

Principles of Swine Selection

Proper animal selection is one foundation of successful swine production. The choices made will affect producers' profits far into the future. Selection is important in many ways, from producing quality pork to animal health.

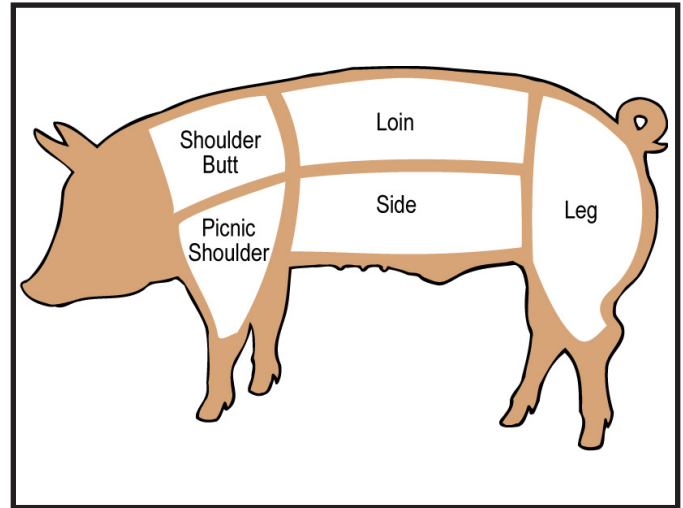
Parts of the Pig

To be able to communicate with individuals involved in the swine industry, one must become familiar with the proper terminology for the parts of the hog. Figure 3.1 is an illustration of the parts of a pig.

Wholesale Cuts of Pork

When hogs are processed into pork, the carcass is divided into wholesale cuts. The wholesale cuts are then sold to retail stores (e.g., the local grocery store). At that level, the wholesale cuts are processed into smaller retail cuts purchased by consumers. The wholesale cuts of pork (see Figure 3.2) are the shoulder butt, picnic shoulder, loin, side, and leg.

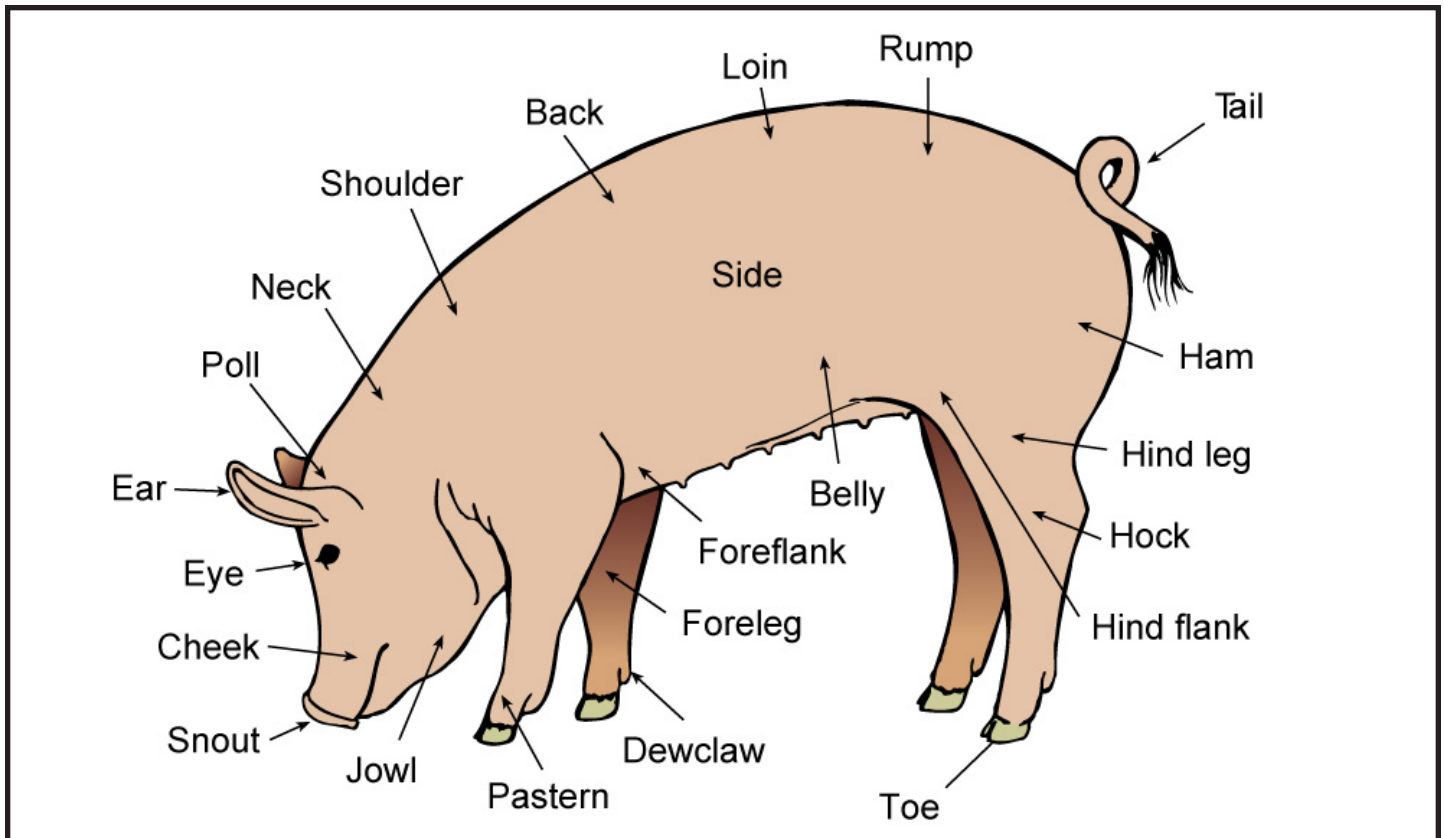
Figure 3.2 - Wholesale Cuts of Pork



Slaughter and Feeder Pig Selection

The demands of the consumer drive the selection of slaughter hogs. Retail consumers purchase lean and meaty cuts of pork. This trend has caused the industry to emphasize leanness. Other factors important in slaughter hog selection are muscling, size/age, and soundness.

Figure 3.1 - Parts of a Pig



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Leanness - Market hogs must be mostly free from fat to produce lean pork. When viewed from the top, a lean hog has an hourglass shape (see Figure 3.3). The loin will be narrower than its shoulder and ham regions. Also, lean hogs will be trim through the lower body.

Muscling - Heavily muscled market hogs produce more saleable pork than more lightly muscled hogs. Hogs should be evaluated for the expression, or definition, of muscle instead of pure thickness. Often market hogs that are extremely wide over their tops are fatter than is desirable.

Size/age - To be profitable, market or slaughter hogs need to reach the appropriate size at an acceptable age. Currently, the packing industry is demanding heavier market hogs. Market weight is usually between 240 and 270 pounds, reached at an age of 140 to 170 days.

Soundness - Soundness refers to the physical ability of the animal to get up and down and move with relative ease. Sound animals with good feet and legs are more productive and generally grow more quickly.

Selecting feeder pigs for purchase involves some of the same criteria. Feeder pigs should be selected for health, soundness, leanness and muscling, and frame size. Health

and soundness are emphasized because feeder pigs are young and light. They must grow and perform until they reach market weight.

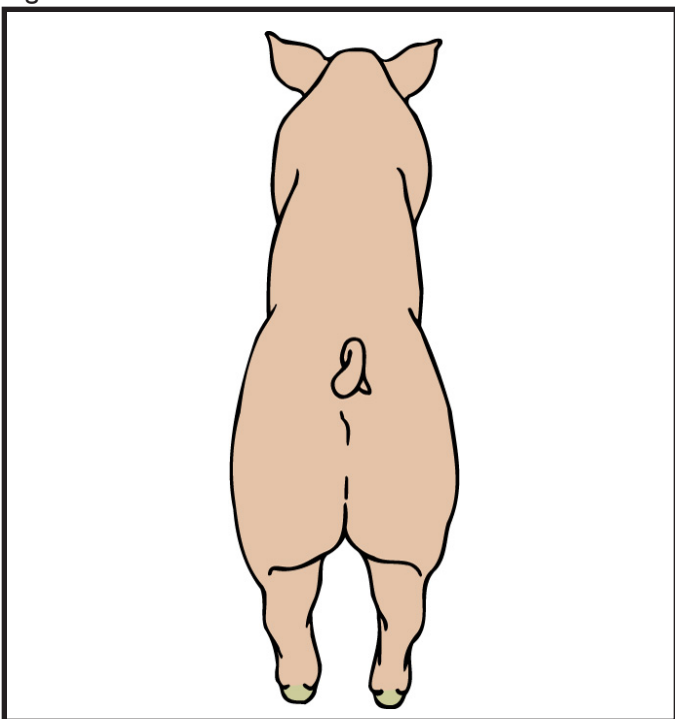
Health - Producers should purchase feeder pigs from healthy herds and vaccinate them against major diseases. Unhealthy pigs should not be purchased no matter the price.

Soundness - Being able to move with ease is a priority when selecting 50-pound feeder pigs. Young pigs that are injured or not sound are a high-risk investment. Production is decreased because they are more susceptible to diseases, grow more slowly, and have higher mortality rates.

Leanness/muscling - Feeder pigs should be extremely lean and display muscle expression at 50 pounds to maintain their leanness until they reach market weight. Leanness and muscle both contribute to the future cutability of the market hog. Cutability is the ratio of the percentages of saleable meat and fat from a carcass.

Frame size - Large-framed animals are desirable because they mature later and stay leaner at higher weights. Small-framed pigs should be avoided. Large-framed animals are taller, and the cannon bones in their front legs are longer than those of smaller-framed animals.

Figure 3.3 - Leanness



Breeding Swine Selection

The selection of hogs to be used as breeding animals should focus on the efficient production of lean pork. Breeding animals should be evaluated for reproductive soundness, skeletal soundness, growth and potential production, frame size, and leanness and muscling. Superior animals excel in all these traits. Producers should never select animals on a single trait without considering the others.

Reproductive soundness - Reproductive and skeletal soundness are priorities in the selection of breeding hogs. Boars should have two functional testicles. Females should have fully developed vulvas and functional underlines (the outline of the underbody) with a minimum of six teats and preferably seven teats per side.

Skeletal soundness - Most hogs are raised indoors on concrete floors. They must be skeletally sound to survive, grow, and reproduce in confinement. Hogs need to have

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proper skeletal angulation; the legs should be straight and set at the proper angle from the body (see Figure 3.4). Hogs should also be able to move with ease.

Growth/potential production - Breeding animals are selected for fast growth and high production. Producers should note the age of the animal when it reaches 230 pounds, referred to as “days to 230”; fewer days are more desirable. Breeding gilts should be selected from large litters of pigs, because a sow that can raise a large litter has mothering ability, which is a desired trait. They must also have an acceptable body capacity. A large body capacity allows animals to consume greater amounts of feed.

Frame size - A large frame size is important in producing lean animals at high weights. Large-framed animals remain leaner at heavier weights than do small-framed animals.

Leanness/muscling - To produce lean and heavily muscled market hogs, breeding animals must share these traits. Breeding stock should be leaner and more muscular than average. Producers should use ultrasound to look at backfat and loin eye area, which are the best indicators of

leanness and muscularity. Adjusted backfat scans at 240 pounds should be between .6 and 1.1 inches, while loin eye areas should be more than six square inches.

Along with making a visual appraisal, producers can look at several important indexes when selecting breeding animals. They are the Sow Productivity Index (SPI), Terminal Sire Index (TSI), and Maternal Line Index (MLI). They use Expected Progeny Differences (EPDs) to evaluate the potential worth of animals for breeding. EPDs look at the expected performance of the offspring of an animal. All three of the indexes assign an average parent a specific value; a higher number indicates an animal that is superior in the traits examined.

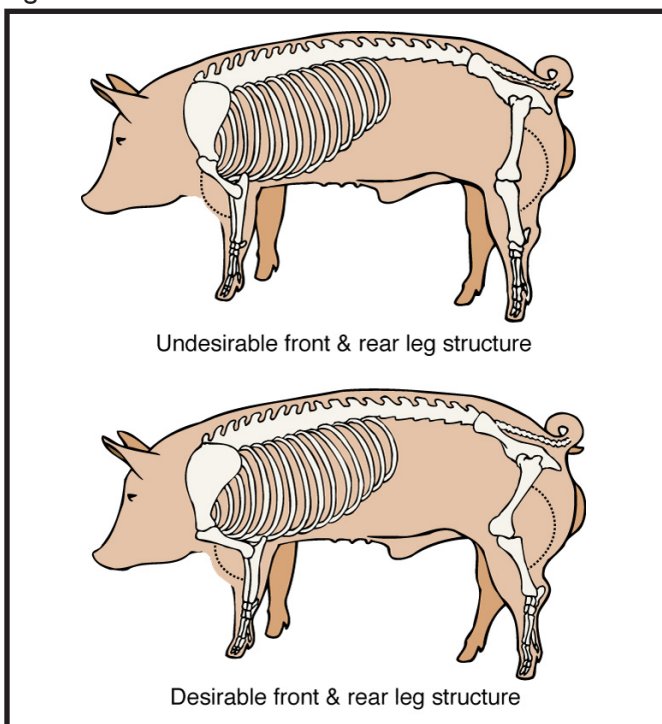
Sow Productivity Index (SPI) - The SPI looks at EPDs for 21-day litter weight and number born alive. SPI numbers above the average indicate animals that should produce daughters that have larger and heavier litters. The SPI should be used when selecting animals for reproductive traits. Each point of the index equals \$1 per litter produced by the daughters of a boar or sow. Litters of sows or boars with an SPI of 105 are \$5 more valuable than an average animal with a value of 100.

Terminal Sire Index (TSI) - The TSI uses data on leanness and growth, looking at EPDs for the number of days to 230 and for backfat. Animals with above average TSI values will produce animals that are leaner and grow more quickly than average. TSI should be used to select terminal sires. Points on the index are worth \$.10 per pig sold, or \$1 for every ten pigs sold. A boar with a TSI of 110 should sire pigs \$1 more valuable than those from an average boar valued at 100 points (10 points x \$.10 = \$1.00 per pig).

Maternal Line Index (MLI) - The MLI looks at EPDs for both reproductive traits (21-day litter weight, number born alive) and growth data (days to 230, backfat). Animals with above average MLI ratios will have higher reproductive and growth values. This index should be used to select replacement gilts. Like the SPI, points are worth \$1 per litter produced by the daughters of a boar or sow.

Indexes are determined by using data from the animal and its ancestors and offspring. The breed associations calculate the ratios, which are generally used for registered

Figure 3.4 - Skeletal Soundness



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animals. Individual producers can calculate variations on the indexes mentioned above.

Summary

Individuals interested in swine production must learn the proper names for the parts of a hog and for wholesale cuts. Producers should select slaughter and feeder animals to produce lean pork for consumers. Selection of breeding hogs involves making a visual appraisal and using indexes, such as the SPI, TSI, and MLI.

Credits

Boggs, Donald L., and Robert A. Merkel. *Live Animal Carcass Evaluation and Selection Manual*. 4th ed. Dubuque: Kendall/Hunt Publishing Company, 1993.

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“What are EPDs?” http://www.ansc.purdue.edu/stages/stg_user.html#What_are_EPDs (2 June 1997).