

## 4-H PORK PRODUCTION MANUAL

This publication, the record sheet and other sheets all are intended to help the 4-H member succeed in the 4-H Swine Project. The best way to learn is by doing -- especially by working with your family, your 4-H swine project leader, other 4-H swine project members, and your local swine producers and Cooperative Extension Agents.

In the process of managing your project, you will also be completing an educational goal. It is important to learn to take the responsibility that goes with managing your project.

The New York State Swine programs consist of the Empire Market Hog program, the breeding program and a variety of educational and competitive activities. All 4-H swine projects can be completed at county level and at the New York State Fair.

Members wishing to enroll in any of these activities should notify their County Cooperative Extension 4-H agent of their interest. A variety of educational materials will then be supplied.

The Empire Market Hog Contest will be conducted during the New York State Fair as a part of the 4-H Swine Show. Members may enter either the "A" Division or the "B" Division. Each division is further divided into junior and senior sections. "A" Division contestants must have at least one market hog that can be entered in the State 4-H Market Swine Show at the correct market weight. "B" Division contestants are not required to show, but are required to bring accurate records to be evaluated.

Each contestant will be expected to:

|    |  |          |          |
|----|--|----------|----------|
| 1. | Enter one (1) Empire Market Hog in Market Class (220-280 pounds) | <u>A</u> | <u>B</u> |
|    |  | X        |          |
| 2. | Enter an appropriate fitting and showmanship class.              | X        |          |
| 3. | Participate in all of the various activities and events.         | X        | X        |

The contest will be scored using the following system of points:

|       |                                 | <u>A</u>  | <u>B</u>  |
|-------|---------------------------------|-----------|-----------|
| 1.    | Scan measurements               | 15        | --        |
| 2.    | Records                         | 30        | 30        |
| 3.    | Herdsmanship during show        | 15        | --        |
| 4.    | Showmanship                     | 15        | --        |
| 5.    | Conformation of hog             | 15        | --        |
| 6.    | Project review (oral interview) | 60        | 60        |
| 7.    | Knowledge review                | <u>50</u> | <u>50</u> |
| 8.    | Get a sponsor                   | 2         | 2         |
|       |                                 | -----     | -----     |
| Total |                                 | 202       | 142       |

It is anticipated that all members who complete the project will receive some financial premium in addition to the regular State Fair premium.

Special awards also will be given to contestants achieving the highest scored in each of the above categories in the point system.

#### Advantages and Opportunity of 4-H Swine Projects

1. Pigs are relatively small and young people can work with them easily.
2. Swine are one of the smartest livestock animals; they are fairly easy to handle and train for showing.
3. Small initial investment.
4. Quick turnover of investment.
5. Small space requirements.
6. Comparatively inexpensive housing and equipment needs for a beginner.
7. Flexibility in size of project.
8. Excellent training in selection, breeding, feeding, and management.
9. Opportunity to expand. You can start with market pigs or breeding gilts and enlarge according to your desire.

#### Suggested activities:

1. Own and care for one or more market pigs.
2. Manage and care for a sow and litter.
3. Fit and show a market hog.
4. Give a 4-H talk about your swine project to the club.
5. Give a demonstration about swine to your club, or another 4-H club or organization.
6. Build simple hog facilities, such as shade, fences and pens.
7. Slaughter a pig.
8. Balance a swine diet.
9. Practice proper vaccination techniques and baby pig management.

Additional learning experiences:

1. Tour a swine project.
2. Visit a hog farm.
3. Visit a feed mill.
4. Visit with your local veterinarian, and discuss swine health.
5. Visit a packing plant.
6. Attend hog shows and sales.
7. Visit a grocery store and study the different ways pork is sold.
8. Participate in the swine show at the New York State Fair.
9. Hold a cookout.

### PLANNING A SWINE PROGRAM

Begin a swine program with the number of pigs for which you can adequately care. Increase the size of your program each year as you gain experience and have space available. Keep complete records on all pigs for program evaluation of project and personal information for future reference.

A market hog program may be started when pigs are between 2 and 2 ½ months old and weigh about 40-50 pounds. The pigs are then fed for an additional 3 to 3 ½ months until they weigh about 220-265 pounds, and are ready for market.

In a breeding program, start with either a purebred or crossbred gilt or sow. A gilt may be selected and reared from a feeder pig and later mated and cared for through gestation and farrowing for the next year's program. A sow will usually cost more, but raise more pigs than first litter gilt. The gestation period - - the time from breeding to farrowing - - is about 114-117 days.

Offspring from the breeding program may be fed in a market hog program, for 5 ½ to 6 months or several gilts from the litter may be raised to build the breeding herd. If you plan to develop a breeding program, keep records on all the pigs in each litter.

### SWINE BREEDS

**Breed:** *A group of animals that have unique color patterns or body structure because they share common ancestors that were selected from those characteristics.*

For centuries, producers have been able to change the characteristics of their hogs to meet demands for the consumer. In the 1700's and 1800's, lard was used a great deal for cooking and making soap; therefore, to please consumers, producers raised what was called a "lard-type hog". Then in the 1900's, people began using more vegetable oil causing the demand for lard to fall and producers began raising a "bacon-type hog". Now, since the most recent demand is for lean meat, swine producers try to produce hogs that have large amounts of lean meat but enough fat to maintain a good pork taste.

Producers can make these changes because the tendency to certain amounts of muscle and fat is inherited; that is, it is passed from parent to offspring. By carefully selecting their breeding hogs, producers can build up a line of hogs with the characteristics they desire.

The most popular breeds of swine are:

Berkshire. The Berkshire was developed in England. They are black with six white points (four feet, nose and tail). They have erect ears and an upturned nose. Berkshires produce long, acceptable carcasses.

Chester White. The Chester White breed originated in Pennsylvania. They are solid white and have droopy ears. Chesters are noted for their mothering ability, litter size and high percentage of ham.

Duroc. The Duroc breed originated from the Jersey Red hogs of New Jersey. Durocs vary from light to dark red in color and have droopy ears. Durocs have a superior growth rate, feed efficiently, and carcass leanness.

Hampshire. Hampshires originated in Kentucky. They are black with a white belt around the shoulders and body, including the front legs. They have erect ears. Hampshires excel in producing lean, muscular carcasses.

Landrace. The Landrace breed originated in Denmark. They are white, long, and have large, droopy ears. Landrace surpass most breeds for litter size and mothering ability. They grow well and produce long, acceptable carcasses.

Pietrain. The Pietrain breed is widely recognized as the world's leanest, heaviest muscle breed. Developed in Europe as a pure terminal line breed, Pietrains look like Spots with droopy ears, long and wide body.

Spotted. The Spotted breed, or "Spots", originated in Indiana. Spotted swine are black and white in color and have droopy ears. Spots grow rapidly and produce muscular carcasses.

Yorkshire. Yorkshires were developed in northern England. They are known as "Large Whites" in that country. They are solid white and have erect ears. Yorkshires are noted for their large litters, mothering ability, and body length.

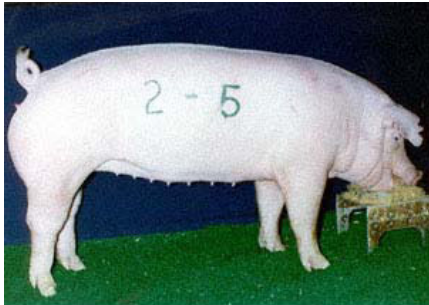


provided by National Swine Registry

Hampshire



Pietrain



provided by National Swine Registry

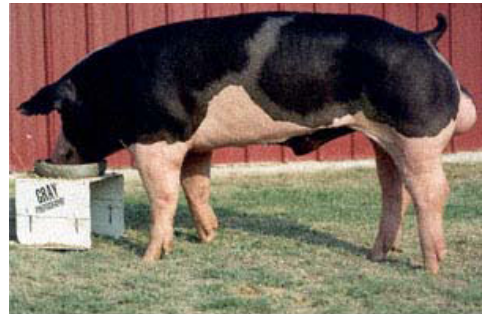
Chester White



Landrace



Yorkshire



provided by National Swine Registry

Spotted



provided by National Swine Registry

Duroc



Berkshire

Each of the above most popular breeds of swine has advantages or strengths. Commercial pork producers will crossbreed or mate a male and a female of different breeds in order to combine the different strengths of different breeds. Crossbreeding also results in heterosis or hybrid vigor. Heterosis represents an increased performance of the offspring above the average performance of the offspring's parents. Crossbreeding two different purebred breeds will produce a crossbred offspring known as F1.

Crossbred pigs will usually grow faster and more efficiently than the purebred parents. Crossbred pigs are also more vigorous and healthy. The chance of being able to find a wide range of crossbred pigs to select from are good. Purebred pigs are less common and are apt to be higher priced because they are more expensive to produce. Very seldom will you have a large number of good purebreds to select from since most herds are crossbreds.

### **SELECTING THE ANIMAL**

When selecting pigs for the first few times, ask someone with more experience to help you pick a pig. Commercial pork producers, 4-H leaders, local Cooperative Extension Agents or your parents all may help you.

Breeding animals cost more than barrows because of their potential to reproduce offspring. A registered gilt will usually cost more than a crossbred. Before you buy any pigs, sow or gilt, check with several producers on their prices and their performance records, including rate of gain, feed efficiency, and carcass merit. Purebred pigs are more expensive to produce due to additional cost of maintaining registration papers with the particular breed association.

The modern type of pig is different from the pig raised several years ago. Today we emphasize and aim to produce market pigs and breeding animals which have rapid, efficient growth and yield a high percentage of muscle.

The ham (leg), loin, side (belly) and boston shoulder (upper half of shoulder) and picnic shoulder (lower half of shoulder) are the 5 primal cuts of a pork carcass. The most valuable primal cuts on a hog are the ham and loin. A soft, wasty ham is undesirable. The ham should be thick and firm. The ham should be wider than the loin and should be thickest in the center and upper part. The loin should be generally curved, not too high or flat. There is a slight ridge down the middle of the loin of a heavily muscled hog. A countersunk tail and a flat, right angle back and loose fat at the base of the ham indicates fatness. A full, clean turn over the top indicates muscling over the back and loin. While a sharp, narrow top reveals a lack of muscling, greater width through the back than through the ham indicates excessive finish.

The meaty hog should have moderate body depth. The flanks should be clean, free of wrinkles and moderately deep. The underline should be firm, trim and free from wrinkles.

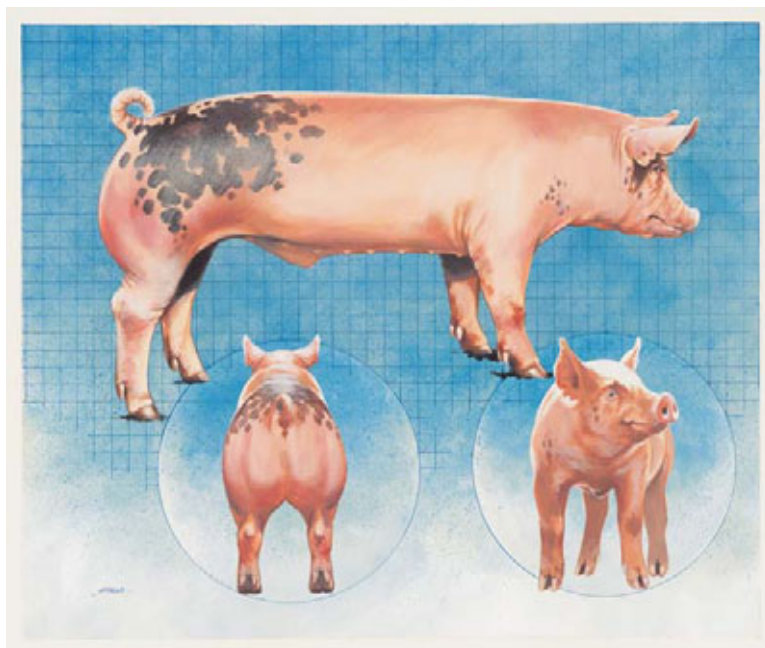
**SYMBOL III\*** is a Standard of Excellence for the pork industry, developed by the National Pork Board.

The standards include production guidelines, carcass characteristics, carcass quality characteristics and a picture of the ideal market hog.

The SYMBOL III picture of the ideal market hog illustrates what a market hog should look like. From this picture, we can see that the ideal market hog should have a long muscular body, with good physical structure.

Ideally, this hog should be able to produce one pound of live weight with 2.4 pounds of feed and should produce a carcass with 6.5 square inches of loin eye area (7.1 for gilts) and a 10<sup>th</sup> rib backfat of .7 inch (.6 for gilts).

*\*"used with permission, National Pork Board"*



This gilt displays excellent front and rear feet and leg structure, levelness of top and good depth in the rib and flank area.

This gilt's front and rear legs are very straight and undesirable; she is high topped, steep rumped, and shallow in the rib and flank.





### A. Selecting feeder pigs

1. Preferably pigs weighing 40 to 60 pounds.
2. Pigs should have long hams and shoulders and thick muscling. Their ham and shoulders should be thicker than their well-rounded loin.
3. Healthy pigs are usually active and somewhat noisy.
4. Healthy pigs have clear bright eyes and moist noses.
5. Pigs should breathe clearly. They should not be coughing, sneezing, bleeding at the nose or have crooked noses.
6. Pigs should have fecal material normal in color and consistency.
7. In addition, today's pigs should have sound bones, feet and legs for free and easy movement. Top feeder pigs should resemble the picture of the SYMBOL III market hog.
8. Remember: Culls are never a bargain.

### B. Selecting gilts

1. Select breeding gilts with top performance records on daily gain, feed efficiency, breeding performance, litter size, carcass merits, etc.
2. Select gilts from sows with good dispositions and good farrowing ease. The gilts themselves should also have a gentle, quiet disposition.
3. Gilts should have a sound underline and at least 12 prominent, evenly spaced nipples. However, 14 functional nipples are preferred. Teat rows should be fairly close to the midline of the abdomen so that piglets can nurse easily.
4. Breeding gilts should have a large skeleton, a long, thick, deep, rectangular body and a square rump, with good depth in the rib and flank area. The top line should be relatively level without dips and humps.
5. In addition, today's pig should have bones, feet and legs for free and easy movement. Legs should not show evidence of calluses, abrasions, abscesses, bunches or swelling, as these symptoms can indicate leg problems. Toes should be of even length with a slight spread. The feet and toes should not show signs of swelling, cracks or abscesses.
6. External genitalia should be well developed with good size and shape to prevent many mating and farrowing problems. Avoid gilts with small vulvas and vulvas that tip upward.



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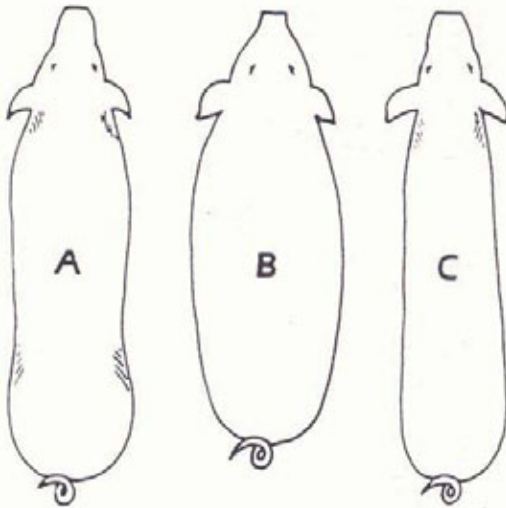
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## Estimation of body composition.

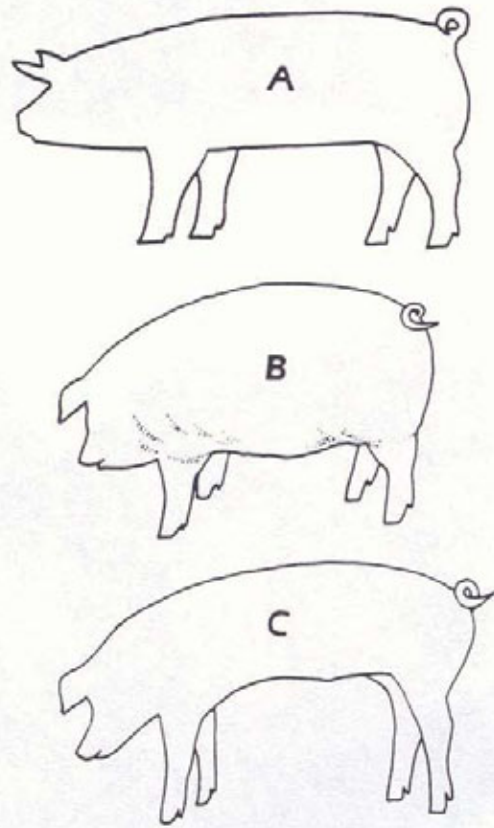
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Top view

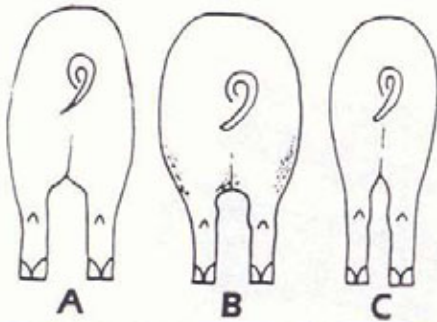


Side view

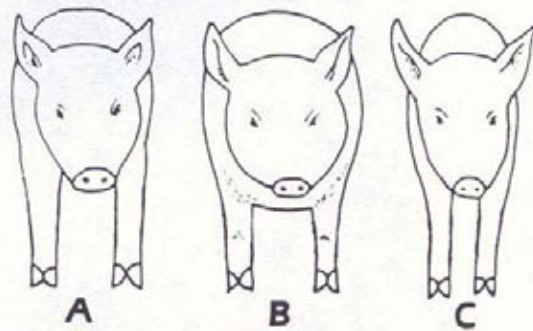


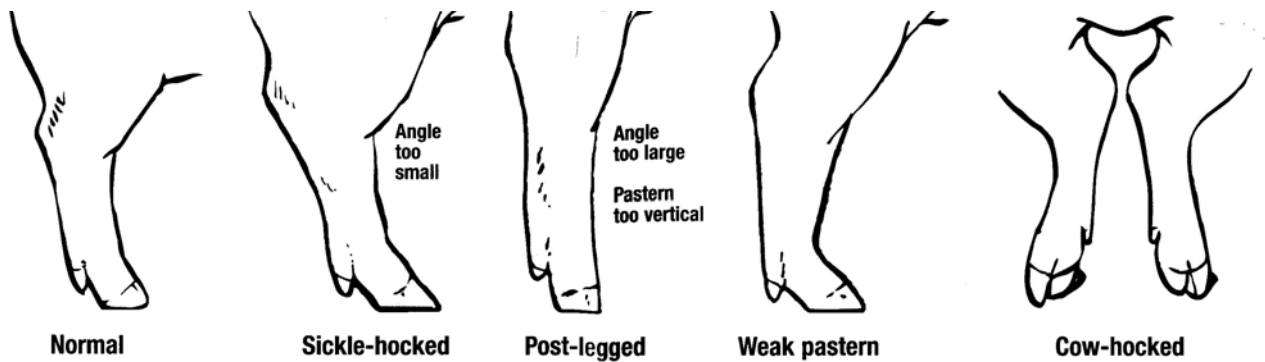
A Ideal meat type hog  
B Lard type  
C Lacks muscling

Rear view



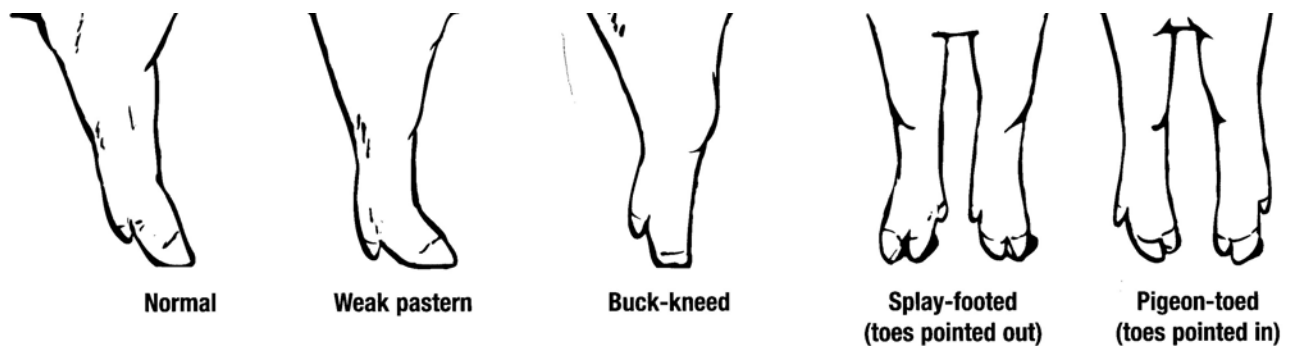
Front view





### Side View – Rear Legs

- Normal:** note the angle of the hip, stifle, and hock joints.
- Sickle-hocked:** when the angle of the hip, stifle, and hock joints is too small
- Post-legged:** when the angle of the hip, stifle, and hock joints is too large
- Weak rear pasterns:** can result in damage to hocks and dew claws
- Cow-hocked:** when the hocks of the rear legs turn inward



### Side View – Front Legs

- Normal:** note how front legs slope from the shoulder
- Weak pastern:** can cause damage to dew claws
- Buck-kneed:** straight front legs cause the knee joints to buckle
- Splay-footed:** tendency of the front toes to point outward
- Pigeon-toed:** tendency of the front toes to turn inward

## CONFORMATION AND STRUCTURAL SOUNDNESS

The skeletal structures in Figures 1 and 2 were drawn, in part, from the radiological examination of live pigs. Emphasis was placed on angles formed at the front legs (M) and rear legs (N). Desirable front and rear leg structure is illustrated in Figure 1, while undesirable bone conformation is illustrated in Figure 2.

Figure 1 shows the flatter top, more level rump and higher tail setting. As you view the animal from the side, note the front leg slope from the shoulder (M). This angle allows for the normal shock-absorbing effect at the point of the shoulder (B). The angle displayed in the rear legs (N) is smaller than that shown in Figure 2. The rear leg joints in Figure 1 are properly angled to allow the hip (E), stifle (F) and hock joints (G) to absorb pressure more equally. The pasterns (D) are sloping and long to provide a cushioning effect and the toes rest squarely on the floor surface.

The rear leg structure in Figure 2 shows a rump that is too steep and the tail setting is too low. The angle (N) is larger in Figure 2 than the angle shown in Figure 1.

The hip (E) and hock (G) in Figure 2 lock in a straight-line position with each step the animal takes. The pasterns (D) are short and straight, which offers the appearance that the animal is standing on its tiptoes. Often these animals have shorter toes with a higher tendency toward injury (cracks, tears, bruises) and uneven wear. The rear feet of these straight-legged animals may exhibit excessive sole wear with subsequent injury or swelling of the pads of the feet and, consequently, lameness.

The spine of the animal in Figure 2 is arched very high. The angle (M) is greater than 90 degrees, which positions the shoulder blade more directly over the bones of the front legs. Additional pressure may be applied at the point of the shoulder (B) and at the knee joint (C) to compensate for this straightness. As a result, the knee joints often buckle. The abnormally straight front leg position in Figure 2 results in abrasion of the pads and toes. (Illustrations adapted from the Pork Industry Handbook Bulletin PIH-101.)

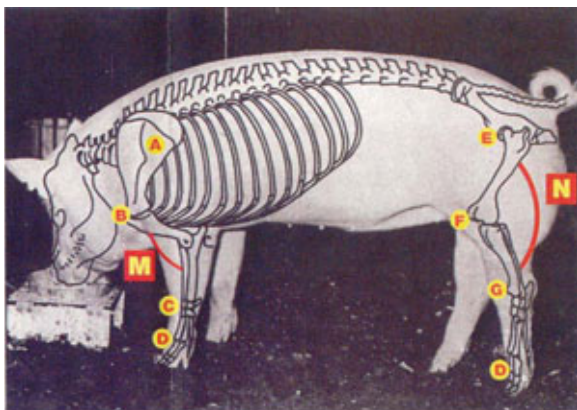


Figure 1. Desirable front and rear leg structure.

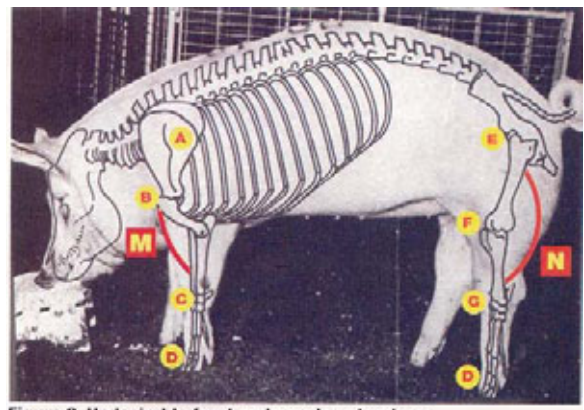


Figure 2. Undesirable front and rear leg structure.

## USING GENETICS RECORDS IN ANIMAL SELECTION

By using the records on production compiled over several generations, the swine operator can get an accurate idea of how the progeny, or next generation, of swine will perform in several records areas important to the producer. These records are known as EPD's, or **Expected Progeny Differential**. There are several areas where EPD's can be used to predict performance, and many of those are listed here with an explanation of what that record means, and whether a positive or a negative EPD is more desirable.

**Expected Progeny Differential (EPD)** – An EPD is the best estimate of a sire or dam's genetic worth, given the information available. It is the actual difference in performance a producer can expect from future progeny of a sire or dam, relative to the future progeny of an average tested parent. Positive EPDs are more desirable for number born alive, 21-day litter weight, and pounds of lean. Negative EPDs are more desirable for days/250 and backfat.

**EPD Number Born Alive (NBA)** – Predicts the number born alive for each individual's progeny, relative to an average tested pig. A sow with an EPD of +0.5 would be expected to produce daughters that would farrow litters with 0.5 more pigs than average tested sow.

**EPD 21-Day Litter Weight (LWT)** – Predicts the 21-day litter weight for an animal's progeny. A sow with an EPD of +3.4 would be expected to produce daughters which would produce litters 3.4 pounds heavier at 21 days than an average tested sow.

**Sow Productivity Index (SPI)** – An index for reproductive traits that combines number born alive and 21-day litter weight. Ancestral data and a sow's lifetime data are included in her SPI.

**EPD Days/250 (DAYS)** – Predicts performance of the offspring of an animal. A boar with an EPD of -3.0 would be expected to produce progeny that would reach 250 pounds three days faster than an average tested boar.

**EPD Backfat (BF)** – Predicts backfat of the offspring. A boar with an EPD of -0.04 would be expected to sire pigs .04 inches leaner than an average tested boar.

**EPD Pounds of Lean (LBS.)** – Pounds of fat-free lean adjusted to a 185-pound carcass. A boar with an EPD of 3.0 would be expected to sire offspring with 3 more pounds of lean than an average tested boar.

**Maternal Line Index (MLI)** – This index weights EPDs for both terminal and maternal traits, relative to their economic values, placing approximately twice as much emphasis on reproductive traits, relative to post-weaning traits.

**Terminal Sire Index (TSI)** – This index combines growth, pounds of fat-free lean and backfat. Selection on this index is appropriate to use to select boars for use as terminal sires in a crossbreeding program.

**Swine Testing and Genetic Evaluation Systems (STAGES)** – A genetic evaluation system provided to the members of the four breed associations of the National Swine Registry. STAGES utilizes performance records for Growth, Backfat, Pounds of Lean, Litter Size and Litter Weight to predict the genetic value of each pig and its parents.

## BUILDINGS AND FACILITIES

You can protect your pigs in the fall, winter and spring by providing a simple dry bed in a shelter facing the south. The shelter does not need to be closed tightly as long as it stays dry in weather. Use straw for bedding in cold weather, and keep the shed free from dust in warmer weather.

A cool shade area is a must for hot weather. If there is no natural shade such as trees, an artificial shade that is open on four sides can be used. If pigs don't have a cool shade, they will not gain well and may even die during hot days.

There are some shelter alternatives for pigs:

1. Use pens or facilities in an existing swine system. There may be facilities on your farm that may be used effectively. This may be best.
2. Remodel existing, older barns or other buildings. This will be best for some project members. You can get ideas on remodeling from your County Extension Office.
3. Build a new housing unit. This could include a clean ground area for exercise or it could be a confinement building.

Elaborate buildings are not necessary for success. With attention to details, good management and disease prevention, a project member can raise pigs successfully in simple facilities and equipment.

## BASIC SWINE FEEDS AND FEEDING

From 65 to 80 percent of the total cost of pork production goes into feed. Naturally, pork producers always try to provide a ration that meets the nutrient requirements of pigs in all the various stages of their lives. These requirements are similar to those of humans because both species have simple stomachs (only one stomach).

Swine have different feed requirements than either sheep or beef cattle. Sheep and cattle are ruminants. They have four parts to their stomachs and can utilize large amounts of hay and other roughages to provide protein, some energy, vitamins, and minerals. Swine have a simple stomach and cannot digest much roughage. Swine rations should contain adequate nutrients (energy, protein, vitamins, minerals and water) to meet the animals' need.

### Energy

Energy nutrients are the carbohydrates (corn, barley, wheat, milo or grain sorghum, dried bakery wastes, etc...), fats and oils in the ration. A swine ration is composed mostly of carbohydrates. The energy nutrients are the body's fuel and are used for growth and movements such as walking, eating, etc. They are also used to produce heat to keep the animal warm.

### Protein and Amino Acids

Proteins furnish the material from which hogs produce lean muscle tissue, milk, and young, and also repair body tissue. Each protein is made up of several simpler compounds called amino acids. Actually, the animal's need is for the amino acids rather than the protein themselves. Lysine is the most essential amino acid in swine rations.

Common sources of protein supply are:

1. Soybean Meal: Contains the amount and quality of amino acids needed to correct the deficiencies of corn. It is commonly used in most swine rations.
2. Dairy Products, such as dried skim milk or whey, also contain the correct proportion of amino acids but usually cost too much to be practical in swine rations, except for very small pigs
3. Meat by-products, such as meat scraps or tankage.
4. Commercial protein supplements: Will usually contain a mixture of protein sources.

Levels of protein recommended in different swine rations are shown below:

| <u>Types of rations</u>              | <u>Percent Protein</u> |
|--------------------------------------|------------------------|
| Creep ration (for pigs nursing sows) | 20-22                  |
| Starter ration                       | 18-20                  |
| Grower (pigs 40 to 125 lbs)          | 16-18                  |
| Finisher (125 lbs to market)         | 16                     |

|                          |    |
|--------------------------|----|
| Gestating sows and gilts | 14 |
| Lactating rations        | 16 |
| Breeding boars           | 16 |

If pastures are good, these amounts can be reduced by 2 percent for finishing hogs and for sows during gestation.

## Vitamins

Vitamins regulate the functions of many parts of the body. They are described in two classes, fat-soluble (A, D, E, K) and water-soluble (the B Vitamins). The body can keep reserves of the fat-soluble vitamins for a time, but the water-soluble vitamins must be supplied in the diet daily. Vitamins are needed in very small amounts, but they are essential for normal body functioning. They are necessary to produce strong, healthy pigs at birth, as well as to promote fast, efficient growth.

Several different vitamins are added to rations and each vitamin has a different function. Vitamin A is responsible for the health of the eyes and the tissues of nasal passages and lungs. Vitamin D helps the proper development of bones. Vitamin E influences reproduction and muscle coordination. Vitamin K coagulates blood. The B-complex vitamins are necessary for the health and proper functioning of nerves, skin and blood.

Most vitamins are supplied by synthetic sources. Natural sources of vitamins include green pastures and dehydrated alfalfa meals. Sunshine and sun colored hay are also sources of Vitamin D.

## Minerals

Minerals, such as calcium and phosphorus, are needed only in small amounts in the ration, but they are very important in bone development and in the chemical reaction of the pig's body. Anemia, for example, is a nutritional disease of baby pigs caused by lack of iron in the sow's milk. A deficiency in zinc will cause parakeratosis, which is a crusty appearing skin disorder. Pigs born without hair usually have an iodine deficiency.

The major materials that are apt to be missing in swine rations and the common sources of these minerals are as follows:

| <u>Mineral</u> | <u>Source</u>                                     |
|----------------|---|
| Calcium        | Bone meal, feeding limestone, dicalcium phosphate |



|   |                                |
|---|--------------------------------|
| Phosphorous   | Bone meal, dicalcium phosphate |
| Sodium  | Salt                           |
| Trace minerals (iron, copper, zinc, manganese, iodine, selenium etc.) | Swine trace mineral mix        |

These are just a few examples of why feeding a balanced ration is important. Feeding too little or too much of some of the nutrients can reduce swine performance.

Feeding a balanced diet will maximize gain and provide overall pork production efficiency. Swine rations may be ground, mixed or pelleted, and put in a self-feeder. A medium grind is best since too fine a grind will make a dusty condition and cause feed wastage.

### **Water**

The cheapest, yet most important nutrient for pigs is water. Clean, fresh water should be provided continuously to swine of all ages. Hogs will consume about 2 pounds of water for every 1 pound of feed eaten. Blood contains 90 to 95 percent water and sow's milk contains more than 80 percent water. A 50-pound pig will drink 1 gallon a day; a 150-pound pig will drink about 2 gallons a day.

### **Feed Additives**

Feed additives are not true nutrients since they are not required for normal growth, but are added to swine rations to promote the best possible performance. These include antibiotics and copper compounds.

Antibiotics help to prevent disease and help the pig grow efficiently. Hogs respond differently to each kind of antibiotic. Young pigs usually respond more than older, heavier hogs. It is also a good idea to change the antibiotic you use, either from year to year, or for different stages of your pig's life.

Copper compounds in the ration seem to have an effect similar to that of antibiotics.

### **Ration Preparation**

**Complete Supplement Mixing** -- One way to prepare a swine ration is to buy a complete supplement. This is a mixture that contains everything except the energy source (grain). When added to the energy source in the right amount, it will supply all the nutrients that the pig needs.

**Total Ration Mixing** -- Another way to prepare your ration is to buy all the raw ingredients, grind and then mix them together. See your local Cooperative Extension Agent for the amount of each nutrient needed to provide a balanced ration.

Pelleted Complete Rations -- Pigs on pelleted rations generally use about 10% less feed to get the same rate of gain as pigs on ground rations. A term that describes this is called feed efficiency.

Soaking Feeds -- There is no evidence that soaking feeds (slopping) saves feed or increases rate of gain.

### Feeding Various Classes of Hogs:

Feeding Market Hogs -- Feed market pigs all they wish to eat. It is important to keep a record of the feed used. If the pigs are self-fed, write down the amount each time feed is added. If the feed comes in bulk instead of bags, it is recommended that you weigh the feed before adding to the feeder. This will allow more accurate recording of feed for the group of pigs.

Feeding Gilts at Breeding Time -- Flushing gilts, or giving them all they want to eat during the breeding season, may increase litter size. Feed all the 14 percent protein ground ration they want, beginning 10-14 days before they are bred and continue until after they are bred.

Feeding Sows and Gilts During Gestation -- Sows and gilts should receive a limited amount of feed during gestation. If they get too much to eat at this time, litter size may be reduced. Feed 4 pounds of a 14-percent protein ration the first two-thirds of gestation; increase to 5 or more pounds during the last one-third. During cold weather, feed an additional pound of complete ration per head per day.

Feeding Sows During Lactation -- Lactating sows or gilts should get all they want to eat until their pigs are weaned. Feed them a 16-percent protein complete ration. You may want them to milk as heavily as possible, therefore, don't limit their feed during this period. It is best to hand-feed sows all they will eat. Hand-feeding lets you see if each sow has a good appetite and is eating well.

Creep Feeding Baby Pigs -- When the baby pigs are a week to 10 days old, they should be offered a special creep feed in an area where they can reach it, but the sow can't. Club members with a few sows will probably want to buy such a creep feed in pelleted form from a commercial feed company.

Starter feed -- When the pigs reach 25 pound in weight, they should be fed a starter ration with 18-20 % protein.

Grower feed -- A 16-18% protein grower ration should be fed between 40 and 125 pounds.

Finisher ration -- Feed 16% protein from 125 lbs to market.

Feeding Replacement Breeding Stock -- When your pigs reach 175 to 225 pounds, animals that are to be saved for breeding stock replacements should be separated from

those finished for market. Feed the replacement stock about 6 pounds of a 16-percent protein ration daily until they are flushed before breeding.

### MARKET HOG PERFORMANCE TRAITS

*Reference: Penn State 4-H Market Swine Project Reference Guide*

| <b>Feed Consumed per Day (Pounds)</b> | <b>Average</b> | <b>Range</b>         |
|---------------------------------------|----------------|----------------------|
| 40-pound pig                          | 2.5            | 2.1 – 2.9            |
| 150-pound pig                         | 5.0            | 4.2 – 5.8            |
| 240-pound pig                         | 6.0            | 5.1 – 6.9            |
| Feed eaten per pound of weight gain   | 3.0 pounds     | 2.6 – 3.4 pounds     |
| Total feed required from 40 – 240 lbs | 600 pounds     | 520 – 680 pounds     |
| Average Daily Gain 40 – 240 pounds    | 1.7 pounds/day | 1.2 – 2.4 pounds/day |

*Some performance traits of breeding swine are listed below. While they don't deal specifically with your project, you need to know some of these numbers.*

| <b>Breeding Swine Performance Traits</b> | <b>Average</b> | <b>Range</b>     |
|--|----------------|------------------|
| Gestation Length                         | 114 days       | 111 – 117 days   |
| Length of estrus cycle                   | 21 days        | 18 – 24 days     |
| Age at first estrus                      | 6 months       | 4 – 8 months     |
| Weight at first estrus                   | 240 pounds     | 200 – 300 pounds |
| Length of estrus (heat)                  |                |                  |
| Gilts                                    | 36 hours       | 8 – 60 hours     |
| Sows                                     | 48 hours       | 24 – 72 hours    |
| Weaning age                              | 21 days        | 10 – 35 days     |
| Time from weaning until first estrus     | 5 days         | 3 – 21 days      |
| Pre-weaning mortality                    | 15 percent     | 5 – 50 percent   |

## SWINE REPRODUCTION

The reproductive system of swine is regulated by a delicate balance of chemical substances called hormones. One of these is responsible for the external signs of estrus or heat, which the boar can detect and which indicate that the sow is ready for mating. Some of the external signs of estrus are the following:

- Females look for the boar and stay close to his pen.
- Females are nervous and tend to walk the fence lines.
- Females will stand still while someone presses down on their backs.
- The vulva is often swollen.

Below are some important facts about the sow's reproductive cycle:

- Estrus lasts 26 to 36 hours.
- The time between estrus is about 21 days.
- The sow will come into estrus 4 to 9 days after weaning.
- Gestation (pregnancy) lasts 114-117 days.

### Boar Management

- Select a meaty-type performance-tested boar from a validated clean herd with no history of diseases and re-test newly purchased boars for diseases 30 days after purchase.
- Buy your boars at least 1 month before usage to allow him to adjust to farm surroundings and for quarantine.
- Treat boars for mange and worms 10 days before the breeding period.
- To maintain best fertility, provide protection for boars from high or low temperatures, both in transporting and on the farm. Consider the use of shade and a sprinkler system during hot weather. Provide an exercise area to keep the boar in good physical condition before breeding.
- Although boars may be physically large and willing to serve sows at 6 months of age, they should not be used or allowed only limited service. Boars should be sexually mature before they are used in the breeding herd. Breeding too many sows to a boar may cause smaller litter size or low conception. A minimum of 3 weeks is

required for the boar to produce adequate normal sperm after a high temperature illness, therefore, don't use a sick boar.

- Rotation of boars improves litter size; therefore, use one boar for 12 hours and another for the next 12 hours. Two services per heat period will result in about 1 to 2 more pigs per litter.
- Don't mix young boars with older sows. The older boss sows may fight young, strange boars and make them timid breeders.

## **Gilt and Sow Management**

### **Before Breeding**

- Gilts selected for the breeding herd should be separated from the market herd at 4 to 5 months of aged or 175 to 225 pounds. If they are not removed and limited in their feed intake, they may become fat; besides, separating them can reduce your feed costs.
- Before breeding, females should be treated for internal and external parasites. Gilts should be 7 to 8 months old and weigh 250 pounds or more before they are bred. Your gilts should have passed their second heat cycle before breeding. This procedure will increase litter size. Also, gilts and sows should be flushed 10 to 14 days before breeding to increase ovulation and litter size. Don't continue to feed high levels after breeding, since it will increase embryonic mortality and reduce litter size.

### **Breeding and Gestation**

- To increase litter size, breed sows or gilts twice. Breed once at standing heat and once 12 to 24 hours later. Record breeding dates. Artificial insemination (AI) is an option. The expense versus advantages of AI needs to be considered.
- Since you may have some dominating sows, gilts and sows should be separated during the gestation period. Do not permit sows to get too fat, but feed about 4 pounds of 14 to 15 percent protein ration for each sow. Refer to breeding dates to prepare for farrowing, and introduce her to the farrowing quarters a week before she farrows.

### **Before Farrowing**

- Treat your sows within 2 weeks before farrowing for internal and external parasites. Clean and disinfect pens, stalls, buildings, and equipment before farrowing. If possible, allow the stalls to be vacant for 4 weeks before farrowing seasons.

- Wash each sow and gilt thoroughly with soap and warm water before placing her into a clean pen. This will eliminate many organisms and external parasites which are on the sow and will prevent baby pigs from becoming infected with disease producing bacteria and worm eggs when they first nurse. Bring your gilt or sow into farrowing quarters 2 to 5 days before farrowing so she will be accustomed to her surroundings.

### Farrowing

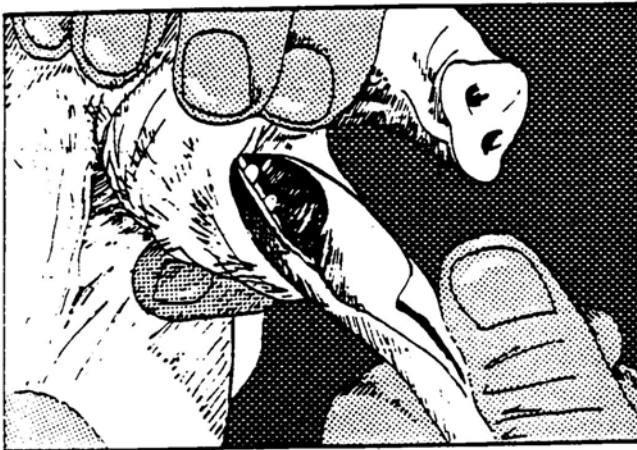
- Management is critical and more important at farrowing than any other time. Since about 30 percent of the pigs which die after farrowing are caused by crushing, use farrowing stalls or guard rails during farrowing. Do not feed the day of farrowing, but gradually build up to full feed after farrowing. Hand-feed the sow all she can eat during lactation. Since a sow needs 5 to 6 gallons of water per day to milk properly, supply plenty of clean, fresh water. Watch sows for possible M.M.A. infection (see M.M.A. in Diseases Section).
- If bedding is used in the stalls, bed lightly with clean dry litter to help prevent baby pigs from burrowing under the bedding and getting crushed. If complete slatted floors are used in farrowing, use plywood, rubber or carpet mats and cover the slats for the first week after farrowing. This prevents chilling and possible pig scours. It helps prevent abrasion of the pigs' feet and knees.
- Since the baby pigs cannot regulate their own body temperature until they are 3 days old, provide a temperature of 90°F at the pig level for the first 10 days then gradually reduce to 80°F until weaning. Pigs are subject to chilling and colds; therefore, the pig's surroundings must be dry, well ventilated and warm. Be present and make quiet, frequent observations.

### Baby Pig Management

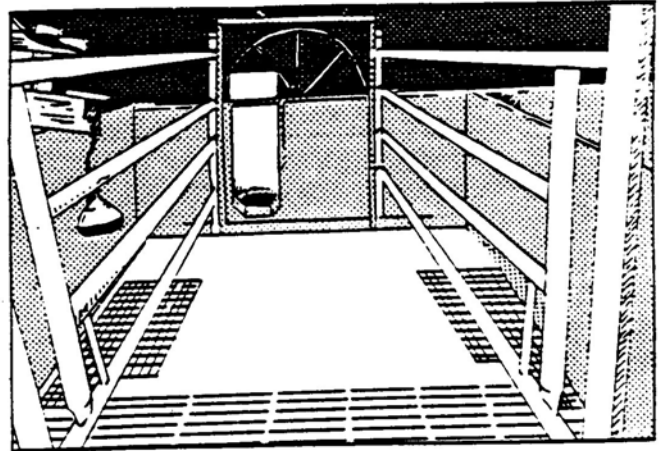
- As pigs arrive, dry them off and be sure they are breathing. If pigs are bleeding excessively, tie off and clip navel cord to 1 ½ to 2 inches in length. Make sure all pigs will get the sow's first milk – "colostrum". This colostrum contains antibodies which help prevent the pigs from acquiring various diseases.
- Clip the 8 needle teeth within 24 hours after farrowing. This will help prevent the cutting of the sow's udder and other pigs in the litter. Such cuts are ready sources for possible infection.
- Tail biting is another confinement problem. Cutting the tail during the first 24 hours after birth is a good practice. Leave about a 1-inch tail and disinfect with iodine. At the same time, ear notch each pig for identification for registration requirement or for future selection of replacement gilts (see figure). Market hogs might be ear notched by the week they are born starting week one on January 1 and July 1 to calculate days to market weight.

# BABY PIGS

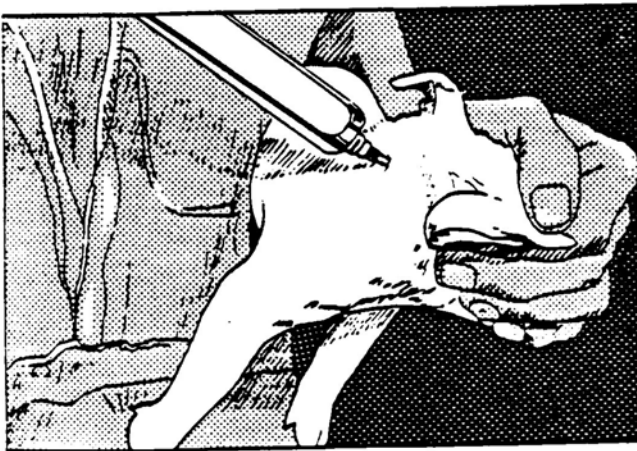
# MANAGEMENT



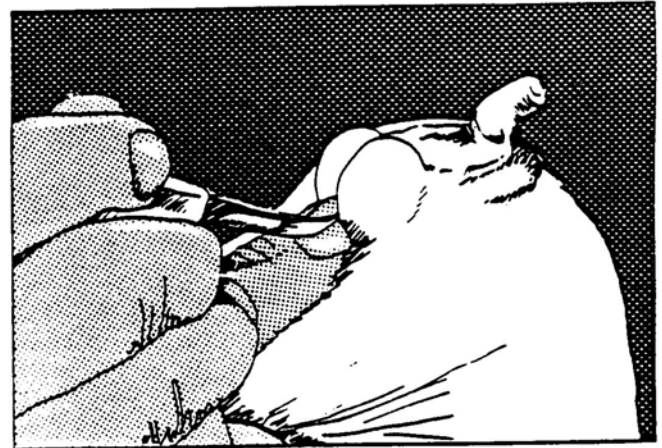
Clipping the Needle Teeth



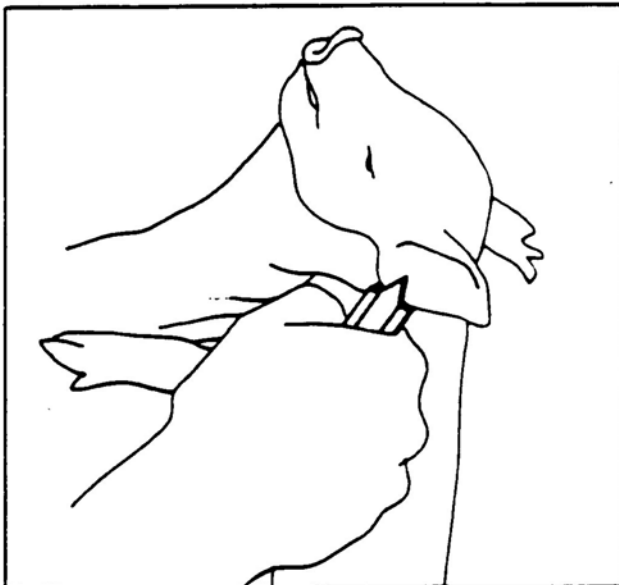
A Heat Lamp and Farrowing Crate



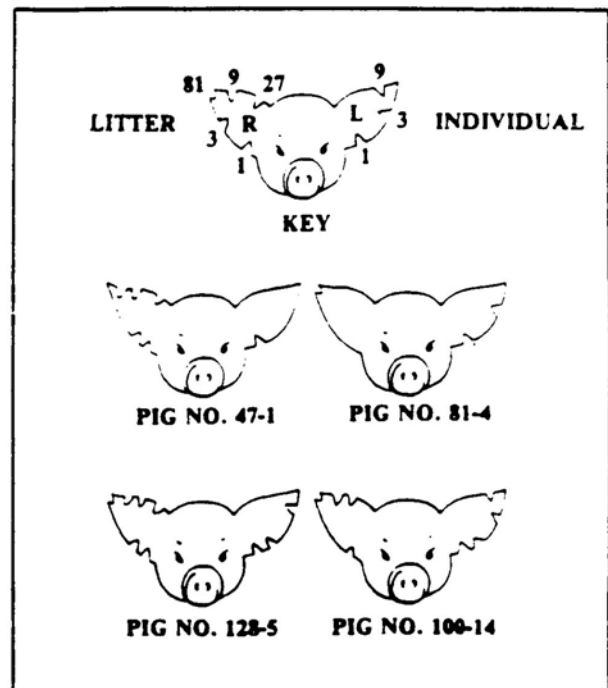
Giving an Iron Shot



Castrating the Baby Pig



Notching the Left Ear



Universal Ear-Notching System



- Some good management practices include supplementing the building heat source with heat lamps or radiant heaters in cooler weather. Place these lamps 12 inches out from the sow's udder and a minimum of 18 inches above the floor. Lamps positioned closer to the sow or pigs may cause heat lamp burn and possible udder problems.
- Keep the house well-ventilated and dry; however, do not allow a draft or your pigs may become chilled. Watch your sows and pigs closely for sickness.
- Sows that fail to eat, have abnormal temperatures, fail to milk, have abnormal discharge, or are sluggish should be treated. If a large number of dead or weak pigs are born, immediately notify your veterinarian. These conditions could be caused by diseases like leptospirosis, SMEDI or pseudorabies.
- Since the first week of life is critical for the newborn pig, be aware of pig scours. The sow should milk well and want to care for her pigs. The sow's milk is low in iron; therefore, you should give a 200 milligram iron dextran shot into the neck region at 3 days of age. The area around the neck or under the foreleg is preferred to the ham area. Ham iron injections often cause yellow stained hams at slaughter.
- If you are going to market your male pigs as barrows, castrate them at 1 to 10 days of age. They are easier to handle and will be healed prior to weaning.
- Under specialized conditions pigs can be weaned as early as 10 days. Most producers wean their pigs between 3 to 4 weeks of age. Before weaning, expose your pigs to a creep feed so they will be used to eating. Provide a 20-22 percent protein creep feed that contains adequate vitamins and minerals. Include antibiotics for prevention against scours and rhinitis and carbodox for bloody scour prevention.
- When litters are uneven, you can help the smaller pigs to catch up by weaning the oldest, heaviest, pigs and leaving the lighter pigs on the sow for another week.

### **S.E.W. (Segregated Early Weaning)**

Segregated Early Weaning is a new production practice that utilizes the baby pig's natural immune system to increase gains, improve feed efficiency and decrease disease. Baby pigs are weaned at 8 to 18 days while they are still protected by the antibodies that they receive from the sow. The baby pigs are moved to a different location where they have no contact with older pigs. Because they are separated from the older animals that can transmit disease, the baby pigs maintain a high level of health. This high health status results in improved gains and feed conversion. Farms that use this new technology, called 3 Site Production, typically have separate locations for farrowing, nursery and finishing. The goal is to have each age group of pigs separated and stop the transmission of disease from older pigs to younger pigs.

## **Biosecurity**

Biosecurity is very important to maintain the improved health status of S.E.W. pigs. Biosecurity means keeping a swine herd safe from the introduction of disease from the environment and other swine. Common sources of disease transmission include birds, rodents, contact with other swine and human traffic. You can have two healthy swine herds that have immunity to the organisms that exist within the individual herd and when they come in contact, both herds may become sick. By avoiding all contact with other swine, biosecurity can be maintained.

Common measures used by hog producers to maintain biosecurity are isolating new breeding stock until it can be tested for health problems, limiting visitors to hog facilities, and providing boots and clothing for visitors.

## **SWINE HERD HEALTH**

A well-managed swine herd health plan minimizes disease by preventing exposure to specific disease organisms and by increasing herd immunity against common diseases. A sound herd health program also includes adequate nutrition, comfortable housing and ventilation, and vigorous parasite control. It is extremely important that you work closely with your local veterinarian and other knowledgeable people to develop a sound swine herd health program.

## **Diseases**

Some common signs of a sick pig are:

1. Excessive sneezing, coughing or forced breathing, known as “thumps”
2. Watery (or bloody), loose fecal material (scouring)
3. Lack of appetite or going off feed for more than 24 hours
4. Constipation
5. Rough hair coat
6. Humped back
7. Droopy tail
8. Cannot get up on their feet
9. Elevated or depressed body temperatures (normal average = 102.5°F)

Many swine diseases can cause serious losses. Some of the more common diseases are discussed briefly below. If you have any questions regarding treatment of diseases, consult your veterinarian.

1. Erysipelas - - Hogs may have this disease in the acute form and die quickly, or in the chronic form, which is usually not fatal but which causes stiffness throughout the body, especially in the leg joints. If erysipelas is a major problem vaccinate sows and gilts 6 weeks and 2 weeks before farrowing time so that antibodies against erysipelas will be in the colostrum milk for the baby pigs.
2. Leptospirosis - - Many forms of this disease infect swine. Sows with leptospirosis may abort near farrowing time or may farrow stillborn (dead) or weak pigs. Gilts and sows should be vaccinated before breeding.
3. Mastitis-Metritis-Agalactia (MMA) - - Sows infected with this disease lose some or all of their milk at or shortly after farrowing. There is no vaccine and/or treatment that is completely effective. The disease can cause severe pig losses.
4. Atrophic Rhinitis (AR) - - Atrophic rhinitis destroys the inner part of the nose and may cause the snout to bend. Affected pigs grow more slowly and require more feed and time to reach market weight. Vaccination can help control this disease.
5. Pseudorabies - - This is an acute, often fatal disease that is caused by a virus. It has many symptoms, but those involving the nervous and respiratory systems are especially easy to see. Drugs and feed additives do not treat or prevent infection. Vaccination is effective in controlling this disease.
6. Pneumonia - - This disease may be chronic or acute and can be fatal. It is an inflammation of the lungs that results in breathing difficulties. Some forms can be prevented by vaccination. Most are treated with antibiotics.

## Parasites

There are two classes of parasites that injure pigs - - internal parasites (those that live inside the pig) and external parasites (those that live on the pig's skin). When treating for parasites, always be sure to follow the chemical manufacturer's recommendations.

- Worms - - are internal parasites. Worms usually cause the pig to lose weight and to use feed less efficiently. Several dewormers (anthelmintics) have been approved for controlling worms. Treat your pigs at least twice at a 4 - week interval.
- Hog lice - - The hog louse is a blood-sucking external parasite that feeds only on pigs. It is a large (1/4-inch long) pest that clings to the hair of the neck, behind the ears, and in the fold of the skin.

- Mange mites - - Mange mites are minute external parasites. The most common signs of mange mites are thickened, rough skin and loss of hair.

See your veterinarian for control recommendations.

## PORK QUALITY ASSURANCE

Most pork producers understand the value of learning about swine selection, showmanship, management, and health care. Today, even more important than acquiring these skills, is taking the responsibility to provide a product that people want to buy.

Quality Time After Time - - Consumers want to be sure that the pork they buy next week in the grocery store will be as good as the pork they bought this week. They want to be able to select from a consistent product in the meat case. Practicing quality assurance means making sure there are no harmful residues in the pork products that you market. It is the bridge that links the responsibilities of production and marketing. Every pork producer must accept the responsibility of consistently providing quality pork products.

Residue avoidance is an important part of a pork quality assurance program. Many organizations, including consumer groups, government agencies and pork producers, are interested in the production of residue-safe pork products. If you want to be a successful producer, you need to make the practice of avoiding residue an essential part of medications you use and their withdrawal times, how to properly mix feed and deliver it, how to identify treated swine and how to manage feeder and pens to minimize residue. Ask for a copy of the three-level Pork Quality Assurance Program available from the National Pork Producers Council for more information about the importance of these factors.

What is Residue? - - You may gain a clearer understanding of what a residue is by picturing yourself drinking a glass of milk. If you finish the glass of milk and fill it again with water without first rinsing it, your water will be cloudy. This is because milk residue is left in the glass.

A residue is the amount of a substance that remains in an animal's body tissue after exposure to that substance. The substance can enter the animal's body when it is used as a feed or water additive or an injectable or external treatment, or it can enter by accident. Some substances may leave an animal's body tissues a few hours after exposure, others may leave in several months, and some may not entirely leave certain tissues. Low-level drug residues are not physically harmful to humans, but they may cause people to lose confidence in the quality of the food products that we produce.

Why the Concern? - - It is illegal to adulterate a food substance. This is why the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA) have set strict guidelines to protect our food supply. Random tests at slaughter facilities can indicate which producers aren't following regulations. If illegal levels of residue are found in the tissue of a slaughtered animal, the USDA can stop a facility from accepting

slaughter hogs from a producer until that herd tests safe from residue. This loss of a market can cause substantial economic concern for a swine producer.

Perhaps the worst consequence of not obeying withdrawal guidelines is that it can cause consumers to lose confidence in pork. Consumers are increasingly health conscious. They demand that their food be lean and wholesome. They are concerned that sensitive persons who eat pork may develop severe allergic reactions if traces of medications are present in meat. Although their concern is not likely to materialize, it is important that residue in animal products be kept below FDA levels.

How Can You Prevent Residue Problems in Your Animals? - - Not all medications pose a potential residue problem. Withdrawal times listed on labels tell you when to remove medications to prevent illegal residues. The withdrawal time is the amount of time the medication must be removed from a hog before it is slaughtered. The time varies from one day to several months depending on the type of medication. Most medications leave the body by way of the urine and feces at a predictable rate. This rate is called a half-life and is the length of time it takes a substance to reduce its concentration by one-half. Every medication has a different half-life. Once a medication is taken away completely, its half-life begins. Withdrawal times are based on half-life rates. If you do not completely withdraw medications, half-life values will increase and withdrawal times will be longer. To prevent withdrawal times from increasing, be sure to properly manage feed additives and feed mixing and handling systems so feed isn't accidentally contaminated.

Carryover of medications in feeders, bulk bins, auger systems, feed mixtures and manure can cause residue problems. Giving too much medication, or giving injectable products improperly, also will lengthen withdrawal times. Contamination of livestock water lines and screens behind nipple waterers may extend withdrawal times after water medication. Monitor all chemicals that your pigs come in contact with. Products used for the control of rodents or external parasites may contaminate a pig's feed supply or environment and cause residue problems in pigs unless precautions are taken.

Points to Remember - - Feed additives and other medications, when used correctly, can improve the growth rate, feed efficiency and survival of your 4-H project animals. As a pork producer, you should know which feed additives and other medications you are using and why you are using them. Give your pigs feed additives only at approved levels and in approved combinations. Use all other products according to label instructions and observe the directions and cautions.

Good day-to-day management is critical in preventing a residue problem in your herd. Identify treated animals, and mark your calendar to indicate withdrawal periods according to the date that you plan to sell your hogs. Plan in advance to withdraw medications from all animals that you will be exhibiting at your county fair so they will meet FDA guidelines by sale day. Ask your county Cooperative Extension Service for additional information on avoiding residues in swine for exhibition. Inform your veterinarian of your plans to exhibit or sell hogs before treatment. Ignoring regulations and withdrawal time is expensive and may cause a medication to be banned from the

market. Remember, producing wholesome pork for the consumer that is residue-safe can mean more profit for every producer.

### **The Pork Carcass ... Percent Lean Measurements**

In recent years, pork producers have moved to more direct marketing to slaughter facilities. One change in the way hogs are bought and sold for slaughter is in the way contracts are written that emphasize payment based on carcass quality. The main indicator of carcass quality in today's market is a quality factor known as percent lean. Percent lean is an index of carcass quality based on backfat measurements, muscling, including rib eye area, and weight, which indicated skeletal size. This quality indicator was developed in direct response to consumer demands for lean meat products. Contract parameters for slaughter hogs specify a target percent lean, which receives an agreed upon price. Animals exceeding the target are paid a premium, while animal carcasses that have a lower percent lean receive a discount – farmers are raising pigs that will meet the quality standards set by consumers.

There have also been tools developed to help farmers evaluate their stock without having to slaughter them for measurement. This technology uses ultra-sound equipment to measure backfat depth and muscle area in live animals. With the improvements in sensitivity of this equipment, the development and refinement of equations that calculate the percent lean, and the development of computer equipment to solve these complicated calculations, farmers can evaluate their animals and make adjustments in their breeding programs without sacrificing a significant portion of their swine herd. This technology has been refined so that there is very little difference between the actual carcass measurements and the computed percent lean values of live hogs.

The percent lean index is used in the Empire Market Hog program to award points based on carcass quality as measured on the live animal at weigh-in. In the past these points were awarded based on the backfat and rib-eye measurements. However, with the changes made in the way hogs are marketed to the slaughter facilities and the improvement in the accuracy of the calculated percent lean figures, we have switched to the percent lean calculation, which is the more accurate indicator of carcass quality.

Slaughter hogs are usually sold on the basis of how much lean meat they will yield in relation to the amount of fat in the carcass. Most of the major packers have their own systems for grading slaughter hogs based on lean cut yield.

The pork carcass represents the end product of the swine business. It should produce cuts of meat that appeal to the consumer. In addition to producing a good carcass, it is also important for the pig to grow well and to be efficient at converting feed to lean pork. You must consider breeding, herd health and management if you are going to raise healthy, fast-growing pigs that are profitable.

## MARKET HOG PERFORMANCE TRAITS

*Reference: Penn State 4-H Market Swine Project Reference Guide*

| <b>Carcass Traits: 245-pound pig</b>             | <b>Average</b>    | <b>Range</b>            |
|--|-------------------|-------------------------|
| Slaughter weight                                 | 245 pounds        | 210 – 280 pounds        |
| Length (first rib to aitch bone)                 | 30.5 inches       | 27.5 – 34.5 inches      |
| Average backfat (first, last rib, & last lumbar) | 1.0 inch          | .6 – 1.6 inches         |
| Tenth rib backfat                                | 0.9 inches        | 0.3 – 1.5 inches        |
| Loin eye Area (10 <sup>th</sup> rib)             | 5.5 square inches | 4.0 – 9.0 square inches |
| Yield (dressing percent)                         | 74.5 percent      | 67.0 – 80.0 percent     |

### NUTRITIONAL VALUE

Today's pork is superior because of improved breeding, feeding and management by producers. Comparing the nutritional value of pork produced today to pork produced 20 years ago, we find more edible pork per pound with more body-building protein and less fat.

The protein of a 3 ½ ounce serving of cooked lean pork contains all of the essential amino acids necessary to build, maintain, and repair body tissues and to increase its resistance to infections and diseases. The minerals and iron, together with high quality protein, are vital in the formation and maintenance of red blood cells and in the prevention of anemia. Pork liver supplies about three times as much iron in an available form as does any other food source.

Pork is a major dietary source of the B vitamins, especially thiamine, riboflavin and niacin, which are essential to food utilization, appetite, and skin and oral health.

Protein foods should be included in everybody's diet each day. Pork is one of the most completely digestible and utilized foods. Every cut is tender and juicy, so it can be included in the diet of very old as well as very young people. Strained pork products for infants provide most of the essential nutrients needed early in life.

With less fat and fewer calories, pork plays a particular role in the diet for weight control. When pork is included in the diet, the dieter is less likely to be tired, hungry, and tempted to eat between meals.

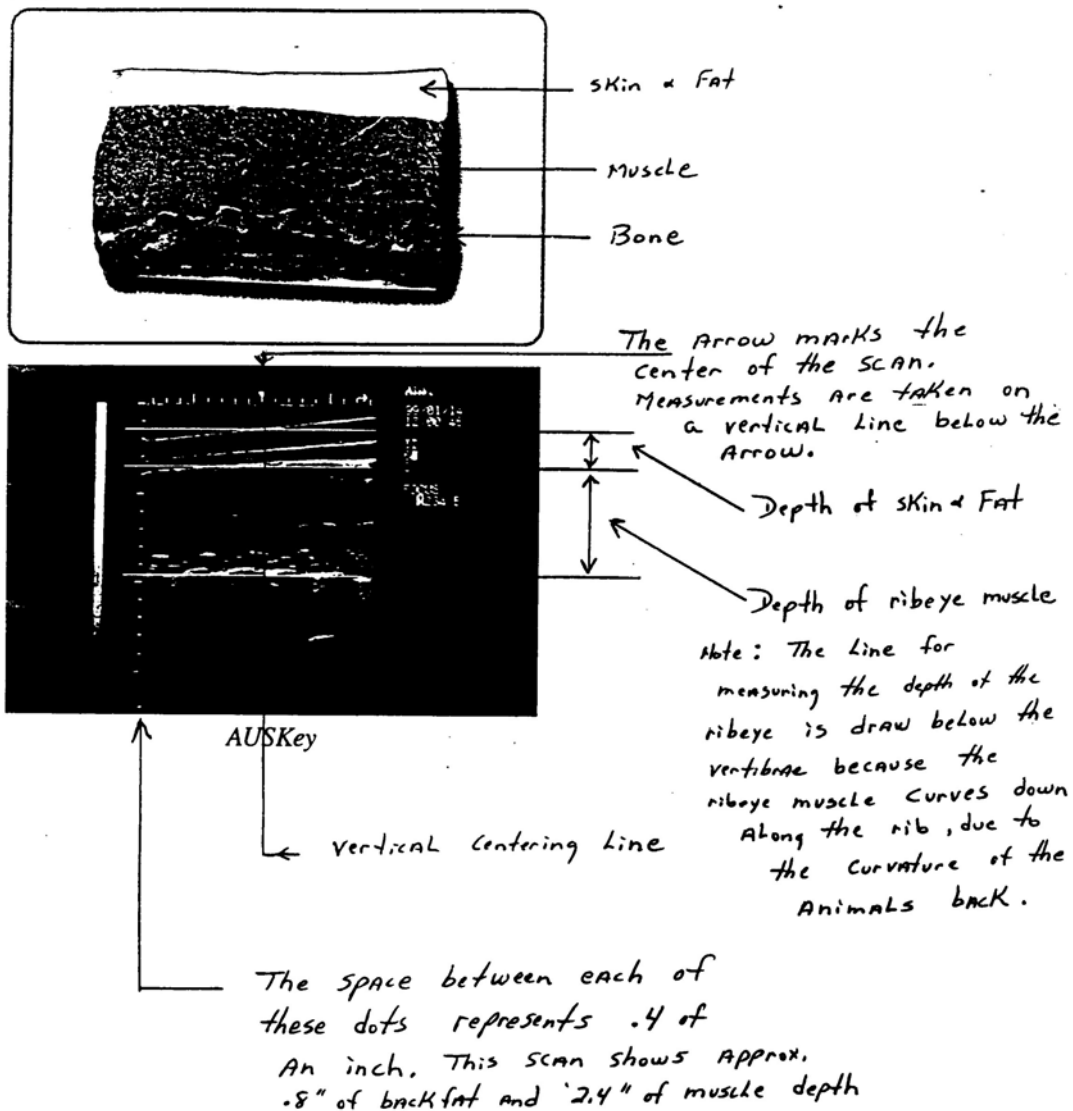
Whether it is barbecued pork chops, roast, ham, bacon, or leftover pork in a sandwich, you can be sure of the same outstanding nutritive values that mean so much to your health and well-being.



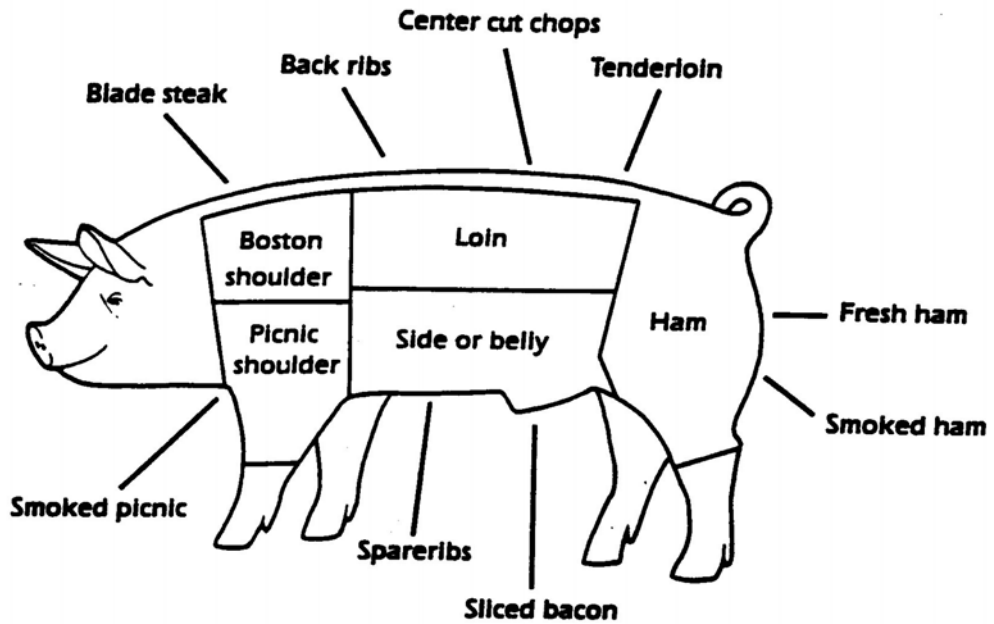
Besides its importance to agriculture, the pig is valuable as a model animal for many physiological and nutritional studies related to human health such as diabetes, gastric ulcers, muscular dystrophy, alcoholism and obesity. The heart valves of the pig have often been inserted as a replacement for damaged human heart valves. Moreover, the skin of the pig can be grafted successfully in the human body to repair burns. Pharmaceutical and by-products rank second only to meat itself in the important contributions hogs make to society.

## Ribeye Scan

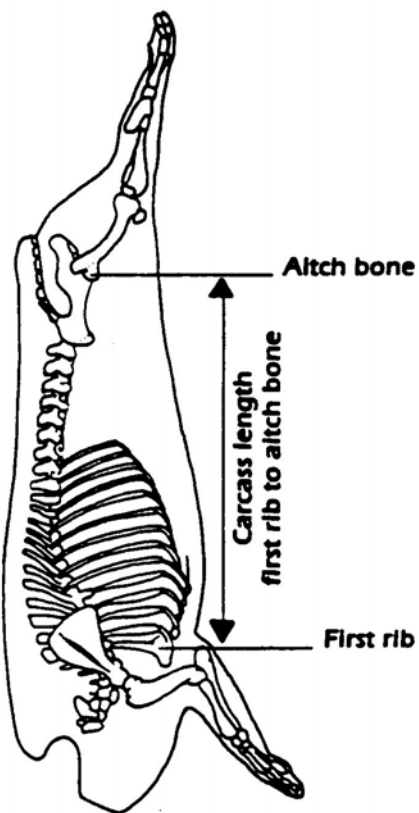
### Animal Ultrasound Services, Inc.



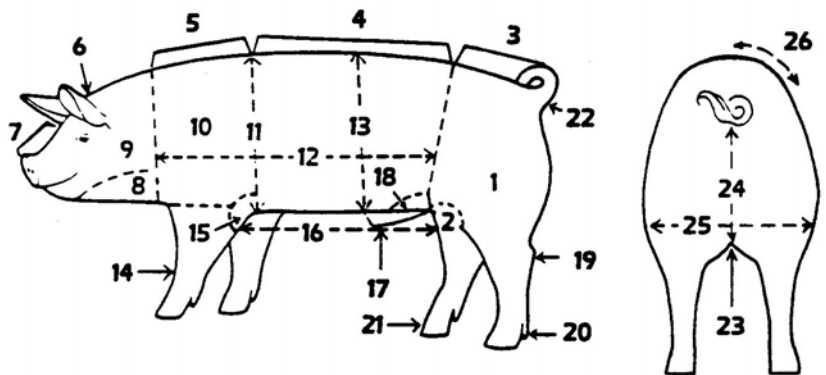
## Wholesale or primal cuts of pork.



## Measuring carcass length.



## Parts of a hog.



- |                         |                             |
|-------------------------|-----------------------------|
| 1. Ham                  | 14. Knee                    |
| 2. Stifle region of ham | 15. Elbow                   |
| 3. Rump                 | 16. Underline               |
| 4. Loin                 | 17. Sheath                  |
| 5. Shoulders            | 18. Rear flank              |
| 6. Poll                 | 19. Hock                    |
| 7. Face                 | 20. Dew claw                |
| 8. Jowl                 | 21. Pastern                 |
| 9. Neck                 | 22. Tail setting            |
| 10. Shoulder            | 23. Seam or crotch          |
| 11. Heartgirth          | 24. Depth of seam or crotch |
| 12. Length of side      | 25. Width of stifle         |
| 13. Depth of side       | 26. Turn over loin edge     |

# PURCHASING PORK

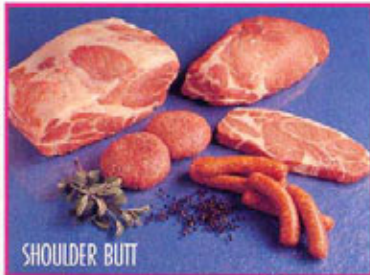
## A Consumer Guide To Identifying Retail Pork Cuts.

Left: tenderloin  
Right: Canadian-style bacon



### CHOPS

Upper row (l-r): sirloin chop, rib chop, loin chop.  
Lower row (l-r): boneless rib end chop (Chef's Prime Filet™), boneless center loin chop (America's Cut™, 1 1/4-1 1/2" thickness), butterfly chop.



### SHOULDER BUTT

Upper row (l-r): bone-in blade roast, boneless blade roast.  
Lower row (l-r): ground pork (The Other Burger®), sausage, blade steak.

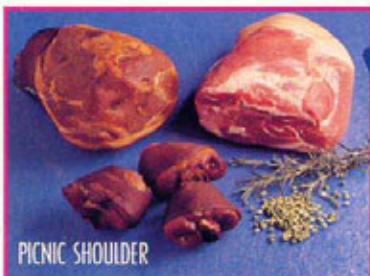


RIBS Left: country-style ribs.  
Right: back ribs.



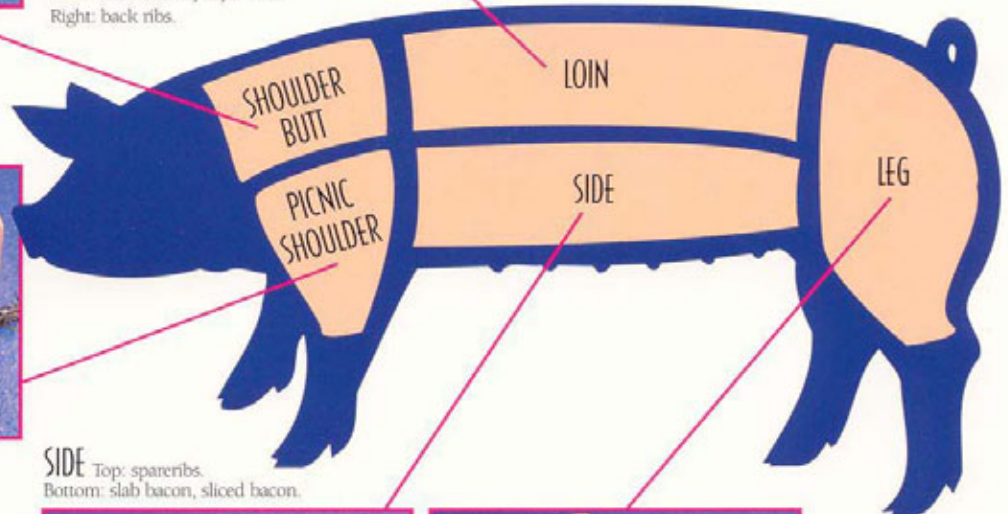
### ROASTS

Upper row (l-r): center rib roast (Rack of Pork), bone-in sirloin roast.  
Middle: boneless center loin roast.  
Lower row (l-r): boneless rib end roast (Chef's Prime™), boneless sirloin roast.



### PICNIC SHOULDER

Upper row (l-r): smoked picnic, arm picnic roast.  
Lower row: smoked hocks.



SIDE Top: spareribs.  
Bottom: slab bacon, sliced bacon.



### LEG

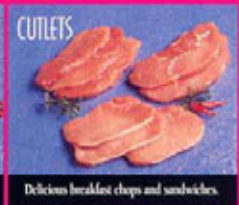
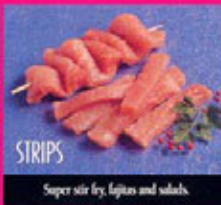
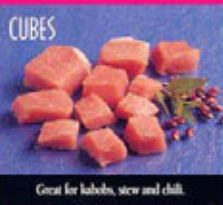
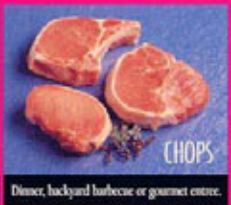
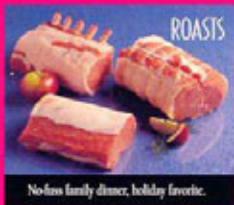
Upper row (l-r): bone-in fresh ham, smoked ham.  
Lower row (l-r): leg cutlets, fresh boneless ham roast.

TASTE WHAT'S NEXT  
**pork**

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### THE MANY SHAPES OF PORK CUT LOOSE!

When shopping for pork, consider cutting traditional roasts into a variety of different shapes.



03342 4-97

## FITTING AND SHOWING

The primary purpose of fitting and showing your pig is to present the animal to its best advantage. Your extra effort may not make a mediocre pig a champion, but proper grooming and showmanship may make a difference of two or three placings in stiff competition.

### Before the show

Proper fitting began when you selected a good meaty pig. You continue fitting through proper management and feeding. During the growing period, work with your pig to get it used to you. Use a cane or whip to teach it signals to move and turn. It is a good idea to start working with your hog at least 30 days before the show.

To guide your pig, train it to the following signals:

- To turn left, tap the pig at the right side of the head.
- To turn right, tap the pig on the left side of the head.
- To stop, place the cane or whip in front of the snout.
- To start, tap the pig on its side.
- **NEVER ABUSE YOUR PIG**
- Proper grooming starts at least 2 weeks before the show. If your pig's feet need trimming, shorten the toes by removing excess tissue with a sharp knife, but don't cause sore feet by cutting too deeply.
- A week before the show, you may want to clip your pig. Clip the hair on your pig's ears and tail, leaving about 2 inches of hair at the end of the tail. To reveal the prominence of the underline, clip the lower area of the belly.
- Wash the pig about 1 week before the show. Use a mild soap or detergent. Rinse to remove all the soap from the skin and do not allow water and soap in your pig's ears. Use a soft brush to groom the hair so the pig looks muscular and trim. It is a good idea to wash your hog 2 or 3 times before a show so it gets used to water and being washed.
- Before the show, depending on the show's requirements, make sure you are properly entered. Your county extension agent will help you fill out the entry forms. All shows will require breed registration papers on purebred pigs. Health papers are required and may be obtained from your veterinarian.

- Don't overcrowd your pig when you are transporting him to the show. Make sure you have adequate bedding during cold weather and have wet sand or sawdust for a summer session. A cover over the truck will protect your pig during all seasons. Be sure air can circulate to prevent overheating.
- When loading, use a chute to avoid injury. Don't excite or frighten your pig.

### At the show

- Try to arrive at the show during the cool part of the day - - early in the morning or late in the evening. If possible, use a pen that is on the north or east side of the building. These pens will be cooler than those on the south and west.
- After arriving at the show, water and rest your pig 6 to 12 hours before feeding and then only about one-half the regular amount. Feed slightly more on succeeding days, but never give a full feed.
- If the weather is hot, use a fan. If necessary, sprinkle pig lightly with water on its nose, head and sides. Never pour cold water over a pig's back or it may die. Do not use straw bedding. Substitute sand or wood shavings if either is available, or let the pig lie on the bare floor. Use only enough bedding in the pen to keep the pig clean. Too much bedding makes him hot. Wet bedding gets steamy in warm weather. If the weather is cool, use drapes around the pens at night to protect from drafts.
- Keep your pens and the area around your pens clean and neat.
- Have all the equipment you will need for show day ready the night before.

### Show Day

- Feed your pigs lightly 2-3 hours before the show. A limited feeding will keep your pig active and alert. Proper fill, or the amount of water and feed eaten, is an important part of fitting and showing.
- Groom your pig again for a few last-minute touches before you enter the ring. The main thing is to have your pig clean.
- When the pig is ready, get yourself ready. Wear clean and neat clothing, and shoes and boots that will support and protect your feet.
- Check the show schedule and get your pig ready to enter the ring promptly when your class is called.
- Handle your pig gently on the way to the ring. Above all, don't fight him if he doesn't want to go. A pig that is hot and excited when he gets to the ring won't show to good advantage.



## In the Show Ring

- Avoid any nervousness in handling your pig in the show ring.
- While most exhibitors prefer a cane, a whip can be used. Touch the pig's head and shoulders only - - never on the rump or back. Carry the small cane or whip in one hand and have a small brush in your pocket. If you use a cane, hold the straight end and guide your animal with the curved end. Keep your pig out of the corners, away from the fence, and out of the large group of hogs.
- Drive your pig so he will show at his best. This usually means walking your pig at a natural gait approximately 10 to 15 feet from the judge. Always keep your pig between you and judge. Try to keep your eyes on both the judge and your pig. Be alert to obey any order the judge may give.
- Take all caution to prevent fighting between animals. It is a good idea to have a volunteer with a solid hand hurdle available to stop fights between pigs in the show ring.
- Judges are interested in seeing three sides of your hog: the back view, for the ham and loin muscling; the side view for length and muscling; and the front view for the width between front legs, shoulders, chest capacity, etc. In showmanship, the judge is looking for the person that can show these sides or dimensions in the most capable manner.
- Be courteous to the judge and to other exhibitors. If you win, be happy and proud but not boastful. If you lose, accept the judge's decision cheerfully, congratulate the winners. Do not complain if you lose.

If you have an honest question, any good judge will be glad to answer it after the close of the show when the classes are still fresh in his mind.

Your experience in the show ring from this year's project helps you to do a better job in the future.

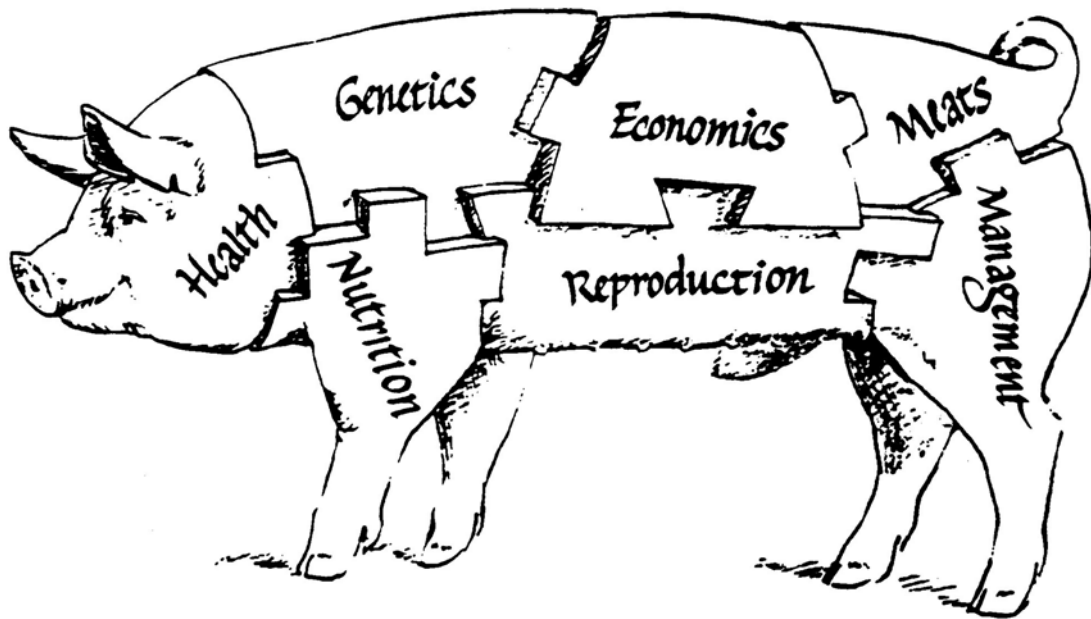
## MARKETING YOUR HOGS

Hogs are commonly marketed between 220 and 265 pounds because as they become heavier they require more feed to produce a pound of gain and usually most of the extra gain is fat.

Most of the hogs produced are either marketed directly to packers via collection or buying points or through local auctions and brokers.

Often the best way to market one or two hogs will be to sell them to your family or friends. Many small slaughterhouses will kill your hog and clean the carcass for a small fee. You can either pick up the carcass that you must cut, cure and wrap or you can have the packer process it for you. This method of marketing allows you to learn more about pork carcasses and enjoy the fine pork you produce.

In some counties, qualified 4-H project hogs can be marketed through local auction sales at the Fair. Hog bidders at these sales are usually people who want to support their local 4-H swine programs.



## GLOSSARY

Definitions were taken from 4-H Market Swine Project Reference Guide from Penn State and The Swine Resource Handbook for Market and Breeding Projects 4-H Circular 134R from Ohio State.

**All-in, all-out production** – Raising pigs of the same age together and keeping them separate from other age groups. (Penn State pg.10)

**Amino Acids** – Basic building blocks for protein

**Antibiotic** – Substance fed or injected to improve growth rate or treat disease. (Penn State pg. 38)

**Average Daily Gain** – The average number of pounds an animal gains in a day, usually determined from weaning weight to slaughter weight.

**Backfat** – The layer of fat located between the skin and muscle along the back of the hog.

**Barrow** – A male pig that was castrated at a young age. (Penn State pg.10)

**Biosecurity** – Practices to keep your pigs from catching diseases from other pigs, people, or the environment. (Penn State pg. 33)

**Boar** – A male pig that has not been castrated. (Penn State pg.10)

**Breed** – A group of animals that have unique color patterns or body structure because they share common ancestors that were selected from those characteristics. (Penn State pg.15)

**Castration** – Removal of a male's testes. (Penn State pg.10)

**Conformation** – A general term describing the way a pig is put together and its appearance. (Penn State pg. 21)

**Crossbred** – An Animal with parents from different breeds. (Penn State pg.15)

**Cryptorchid** – A male pig with one or more testicle that failed to descend into the scrotum. The undescended testicle(s) remain(s) in the body cavity. (Revised from Ohio pg.2 glossary)

**Dam** – An animal's mother. (Penn State pg.15)

**EPD** – Expected Progeny Differentials

**Ethics** – Doing what is right. (Penn State pg. 45)

**Expenses** – Money you spend for products or services. (Penn State pg. 52)

**External Parasite** – Those parasites causing problems on the outside of the pig, such as lice and mange. (Penn State pg. 33)

**Farrow** – Give birth. (Penn State pg.10)



**Feed Efficiency** – The amount of feed that it takes to gain 1 pound of live body weight.

**Feeder Pig** – Newly weaned pig. (Penn State pg.10)

**Fitting** – Cleaning, clipping, and preparing your animal for exhibition. (Penn State pg. 45)

**Gestation** – Time period from breeding to birth.

**Gilt** – A young female swine that has not yet farrowed a litter of pigs. (Penn State pg.10)

**Heterosis** – The usual improvement of a crossbred over the average of its parent purebreds in a certain trait. (Penn State pg.15)

**Hog** – Pigs approaching market weight. (Penn State pg.10)

**Hurdle** – A panel or board used to guide and move swine. (Ohio glossary pg.2)

**IM** – An abbreviation for intramuscular injection, meaning injection into the muscle (Ohio State glossary pg. 3)

**Income** – Money someone else pays to you. (Penn State pg. 52)

**Inorganic** – being or composed of matter other than plant or animal (you may want to revise this. This is from Webster Dictionary)

**Internal parasites** – Those parasites causing problems on the inside of the pig, such as worms. (Penn State pg. 33)

**Loin Eye Area (LEA)** – Square inch measurement of the loin muscle taken at the 10<sup>th</sup> rib.

**Loss** – Money you lose when your expenses are more than your income. (Penn State pg. 52)

**Marbling** – Flakes of fat in lean meat. (Penn State pg. 38)

**Minerals** – Inorganic nutrients required by the body.

**Parasite** – A living being that lives and gets its food in or on another living being, called a host. (Penn State pg. 33)

**Pig** – Usually young pigs up to market weight. (Penn State pg.10)

**Pork Quality Assurance Program** – Program sponsored by the National Pork Producers Council to ensure that meat is safe and wholesome. (Penn State pg. 38)

**Profit** – Money you keep when your income is more than your expenses. (Penn State pg. 52)

**Progeny** – Offspring of a sire or dam.

**Protein** – A complex nutrient the body uses to make muscle and bone. (Penn State pg. 52)

**Purebred** – An animal with parents from the same breed (Penn State pg.15)

**Residue** – The amount of a substance remaining in an animal’s body tissue after being vaccinated or fed that substance.

**Showing** – Presenting your animal to a judge in a show ring.

**Sire** - An animal’s father. (Penn State pg.15)

**Sound** - Free from structural defects. (Penn State pg. 21)

**Sow** – A female swine that has farrowed one or more litters. (Penn State pg.10)

**Sportsmanship** – Winning and losing gracefully. (Penn State pg. 45)

**SQ** – An abbreviation for subcutaneous injection, meaning injection under the skin. (Ohio State glossary pg. 3)

**Vertical integration** – One person or company controlling two or more parts of the pork production chain (production, packing, processing, retailing.) (Penn State pg.10)

**Vitamins** – Compounds that assist the body in using other nutrients.

**Withdrawal time** – The minimum time that must pass between when an antibiotic or vaccination is given to the pig and slaughter. (Penn State pg. 38)

## SOURCES OF INFORMATION AND ASSISTANCE

For more information and assistance for your 4-H swine projects contact the following:

1. Your local county Cooperative Extension Service.
2. Pork producers in your area
3. New York Pork Producers Cooperative  
c/o Charles R. Miller  
9896 Ridge Road  
Alexander, NY 14005  
Tel. No. (716) 547-9697
4. New York State 4-H Office  
Dr. Tro V. Bui  
Department of Animal Science  
250 Morrison Hall  
Cornell University  
Ithaca, NY 14853  
Tel. No. (607) 255-4505
5. National Pork Producers Council  
P.O. Box 10383  
Des Moines, Iowa 50306  
Tel. No. (515) 223-2600
6. National Swine Improvement Federation  
Department of Animal Science  
109 Kildee Hall  
Iowa State University  
Ames Iowa 50011-3150
7. 4-H Market Swine Project Reference Guide  
Penn State University
8. The Swine Resource Handbook for Market and Breeding Projects  
4-H Circular 134R  
Ohio State University