OKLAHOMA
CareerTech

Introduction to Agriscience

Unit 6
The Swine Industry

Student Edition

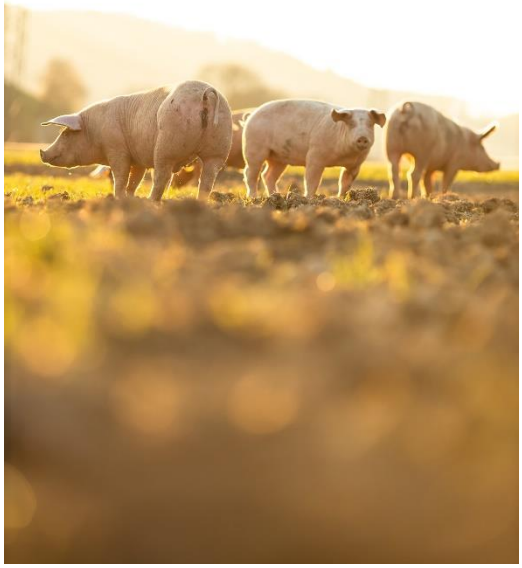
CIMC

AG3001

Unit 6
The Swine Industry

Pigs were one of the first animals to be domesticated, and the Chinese were the first to raise wild pigs for food. ***Pork*** is the meat of pigs, and the production of pork has seen many changes over the years with the most dramatic of these changes occurring within the last few decades. At one point in time, many small family farms each raised relatively few pigs. Now, large farms, though fewer in number, each raise large numbers of pigs.

Swine are useful as meat animals, research animals, entertainers, and pets. There are not many other animals that can claim so many occupations. Some people think pigs are dirty and ignorant. In fact, pigs wallow in mud to stay cool because they don't have the ability to sweat, and they are as intelligent as dogs.



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OBJECTIVES

1. Discuss the history of the swine industry and its role today.
2. Identify major breeds of swine and their characteristics.
3. Locate the key parts of a hog.
4. Identify consumer products derived from swine.
5. Apply the universal ear notching system.

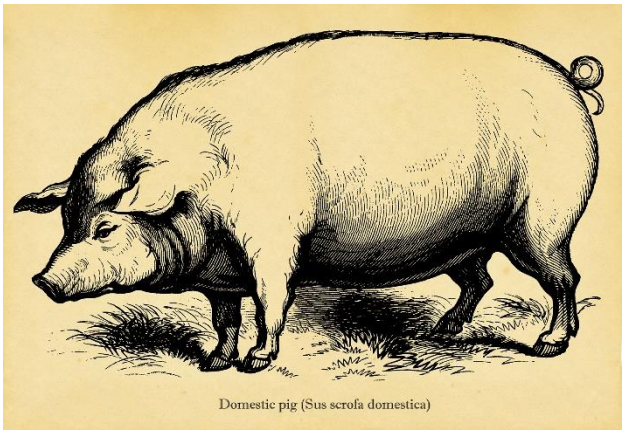
KEY WORDS

barrow
boar
erect
farrow
gestation
gilt
lard
litter
porcine
pork
sow
wean

Swine Industry History

The pig has been a part of human life for several thousand years. There is evidence that humans may have used pigs as early as Neolithic times. The Chinese were the first to domesticate pigs, perhaps as early as 7000 B.C. Europeans were raising pigs by 1500 B.C. The pig has been with us long enough to have found a place in nearly every facet of our lives — in our food (the average American eats more than 60 pounds of pork products each year), our literature (ever read *Charlotte's Web*?), our cultural icons (don't forget Miss Piggy), our language (hogwash!), our health (insulin and heart valves), and even the backbone of our economy (Wall Street is so named because it is where Manhattan residents built a wall to protect their dwellings from scavenging pigs).

The domestic pig descends from two wild types — *Sus scrofa* is a European wild boar, and *Sus vittatus* is an East Asian pig. The genus *Sus* means pig, and the species *scrofa* or *vittatus* determines the type of pig. ***Porcine*** is a general Latin term relating to all pigs. While Christopher Columbus brought pigs on his voyage to the New World, Hernando DeSoto is credited with starting the first pig herd in North America. Thirteen pigs landed with him in Florida in 1539. Those 13 pigs began breeding, and three years later the colony had a herd of 700 pigs.



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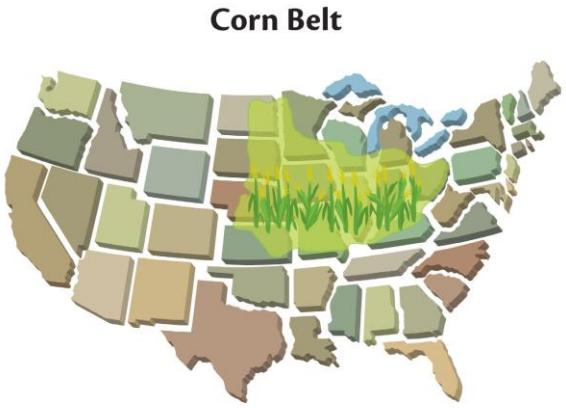
Other explorers and colonists brought their share of pigs to the New World. By 1660, pigs in the Pennsylvania Colony numbered in the thousands. Most farmers kept a few pigs, which supplied meat for their families and provided additional income. For most of their history, pigs were allowed to scavenge for their food, or they were fed household scraps and garbage. Finishing pigs on a corn diet first became common practice in Pennsylvania.



In the mid-1800s, Cincinnati, Ohio, became the first city to commercially slaughter pigs. As refrigerated transport became available in the latter part of the 19th century, pig production began to concentrate in the Midwest "corn belt." Producers took advantage of the abundance of grain available in this area to feed their pigs, and production became cheaper than raising pigs close to consumer centers.

Iowa has long been the country's largest producer of swine. Before the 1950s, ***lard***, or fat, was a major product from pigs. People used it extensively in cooking, as well as for making soaps and candles. Until that time, pigs were developed to produce large amounts of fat. Since the advent of vegetable oils and synthetic products that have largely replaced lard, pigs have been developed to emphasize the type of meat the health-minded consumer wants. The modern pig produces leaner meat and much less fat than its ancestors.

Major Breeds

While there are not as many different breeds of swine as there are cattle, there are still several breeds from which to choose. Each breed has been developed to emphasize certain characteristics. Breeds can be identified by observing the color of the animal, its general size and shape, and the type of ears, either ***erect*** (upright) or drooped. Breeds whose names end in "shire" have erect ears. The Duroc, Hampshire, and Yorkshire breeds are three of the most popular breeds in the United States

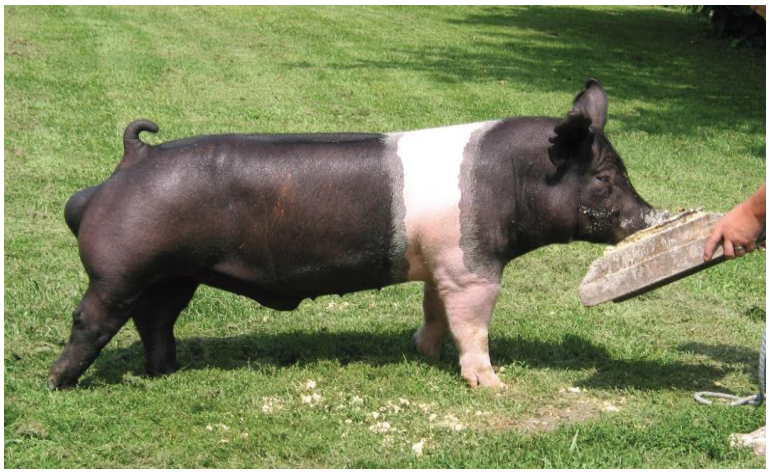
The Duroc is known for its variations of red color and droopy ears. It is desired by breeders for its meat production. The Hampshire is a heavily muscled, lean-meat breed that is identified as being black with a white belt circling its shoulders, front legs and feet. The Yorkshire is known as the "mother breed" with its white body and erect ears.

Other breeds produced in the United States include the Berkshire, Chester White, Spot, Poland China, and Landrace. Some of the less popular breeds include the Pietrain and Hereford. These breeds all have desirable characteristics depending upon the use and personal preference. Some breeds have superior mothering qualities while others contribute to high-quality meat production.

Duroc

Durocs were developed in the U.S. and are a solid red color with no white on their body. There can be variation in the color, ranging from a very light golden red to a very dark red. This breed has a medium-length body and a slightly dished face. The ears droop over the eyes and should not be held erect. The Duroc is considered a good meat-type hog.

National Swine Registry photo



Prairie State Semen, Inc. photo

Hampshire

The Hampshire was developed in Kentucky from imported Old English pigs. They have a distinctive color pattern. The body is black with a broad white "belt" that encircles the shoulders, including the front legs and front feet. The body is medium length, and the ears are erect, not covering the eyes. Hampshires are a heavily muscled, lean-meat breed.

Yorkshire

Developed in the county of York, England, the Yorkshire has a white body with small, erect ears. The goal of the Yorkshire breed is to be a source of durable mother lines that can contribute to longevity and carcass merit. The breed motto is, "The mother breed and a whole lot more."

CIMC photo

SAE IDEA:
<u>Research</u>
Test the selection of young pigs based on grade and lean yield at slaughter.

Berkshire

As one of the oldest identifiable breeds, the Berkshire, originating in England, has a black body with six white points (the feet, face, and tail tip). The ears are short and erect, and it may also have splashes of white on the body. The Berkshire is a breed with traits of fast and efficient growth, reproductive efficiency, and meatiness. At one time, it was a popular lard breed.

Prairie State Semen, Inc. photo

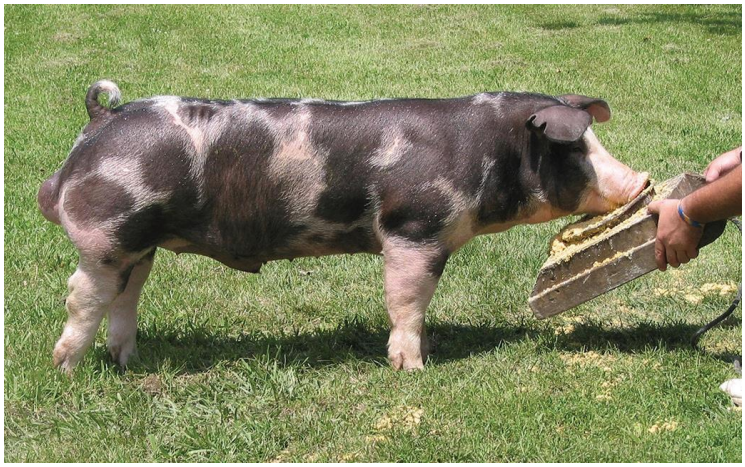
Chester White

Prairie State Semen, Inc. photo

The Chester White has an all-white body with drooping ears. It is named for Chester County in southwest Pennsylvania where it was developed in the early part of the 19th century (1800s). The sows are known to be very prolific with, on average, more than 11 pigs weaned per litter. Chester Whites also have good mothering ability, durability, and soundness.

Spot

The roots of today's Spot breed can be traced to the Poland China. Once called the Spotted Poland China, the breed was largely developed in Ohio and Indiana. The Poland China was dropped from the name in 1960. The breed is known for its spotted body with an ideal ratio of 50 percent black to 50 percent white. Its ears are forward leaning or drooped, and they are fast-gaining and feed efficient.



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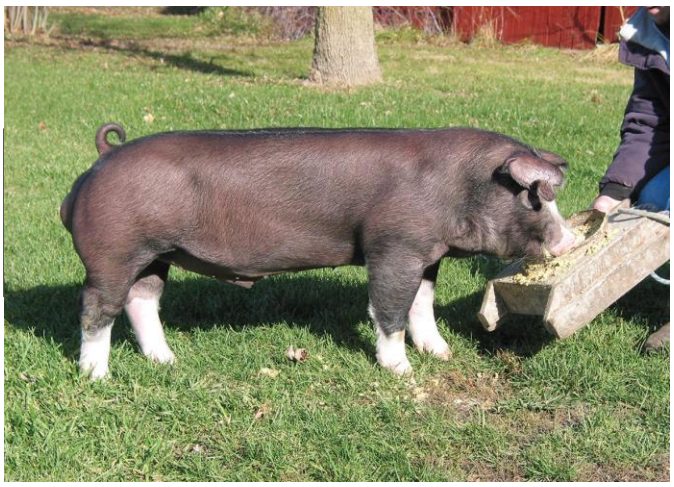

Prairie State Semen, Inc. photo

Poland China

This breed came from neither Poland nor China. Rather, it was developed in Ohio and the origin of its name is a mystery. The Poland China has a black body with six white "points" - the feet, nose, and tail tip – and drooping ears. This breed was originally considered a lard-type hog, but recent selection efforts have resulted in the breed conforming more to a meat-type hog.

ABOUT THE NATIONAL SWINE REGISTRY

The National Swine Registry (NSR) was formed in 1994. Four breed registries were combined to create the NSR—Hampshires, Landraces, Durocs, and Yorkshires. These four breeds represent 87 percent of the total purebred hog population in the United States. Genetic trends are monitored for all four breeds and incredible advances have been made in recent years. For more information about the NSR, visit their web site at **www.nationalswine.com**.

American Landrace

Also known as the Landrace, this breed was developed using a foundation of Danish Landrace hogs. They may look similar in color to a Chester White; however, the Landrace is longer bodied with larger ears. The Landrace is known for its mothering ability and prolificacy with an average 10 to 12 pigs per litter. The breed is typically gentle, but the large ears interfere with vision, which can easily startle a hog if approached unexpectedly.

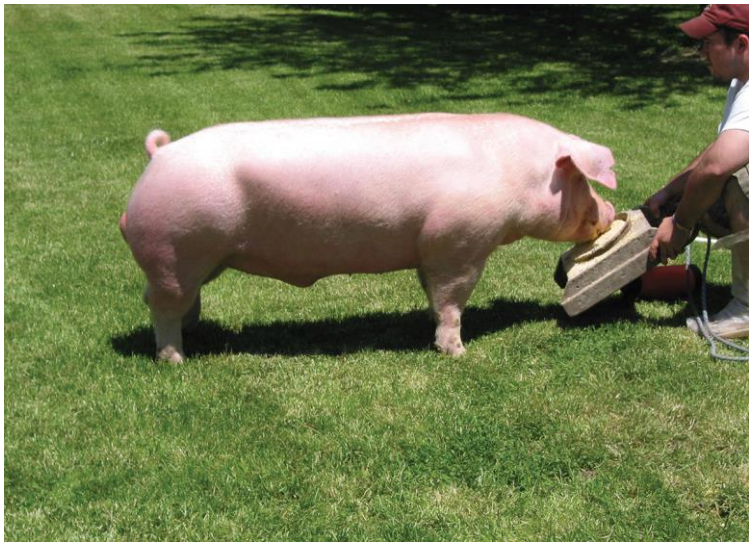

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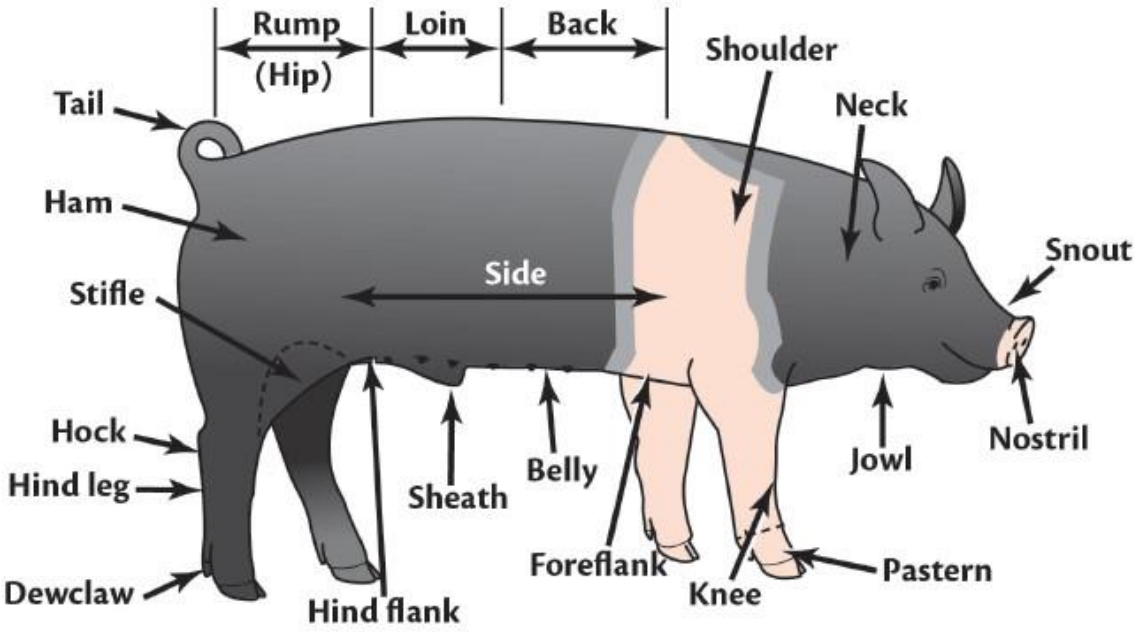
Photo provided

Hereford

The Hereford breed was developed in about 1920 by a group of breeders in Iowa and Nebraska. The Duroc and Poland China was used along with possibly some Chester White and Hampshire hogs to develop the bloodline. Once the Hereford was established, a breed registry was opened in 1934. The Hereford breed has a white face with not less than two-thirds red aside from the face and ears. The pig should have at least two white feet not less than one inch above the hoof. The shade of red can vary from light to dark.

Parts of a Hog

It is important to know and use the correct terms for the parts of the body when discussing swine. When evaluating the muscling of a hog, the ham, loin, and rump are often the focus. To determine the amount of fat a hog may have, the jowl, shoulders, and loin are often viewed. The sheath is specific to male hogs – boars or barrows.



A ***boar*** is a male hog that has not been castrated and can reproduce, while a ***barrow*** is a castrated male hog.

An immature female is a ***gilt***. After a gilt is bred, she will ***farrow***, or give birth. On average, swine will give birth to 8 to 10 pigs, also known as a ***litter***. Once the gilt farrows a litter of pigs, she is then termed a ***sow***. It takes a gilt or sow an average of 114 days (3 months, 3 weeks, 3 days) from breeding to farrow, which is called ***gestation***. A producer will ***wean*** the litter, or remove from the mother, somewhere between 3 to 6 weeks depending upon facilities, care, and production schedule.

Consumer Products

In the past, farmers who raised pigs took pride in using "everything but the oink." This ability to get every possible use from a resource is still important today and is just one aspect of the sustainable agriculture concept. These days, however, the products and uses that are gained from swine range far beyond any that the long-ago farmer could have imagined.

Human health care is one area where swine contribute in unique ways that other animals cannot duplicate. Many of their physiological systems, such as the cardiovascular and digestive systems, are very similar to our own. For this reason, pigs are used in different types of health research and to produce a variety of health-care products and medicines.

WHY DON'T PEOPLE IN SOME CULTURES EAT PORK?

In some cultures, laws were handed down that pork was from an "unclean" animal and was not to be eaten. Even though some of the reasons for avoiding pork were based on religious beliefs, this made a great deal of sense from a health perspective. Hundreds of years ago, the risk of eating contaminated pork was very high. Obviously, refrigeration and freezing were not available. Salt for preserving meat was a precious commodity, as was firewood for smoking meat. Illnesses due to the consumption of contaminated pork can be life threatening. Today, sanitation, proper preparation, and safe handling of pork, coupled with up-to-date farm management and inspection practices, have reduced the threat of contamination in foods. But for people living hundreds of years ago who did not have access to a safe food supply, it can be said that early religious laws functioned as the world's very first "health departments."

Animal models in research

Pigs are considered an excellent animal model for conducting cardiovascular research. The pig's heart-to-body-size ratio is like a human's. Pigs are also susceptible to several of the same cardiovascular diseases and stressors. They have been used in research on diabetes, alcoholism, gastrointestinal diseases, peptic ulcers, liver transplant studies, wound healing, and plastic surgery. Pigs used for medical research are not slaughtered for human consumption.

SAE IDEA:
<u>Exploratory</u>
Conduct a survey of all livestock operations in your area.

SAE IDEA:
Entrepreneurship
Raise pigs for breeding, show, or market.

Treatments for wounds and diseases

Swine are the source of over 40 kinds of medications. Other treatments derived from pigs include the use of tissue from pig skin to treat severe burns or skin rashes, pig heart valves as replacements for human heart valves, and insulin taken from the pig's pancreas gland to treat diabetes. In addition to its contributions to the health care industry, the pig offers by-products in other areas as well.

Household

The fatty acids and glycerin from slaughtered pigs are ingredients in many products: cellophane, floor waxes, insulation, plastics, and matches. The bones from slaughtered pigs are used to create such items as bone china, glass, glue, porcelain enamel, and water filters.

Hobbies

The fatty acids and glycerin from slaughtered pigs are used to make chalk and crayons. The blood from slaughtered pigs is used to create fabric dye. Hair is used to make artist's brushes. And, as most people know, a football is sometimes called "pigskin" because leather from pig hides is often used to make them.

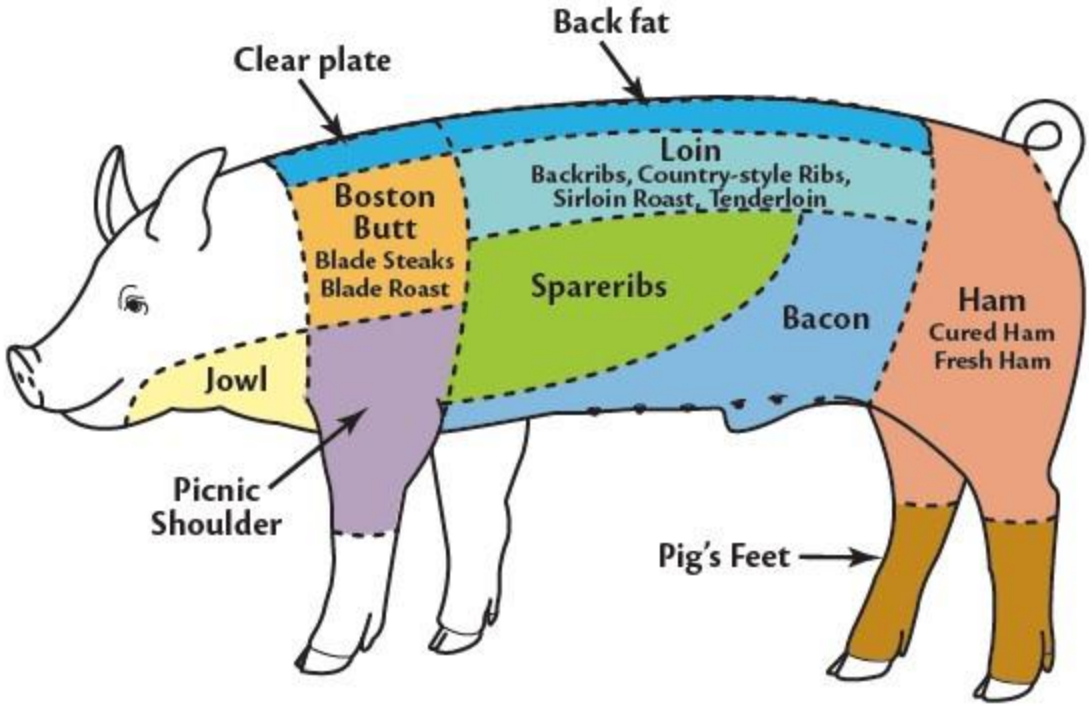
Thinkstock Photos

Industrial/Agricultural

The fatty acids and glycerin from pigs are ingredients in cement, antifreeze, rubber, insecticides, and weed killers. Bone meal and manure are used for fertilizers. Swine play a vital though largely unrecognized part in our lives. So, the next time you feel inclined to call someone a "pig," remember how pigs help us live longer, healthier, happier lives. You will be giving that person a compliment of the highest order.

Food Products

When you think of food that comes from swine, you might think about bacon, ham and sausage. Those are very common food products, yet other foods use by-products from swine, such as gelatins and pork rinds. According to the USDA, Americans eat approximately 50 pounds of pork per person each year.



SWINE FLU? IS THERE SUCH A THING?

Years ago, a strain of Influenza A, also known as H1N1, was labeled a pandemic by the World Health Organization. This strain of flu was first labeled as "swine flu" because it was thought to have originated from swine. After genetic testing of the virus, scientists concluded that the virus is very different from the virus that typically circulates in North American pigs. The novel H1N1 virus has genes from European and Asian pigs, along with birds and humans.

Universal Ear Notching System

The Universal Ear Notching System is used by pork producers to identify pigs. Notches made in the pig's right ear identify the litter in which it was born. Notches made in the pig's left ear give the pig a unique number from that litter. The pig's "name" is its litter number combined with its individual number.

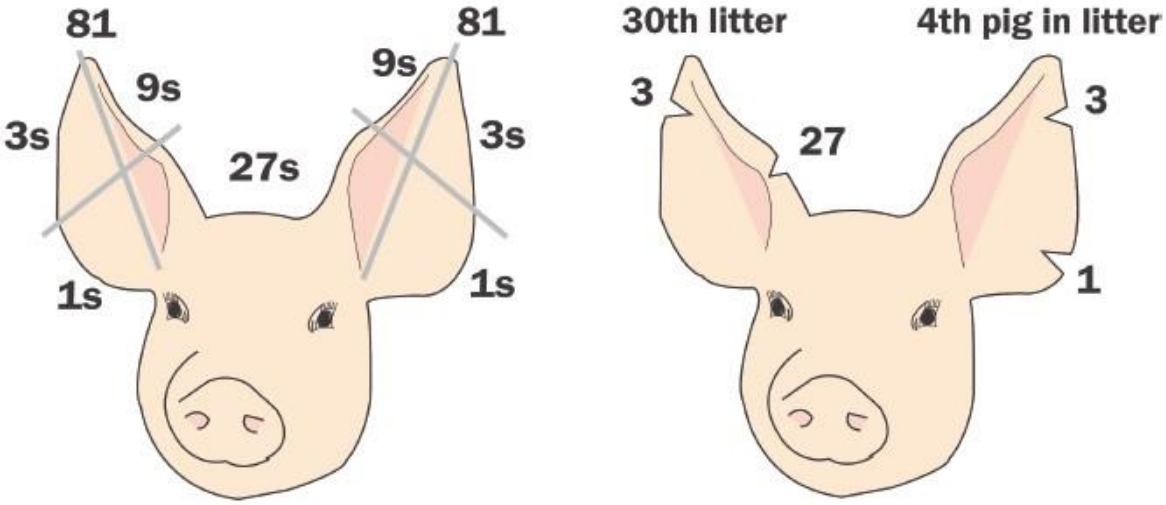
For example, a pig born in the 42nd litter of the year at a particular farm, and the last in a litter of 8 would be pig 42-8. The "dash" is spoken, so you would say, "forty-two dash eight" to refer to this pig.

Each ear is divided into numbered quadrants. There can be up to two notches in each quadrant, and the tip of the ear can be notched as well.

SAE IDEA:
<u>Placement</u>
Work for a swine breeder or corporate swine facility.

- Each notch in the outside, lower quadrant counts as “1”
- Each notch in the outside, upper quadrant counts as “3”
- Each notch in the inside, upper quadrant counts as “9”
- Each notch in the inside, lower quadrant counts as “27”
- A notch in the tip of the ear is “81”

All the notches in the pig’s right ear are added to make the litter number. All the notches in the pig’s left ear are added to make the individual number. With this system, all numbers between 1 and 161 can be represented.



In the picture above, this pig’s ear notches show that it comes from the 30th litter on the farm that year, and it was the 4th pig in the litter. On the litter ear, one notch in the 3 quadrant plus one notch in the 27 quadrant adds up to 30. On the individual ear, there is one notch in the 1 quadrant, plus one notch in the 3 quadrant. This adds up to 4. The pig is 30-4.

UNIT SUMMARY

Swine, wild and domesticated, have been a part of human existence for thousands of years. Throughout the years, the use of hogs has shifted from a fatter animal to one that produces a much leaner meat in response to consumer demand. The variety of breeds allows producers to select a breed for its meat production or mothering ability. Many times, breeds are crossed to combine traits most desirable into one animal. Swine have been used in many ways from research to medicine and glue to paintbrushes with the most popular use being meat products. Beginning in the Neolithic times, swine proved to be useful and continue to do so today.

UNIT REVIEW

1. How has the production of pork changed over the years?
2. What two wild pig types do most domestic hogs originate?
3. Who started the first pig herd in North America?
4. Why is the largest hog population in the Midwest?
5. What in a breed name will indicate erect ears?
6. Choose four breeds and describe the physical characteristics of each.
7. Name three breeds that originated in the U.S.
8. Which breeds are known for their mothering ability?
9. What is the difference between a boar and barrow?
10. How long does it take a pig from the point of breeding to have a litter of pigs?
11. What have been some research uses of swine?
12. Name five household uses of swine products.
13. Draw and label a pig with the universal ear notching system quadrants.