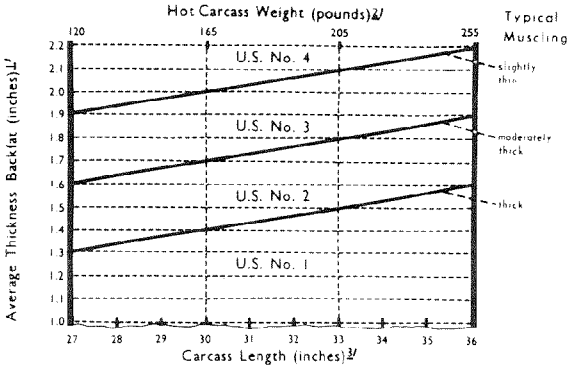
1. Attend swine field days held in your area.
2. Compare notes with other club members on how you manage your animals.
3. Read up on how other places deal with management problems.

Marketing

Under the USDA system there are five grades of market hogs: U. S. No. 1, 2, 3, 4, and utility. A U. S. No. 1 market hog can range from 1.3 inches back fat with a carcass length of 27 inches to 1.6 in-

ches back fat with a 36 inch carcass. The chart below is designed to determine where a specific hog falls.

Table 7
RELATIONSHIP BETWEEN AVERAGE THICKNESS OF BACKFAT, CARCASS LENGTH OR WEIGHT, AND GRADE FOR CARCASSES WITH MUSCLING TYPICAL OF THEIR DEGREE OF FATNESS.



1) An average of three mesaurements including the skin made opposite the first and last ribs and the last lumbar vertebra. It also reflects adjustment, as appropriate, to compensate for variations from - normal fat distribution.
2) Carcass weight is based on a hot packer style carcass.
3) Carcass length is measured from the anterior point of the aitch bone to the anterior edge of the first rib.

Go up the left side to the average back fat, then across to the carcass length. That determines the grade, if the minimum degree of muscling is met. Under this system there are six degrees of muscleing, divided as follows:

U. S. No. 1	very thick or thick
U. S. No. 2	moderately thick
U. S. No. 3	slightly thin
U. S. No. 4	thin
U. S. utility	very thin.

Backfat thickness is the average of three readings taken at three different locations: opposite the first rib, the last rib and the last lumbar vertebra. Check the diagram for details.

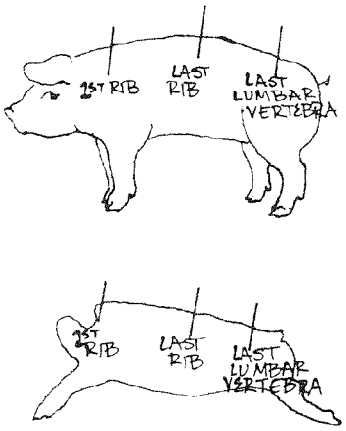


Fig. 37

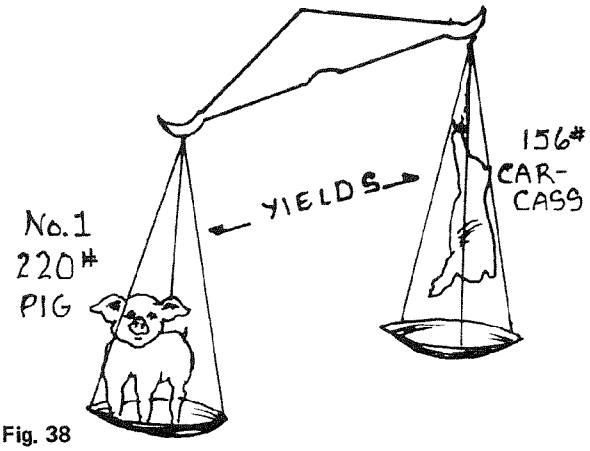


Fig. 38

Most hogs have a dressing percentage higher than 60%. This means the carcass weight is more than 60% of the live animal. A U. S. No. 1 often has a dressing percentage of more than 70%.

Grades apply to carcasses but they can be estimated on live animals as well. Evaluation takes time and practice and is another reason to try out for your county judging team.

Although the USDA grades are official, most packing companies also have their own. Hogs sold by contract are usually sold under the buyer's grading system and feeder pigs are not even graded, since they are sold by lot most of the time. Another reason this grading system is not used more is that U. S. No. 1, 2, and 3's all bring the same price at auction markets. However, many packing companies do pay premiums for No. 1 and 2 hogs and producers with these type hogs tend to do more business directly with companies than those raising No. 3s. The second group may like to sell through auction markets since they might get higher prices there.

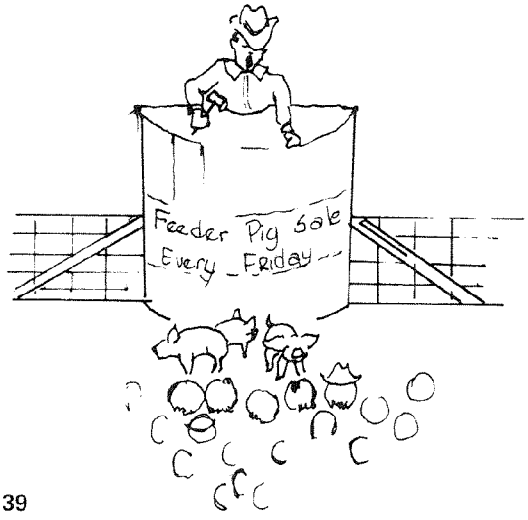


Fig. 39

In Florida, most hogs are sold through livestock auction markets. Feeder pig sales are held at different locations such as Gainesville, Ocala or Live Oak and most North and Central Florida markets also sell market hogs. Lists of sale dates are available from the county agent or Florida State Marketing Division.

There are alternatives to the auction market. Sometimes several producers will get together and sell their hogs at the same time by forming a co-op. This is more popular in the Midwest, however. One other way to sell hogs is by contract, as mentioned above. This means a producer will agree to supply a certain number of animals to a particular packing company or plant. Or he can sell to an order buyer. An order buyer is a person who represents one or more packing plants or companies, or even other people. He has orders to buy certain types of hogs and attends sales and visits farms to fill his orders. He is usually paid a percentage of the price for his work.

Questions

1. What are the five USDA grades for hogs?

2. What is dressing percent?

3. Where are the measurements for back fat taken?

4. Where are most hogs sold in Florida?

Glossary

AI—artificial insemination.

Atrophic rhinitis—a disease which starts in the nose and destroys the cartilage, causing the nose to grow crooked. This may lead to infection of the lungs and pneumonia.

Barrow—male pig castrated before reaching sexual maturity.

Boar—male hog or pig with intact testicles.

Brucellosis—this disease causes abortion and is contagious, causing undulant fever in man. Destroy infected animals.

Carbohydrates—food made of molecules that are easily digested and provide energy for the body.

Cartilage—bone-like tissue.

Castrate—remove testicles by surgery.

Colostrum—first milk produced by the sow; it provides immunity to the baby pigs for the first few weeks.

Conception rate—the number of females which become pregnant compared to the number mated.

Conformation—a general term describing the way a pig is put together and the appearance he gives.

Co-op—short for cooperative. It is a group of people who share the costs of production, then split the profit.

Creep feeder—area accessible to small pigs but not their dams, in which a high protein supplement is provided.

Crude protein—the approximate amount of protein in a feed.

Cull sow—full-grown female sold for slaughter.

Deficiencies—in nutrition, this means an animal has not been getting enough of a nutrient or nutrients. Symptoms range from nothing to coma and death.

Dressing percent—percentage of the carcass usable, compared to liveweight.

Erysipelas—disease that causes purple diamond shapes to appear on the skin. Death losses can be prevented by vaccinating.

Estrus—period of from one to five days (usually 2) when gilts and sows can be bred.

Evaluation—the process of judging a live animal and estimating carcass traits to determine quality and grade.

External parasites—of pigs include ticks, fleas, lice and mange mites.

Farrow—to give birth to pigs.

Fecal sample—small amount of manure collected to test for the presence of worms.

Flush feeding—feeding a high level of energy (6-8 lbs. of corn) to sows and gilts a week before breeding.

Forages—pasture crops that can be grazed by pigs.

Full-(self)-feed—animals are allowed to eat as much as they will clean up; feed is available at all times.

Gestation period—pregnancy, lasting about 114 days in swine.

Gilt—young female that has not yet produced a litter.

Grading—the process of finding out all the carcass information such as muscling and length to determine the quality of the carcass.

Growing-finishing pig—animal weighing between 40 and 220 lbs. that is being fed for slaughter.

Heat cycle—(estrous cycle) period of time from the beginning of one estrus (heat) to the beginning of the next.

Lactation—to give milk.

Lard-type hog—old-fashioned animal with a thick layer of back fat and a short body.

Leptospirosis—reproductive disease that causes abortion.

Libido—indication of a willingness to breed by a boar.

Meat-type animal—the modern type of pig, this one has less backfat and more lean.

Milk letdown—30 second period every hour when milk flows through a sow's teats.

Nutritionist—scientist trained in the study of feeds and feeding.

Open gilt or sow—one which is not pregnant.

Pseudo rabies—once thought to be rare, this virus is one of the major problems today. It causes death and can linger in a herd for long periods of time.

PSS—porcine (pork) stress syndrome. This condition is inherited and tends to show up in extremely heavy muscled pigs. Affected animals are easily tired and nervous. Extra stress like rough handling causes death.

Runt—small or weak pig in a litter.

Scours—diarrhea. This can be caused by many different factors, making prevention and cure difficult. Scours range from soft stools to dehydration and death due to loss of water and gut damage.

Seed stock—foundation breeding animals.

Shrink—weight loss, usually temporary.

Sow—female which has farrowed at least once.

Standing heat period when the female will allow the boar to mount and breed.

TGE—transmissible gastroenteritis. This virus is deadly to baby pigs, and almost all affected pigs die. It is beginning to show up in Florida and is very severe in the Midwest.

Wallow—water-filled depression or container large enough for pigs to lay in to cool off during warm weather.

Weaning—removing young from their mother.

Yield—percentage of the carcass in the four lean cuts: ham, loin, picnic and Boston butt.

REFERENCES

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Swine Production on a Small Scale, Fla. Circular 470.

Swine Production in Florida, Fla. Bulletin.

Swine Production in Temperate and Tropical Environments, Pond, Maner.

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Rd. 32 I-65
Lebanon, In. 46052

Table 8

SWINE GESTATION TABLE-115 DAYS

Bred Jan.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Jan.
Farrow April	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	May
Bred Feb.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	--	--	--	Feb.
Farrow May	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	--	--	--	June
Bred Mar.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Mar.
Farrow June	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	July
Bred April	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	--	April
Farrow July	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	--	Aug.
Bred May	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	May
Farrow Aug.	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Sept.
Bred June	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	--	June
Farrow Sept.	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	--	Oct.
Bred July	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	July
Farrow Oct.	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Nov.
Bred Aug.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Aug.
Farrow Nov.	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Dec.
Bred Sept.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	--	Sept.
Farrow Dec.	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	--	Jan.
Bred Oct.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Oct.
Farrow Jan.	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Feb.
Bred Nov.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	--	Nov.
Farrow Feb.	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	--	Mar.
Bred Dec.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Dec.
Farrow Mar.	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	April

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Parts of Pigs and Cuts of Meat

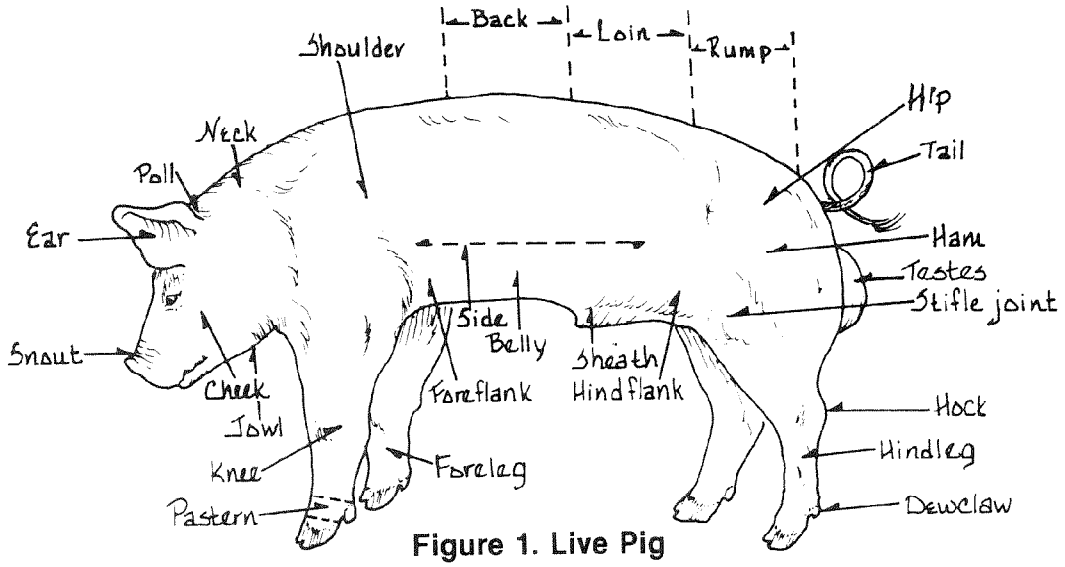

Figure 1. Live Pig

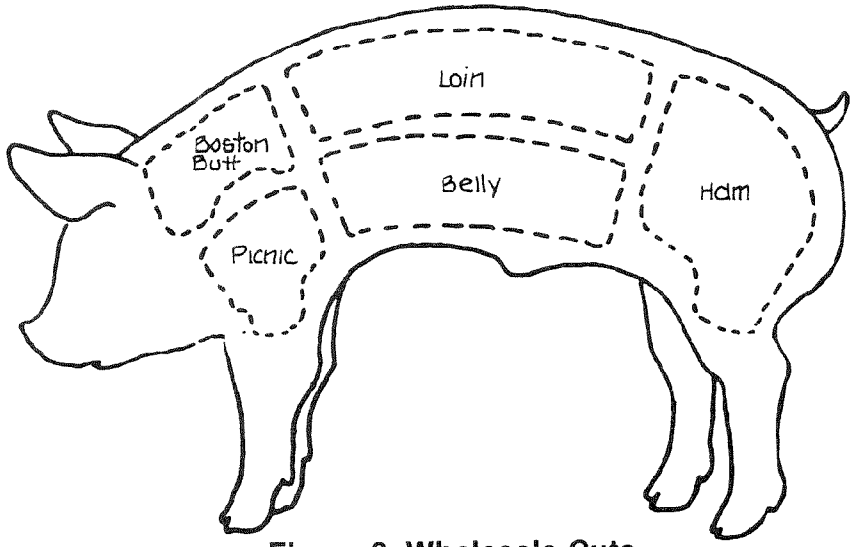

Figure 2. Wholesale Cuts

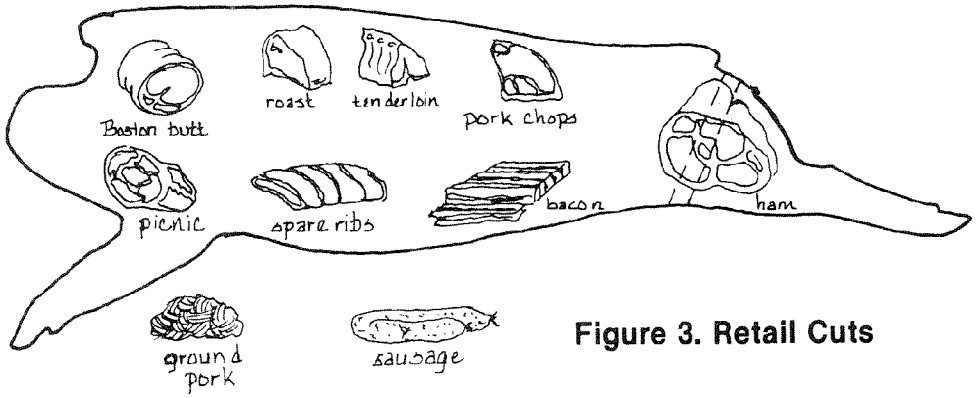

Figure 3. Retail Cuts

1. This document is 4HSWM11 of the Florida 4-H Youth Development Program, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Reviewed June 2002.

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