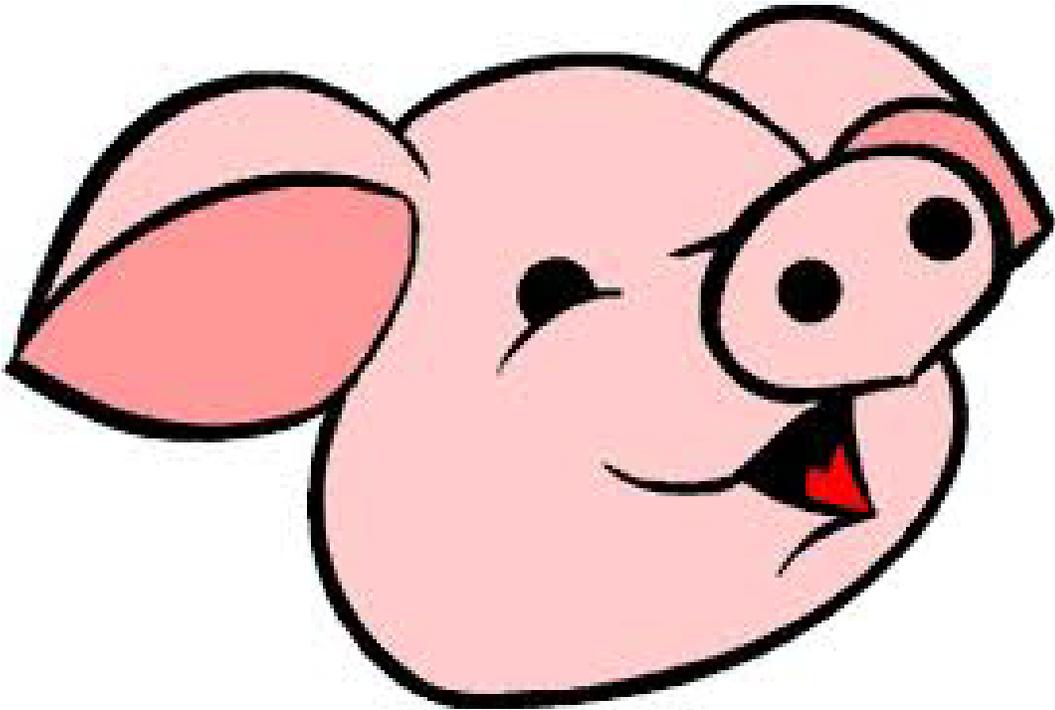


Market Swine Knowledge Test Study Materials



Compiled by Trey Haag and Emma Fischer 2023

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Animal Welfare

Facilities and Components of Living

When preparing to buy your breeding gilt or market barrow, it is necessary to consider and think about where you will keep your swine project. All larger animals require enough space for growth and development. In the best situations, pigs require a covered area with misters during the day (especially in the warm fall months), an adequate amount of space for water and feed, and a place with bedding to sleep in. There are many factors that are important to think about when deciding your facility for your project. These factors include: Electricity, ceiling height and ventilation, flooring and shaving type, wash area, storage, drainage, convenience and accessibility and waste disposal areas.

Electricity

This is important to keep your animal properly in the correct temperature and lighting purposes. Unsure that all outlets are in a safe location- out of a pig's reach and eliminate the potential hazard of extension cords running across the ground.

Ceiling Height and Ventilation

Protection from the sun is necessary for pigs with any white skin. To keep them cool and protected from the sun, a shade cloth or covered barn will help especially in the warmer months. Ideally, ceilings in an open- air barn should be at least 10 feet tall. Barns with lower ceilings will cause the barn to be a warmer temperature due to heat radiating from the ceiling. If you have an open-air barn it should be located so that prevailing winds can blow in and aid in ventilation. Fans can be affixed into the barn to aid in cooling the barn down. It should be 90°F or less throughout the barn ideally so that they have constant fresh air. Lastly, for insulated barns 8 feet tall is the minimum height that ceilings should be.

Heat Lamps

When temperatures fall below 60°F, it is advised to add heat lamps to the pens. Affix heat lamps where they are at least 12 inches and no more than 18 inches from the top of the pig's back while standing to avoid burning your pig. Adding straw to the bedding will also help in keeping warm.

Flooring and Shaving Type

Avoid slick surfaces in the walkways or aisles of your facilities. If you have a slick surface, consider putting rubber mats down to provide a surface that is safe and provides more traction for your livestock. Sand or pine shavings are ideal for bedding in covered pens. These options are not only comfortable but easy to clean as well.

Wash Area

When washing or bathing your livestock it is ideal to have a concrete area to do it on. This helps the area away from mud in the area and on your animal.

Storage

It is important to consider having adequate dry storage space to put feed, equipment, and supplies. Feed should ideally be kept in a separate secure area closed off from the rest of the barn to aid in keeping rodents away from the feed, preventing mold growth, and maintaining quality. To keep moisture out of an open bag of feed, it may be helpful to roll the top of the bag down to close it.

Drainage

Proper drainage is important so that water (whether it be from washing your pig, cleaning the floors or mats, wetting down shavings, filling water troughs or from rain) does not build up in and around the barn. Standing water around the barn promotes a favorable environment for pests and bacteria growth, which can be harmful to you and your swine project.

Convenience and Accessibility

It is important to think about the accessibility of loading and unloading your swine project into a trailer for various purposes. It may also be beneficial to think about if trucks or trailers are likely to get stuck trying to access your facilities in the case of transporting during or after significant weather.

Waste Disposal

Pens should be cleaned at least twice daily to decrease the amount of flies, disease, and odor (ammonia) to keep your swine project's living quarters clean and comfortable. Having a place to make a compost pile away from the livestock is key in the waste disposal. Manure is also a fly attractant which is why it is important to keep disposal a good distance from the living facilities of your livestock project.

Fencing (Runs)

In a typical run for a pig is comprised of a covered area with pine shavings, another covered concrete area where the pig is fed and watered, and a space where the pigs can move freely throughout the day that is partly covered. A good option for fencing is a panel fence as it aids in preventing skin injuries from the pig.

Feed Troughs

Pigs are known for knocking off their feeders if they are not affixed to the fencing of their run so unsure that they are properly secured to avoid spillage for self feeders. Another option for a feeder is a hanging trough. They are used for hand feeding pigs and are easy to clip to the fencing. Make sure to clean out the feed troughs regularly to ensure quality feed is being consumed.

Water

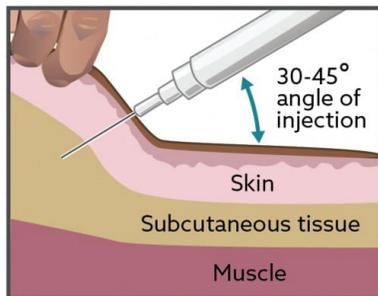
Water nipples and water bowls on a float system are the most used options for watering in the swine industry. Where you place the water dispenser is important so that your animal can access it with ease and kept in the shade so your animal is not drinking warm water. Make sure to have clean fresh water at all times.

Modified from Texas 4-H Explore Book Series - Swine

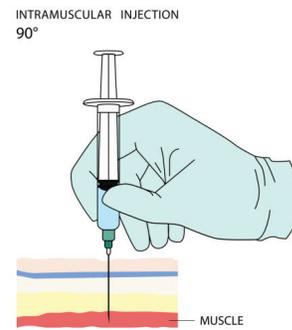
Administering Medications

To help prevent diseases caused by infectious viruses and bacteria, it is important to consider applying a vaccination program for your livestock. The purpose of a vaccine is to boost an animal's resistance to a disease. Ensure that when administering vaccines to read the label for age of animal, injection site, route of administration, proper storage temperature, withdrawal period and more.

For swine, the only place that is acceptable to give a vaccine is in the neck. Never give injections in the hip. Two of the main types of injection styles that are used in the swine industry are intramuscular (IM) which is within the muscle and subcutaneous (SQ) which is under the skin.



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The 5 Freedoms

- 1) Freedom of Hunger and Thirst
 - a) By ready access to fresh water and diet to maintain full health and vigor
- 2) Freedom from Discomfort
 - a) By providing an appropriate environment including shelter and a comfortable resting area
- 3) Freedom from Pain, Injury, or Disease
 - a) By prevention or rapid diagnosis and treatment
- 4) Freedom to Express Normal Behavior
 - a) By providing sufficient space, proper facilities and company of the animal's own kind
- 5) Freedom from Fear and Distress
 - a) By ensuring conditions and treatment which avoid mental suffering

Animal Health and Well-being

Animal well being/animal welfare is the ability of an animal to cope with its environment and living conditions. Well-being includes an animal's ability to perform natural behavior, an animal's health and biological functioning, and an animal's feelings or emotions.

Three Circle Model of Animal Well-being

1. Basic Health and Functioning

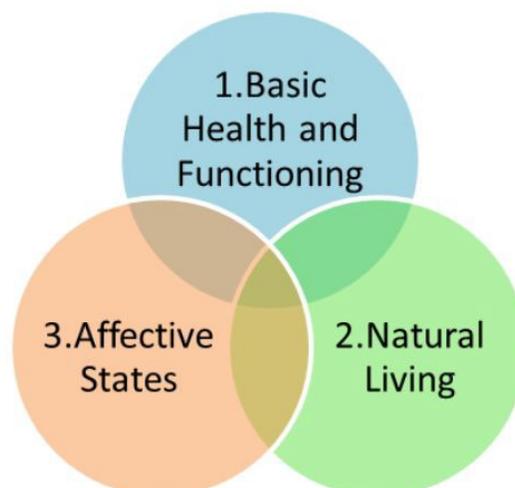
The basic health and functioning concept addresses the physical fitness of the animal. This includes good health, normal body function, and normal growth and development. Circle 1 relates closely to freedoms from hunger and thirst (Freedom 1); discomfort (Freedom 2); and pain, injury, and disease (Freedom 3).

2. Natural living

The natural living circle emphasizes that animals should be able to lead reasonably natural lives. This includes the ability to perform important, natural behaviors and to have some natural elements in their environment. Circle 2 relates closely to the freedom to express normal behavior (Freedom 4).

3. Affective states

The affective states circle considers the emotional state of the animal. Animals should feel mentally well and not be subjected to excessive negative emotions that can cause unreasonable stress. Negative emotions may include pain, hunger, and distress. Animals should be able to experience positive emotions in the forms of pleasure or contentment through play or social contact. Circle 3 relates closely to the freedom from hunger and thirst (Freedom 1); pain, injury, and disease (Freedom 3); and fear and distress (Freedom 5)



Signs of Poor Well-being

Most times you can notice signs that your animal is either sick or in pain. These are some of those signs to look out for when checking your animals; being less social than usual, eating and drinking less than usual, inactivity, inability to get up from a lying position, using the same area for resting and defecating/urinating, huddling, shivering, sleeping, and resting more than usual, dull, dirty skin, dull eyes, discharge from the eyes, nose or other areas, vomiting, and any other injuries or sores anywhere on the body.

Causes of Poor Well-Being

Swine are not in control of their environment and therefore are dependent on actions that are or are not taken by their caretakers. Humans can have a negative effect on swine in many ways : neglect, cruelty or abuse, abandonment, and crowding.

1. Neglect: Failing to care for an animal. Not providing adequate food or water. Restraining the animal in a way that causes pain or endangers health. Ignoring illness, injury or disease, and not providing veterinary care.
2. Cruelty or abuse: Causing physical harm and/or pain to the animal , such as prolonged periods of thirst, hunger, or restraint and immobility.
3. Abandonment: Deserting swine without providing means for long-term care.
4. Crowding: Not providing sufficient room, especially room to stretch and turn around fully.

Feeding and Feedstuffs

Importance of Water

Water is the single most essential nutrient your livestock project(s) require in their diet. If your project does not have access to water their body will be unable to maintain itself. It is very important that you supply your project with clean, fresh water at all times. Your swine project normally drinks two times as much water as their daily feed intake on a per pound basis. It is important to consider how much water your animal will need when giving them a watering system in their living quarters. Your project may require more water depending on different influences including diet, temperature, climate, age, level of production, and even breed. In the hot summer months, it is important to remember to provide your swine project with fresh, cool water everyday to help them regulate their body temperature and stay cool in the hot temperatures.

Feed Rations

Within any feed ration it is necessary to have the 5 components of rations; Energy, Protein, Minerals, Vitamins, and Water.

Energy: Common examples of energy within a swine diet are corn and milo. These are also the cheapest source of energy as well. You can also use wheat, oats, and barley for the energy component of the feed ration for feeding swine.

Protein: Common examples of protein within a swine diet are soybean meal, fish meal, or commercial protein concentrates. 2 factors about protein that are highly important is the amount of protein within the ration and the quality of said protein. Average protein requirement for growing pigs (50-125 lbs) is 15-16% and for finishing pigs (125-140 lbs) is 13-14%.

Minerals: Common examples of minerals within a swine diet are through either grain (energy) and protein sources or mainly from mineral supplements. A couple of the main mineral supplements that make up the largest mineral requirement are calcium, phosphorus, and iodized salt.

Vitamins: Common examples of vitamins within a swine diet are direct sunlight, dehydrated alfalfa meal, and synthetic sources like vitamin premixes. Vitamins regulate many body functions and are essential for rapid growth of pigs.

Water: (See Importance of Water above)

Good Feedstuffs vs Bad Feedstuffs

The quality of feedstuffs you provide your swine project will heavily affect your projects' performance, disease resistance, and health. Low-quality feedstuffs can contain pathogens that may be extremely harmful to your swine project. These pathogens can easily be passed from your swine project to you, low-quality feedstuffs may also contain harmful components that may also cause harm to you. Not only is it important to provide your livestock with the necessary nutrients, it is important to select a feed that is of good quality for your project, you, and consumers.

Providing a quality feed is important to ensure your project is receiving all the essential nutrients from their feed as possible. Bad feed may be stale, moldy, contain too much moisture, or have an unappetizing taste to your animal. Good feed will be high in nutritional content, have good flavor, will be appetizing in appearance, and will smell fresh.

The difference between feeding good feedstuffs versus bad feedstuffs may be minimal sometimes, but it may also be drastic. Feeding low-quality feedstuffs can result in poor appetite, a higher feed conversion ratio, slow growth, and may even lead to death of your livestock. For these reasons, it is important to always trust in the feedstuffs you are feeding your project, and to know where the ingredients are being sourced from. If you plan to switch the feed your livestock is eating, it may be helpful to do some research to ensure it is a high quality feed that you can trust will be good for your project.

Reading Feed Tags

Nutrition is one of the most important things to have a successful 4-H livestock project. Understanding feed tags will help to make sure that your animals are getting the proper nutrition for the requirements that they need. The following list is the information that will be on a feed tag and a description of the item.

Product Name and Brand Name: This will always be on the label and generally has an unique name for it

Purpose of Feed: This will explain which species and stage of production the feed is meant for. (Growing/Finisher Ration)

Medication and Active Drug Ingredients: This will not always appear in the feed tag. It will only appear if the word MEDICATED is below the name. Along with that it will state the purpose of the medication, list of active ingredients, and amount of medication within the feed.

Guaranteed Analysis: This will display the main ingredient percentages. Some of the more predominant percentages that will be present is minimum percent of crude protein (crude protein is determined by multiplying the nitrogen content of a feed by 6.25), minimum percentage of crude fat (fat has an energy value around 2.25x the value of carbohydrates), maximum percentage of crude fiber (this is a measure of the indigestible or non-useful portion of a feed, a lower crude fiber is more desirable), minimum and maximum percentage of calcium, minimum percentage of phosphorus, minimum and maximum percentage of salt, and minimum vitamin A in International Units (IU) per pound.

Ingredient Statement: This is the list of ingredients used to make the feed. The list will always go in order of highest concentration/amount to lowest.

Feeding Instructions: Directs how the product should be fed.

Warnings and Cautions: This will only be on the label if the feed is medicated.

Distributor Name and Address: This tells you the name of the company that is either making the feed or distributing it.

Net Weight: This tells you the weight of the feed in the bag.

Feed Efficiency

Feed conversion ratio (FCR) is defined as a measure of an animal's efficiency to convert feed into increased body mass. You want a lower FCR. When the FCR is lower this tells us that the animal needs less feed to get a heavier weight. The average FCR for swine is 3:1-3.2:1. This states that it takes swine on average 3 pounds of feed to create a 1 pound increase in body weight on that animal. The formula for FCR is Feed intake/Animal weight gain.

Average Daily Gain (ADG) is defined as the average amount of weight a market animal will gain each day during the feeding period. You want a higher ADG. This states that your animal gains more per day possibly compared to other animals. The formula for ADG is the weight of the animal/number of days on feed.

Example Problem: You fed your market barrow 32 lbs and as a result it gained 10 lbs. What is the FCR of your barrow?

$$\text{FCR} = 32 \text{ lbs of feed} / 10 \text{ lbs gained}$$

$$\text{FCR} = 3.2 \text{ or } 3.2:1$$

Example Problem: A gilt weighs 280 lbs at 6 months of age. What is the ADG of this gilt?

$$\text{ADG} = 280 \text{ lbs} / (365/2) = 182.5 \text{ days}$$

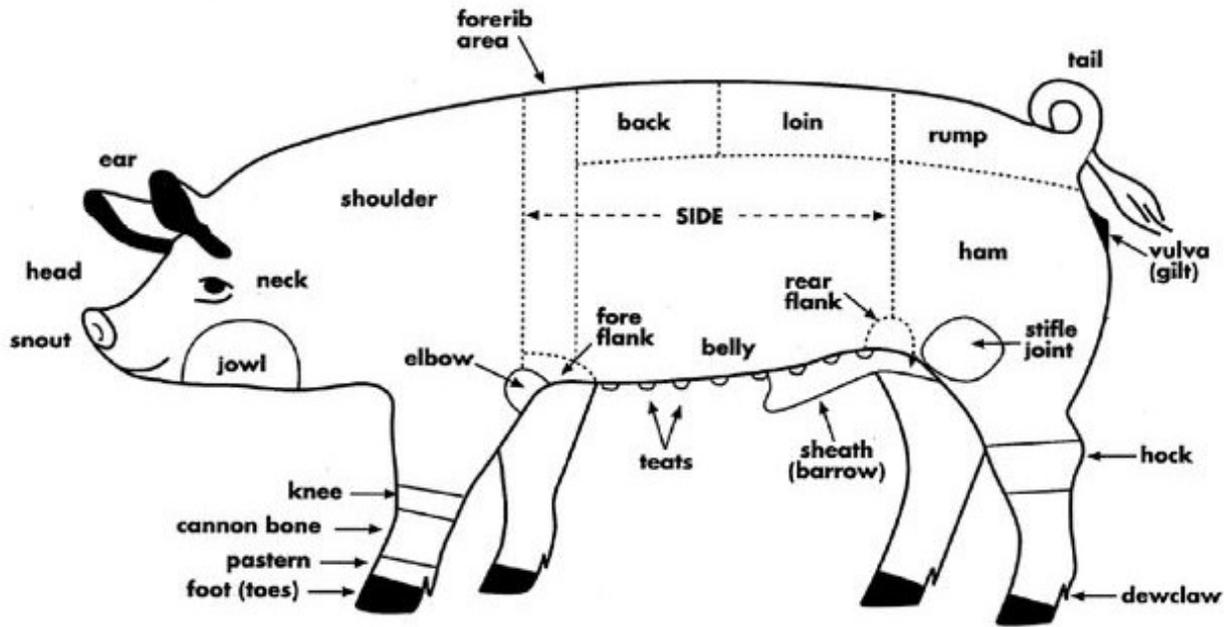
$$\text{ADG} = 280 \text{ lbs} / 182.5 \text{ days}$$

$$\text{ADG} = 1.53 \text{ lbs per day gained}$$

Some factors that could impact these numbers are genetics, age of the animal and quality of feed. Genetics can cause a difference as certain breeds have higher growth rates compared to other breeds. The age of the animal will have an impact as younger animals have a quicker growth rate compared to older animals. Quality of feed can determine a lot for your livestock project. If you have a poor quality feed they will not gain weight and get the required nutrients that are needed for that animal.

Anatomy

Parts of the Animal



Imported from National Junior Swine Association

Meat Cuts

Things to know about the meat product from livestock:

1. Dressing Percentage (DP) : Determined by the quantity of carcass weight (HCW) divided by live weight (LW) multiplied by 100
 - a. Example: LW = 280 lbs and HCW = 203 lbs What is the DP?
 $DP = (203 / 280) \times 100 = 72.5\%$ (This is the average DP for swine)
2. Calculating Loin-eye Area : Loin-eye Area is calculated by placing a grid over the surface of the cut and counting all the dots surrounded by the meat of the cut. This number is then divided by ten. The result of this calculation is the loin-eye area in square inches.
 - a. Example: You counted 45 dots within the loin. What is the loin-eye area in square inches? $45 \text{ dots} / 10 = 4.5 \text{ square inches}$ (the average loin-eye area is 3.5-7 square inches)
3. PSE pork is a quality problem that is currently impacting the industry. PSE stands for pale, soft, and exudative.

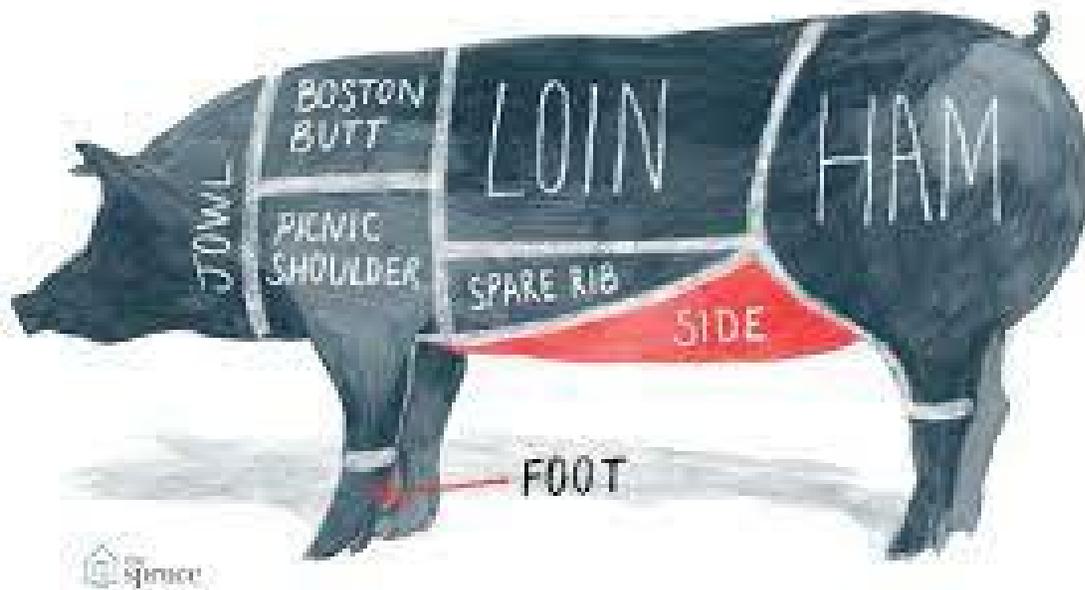


Image Imported from The Spruce Eats

Interior Anatomy

Pigs are monogastric animals which means that they have a single chamber stomach. Pig's digestive tract is very similar to humans. Just like humans, digestion starts at the mouth with the act of chewing and breaking down the feed. It then goes through the esophagus and down to the stomach where your saliva and stomach acids start breaking down the feed. In the small intestine, enzymatic digestion further continues the process and also the small intestine absorbs nutrients from the feed. Once the feed is through the small intestine it goes to the large intestine where fermentation happens and water absorption as well. Lastly anything that was not absorbed by the body is then excreted via the feces.

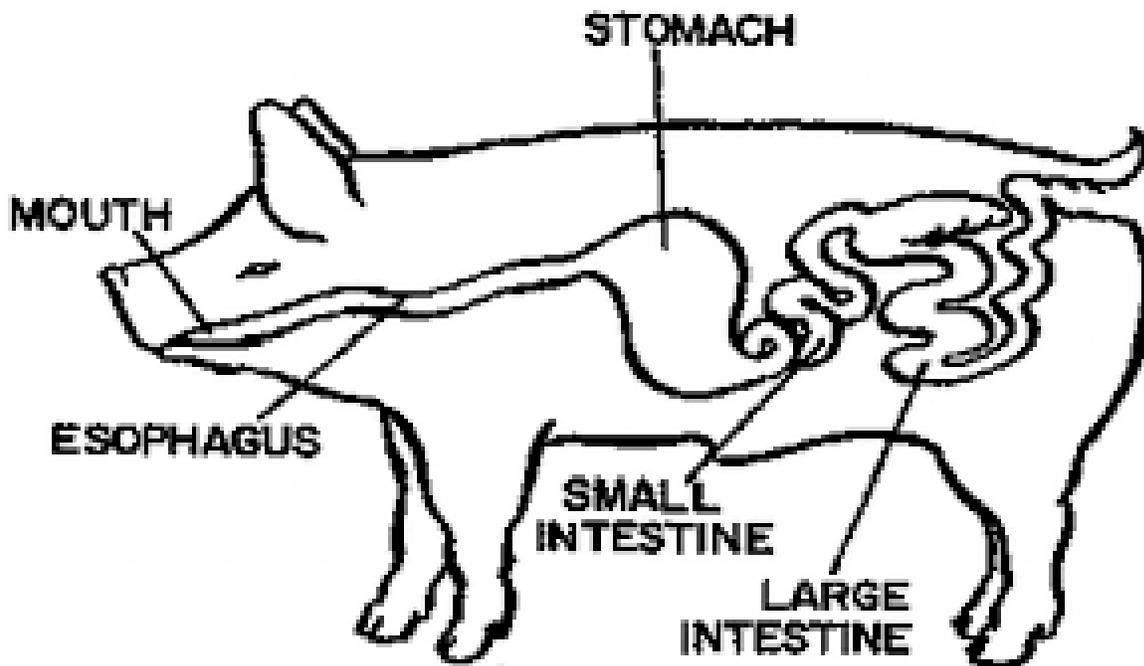


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Structure

If possible, it is beneficial to pick a project that is structurally sound. Soundness refers to having correct structure within the animal's skeleton or body. It is important to take notice and understand any feet or leg structural issues your swine project may have. If they have issues they might not be able to perform or function. Here are some of the qualities you want for the soundness of your swine project.

Feet: The feet should be facing straight ahead. Stay away from feet that point either in or out.

Legs: A pig's legs should stand straight and square.

Hocks: The hock is the joint in the back leg between the ham and hoof. Stay away from animals that are sickle-hocked, post-legged, bowlegged, and cow-hocked

Sickle-hocked: When viewing the rear legs from the side of the animal, the hock has too much angle, which causes the animal to stand too far underneath themselves.

Postlegged: The hock of the hind legs has too little angle. The animal is too straight through the joint in their hind legs, resulting in very restricted movement because they lack the flexibility within their legs.

Bowlegged or pigeon toed: When viewed from the front or rear of the animal, the knees are set too far out, which causes the toes to turn inward towards each other.

Cow hocked or splay footed: When viewing the hind legs from the rear of the animal, the hocks are turned inward or appear too close together, which causes the toes to turn outward away from each other.

Pasterns: These are the joints that connect the fetlock to the top of the hoof. The pasterns should make a 45 degree angle with the ground.

Shoulders: Their shoulder should run smoothly with its neck and make a 45 degree angle with the body.

Diseases and Disease Management

Common Species Diseases

When caring for your swine project, it is important to familiarize yourself with some of the diseases that are common to your project. Livestock can often get sick and show little symptoms, so ensuring you look closely at your animal everyday could be the difference between being able to help your livestock versus losing your livestock. Being able to recognize/diagnose, know how to treat, and know the prevention of these diseases is an important skill to obtain to care for your swine project.

Biosecurity is also another big aspect to help prevent disease spread in the swine industry. Biosecurity is defined as procedures intended to protect humans or animals against disease or harmful biological agents. Some ways to put biosecurity measures into practice is an all-in all-out procedure. All-in all-out means that when you get new animals, you want to have the first batch out of the barn before you take in new animals and potentially new diseases. Another method is through showering in and showering out. This way you shouldn't be able to bring any new diseases in and any diseases out of the barn. It should stay contained within the barn site.

African Swine Fever (ASF): A viral disease in swine that originates from Africa. It is mainly transmitted through soft-bodied ticks, lice, and flies.

Signs/Symptoms: High fever, loss of appetite, loss of balance, refusal to stand or move, vomiting, bloody discharge, extremities become a blue-purple color, abnormal breathing.

Treatment: None

Prevention: Do not feed food waste/food scraps, follow all biosecurity measures that are in place for your barn (and if there is none adopt some biosecurity rules)

Porcine Reproductive and Respiratory Syndrome (PRRS): A viral infection that affects all age groups. This disease is the most economically significant disease in the US today. PRRS destroys up to 40% of the pig's macrophages (a certain type of white blood cell). The white blood cells are the main thing that give the animal protection from other infections.

Signs/Symptoms: Coughing, abortions, early farrowing, fever, discoloration of the skin, increased stillbirths, lethargic (refusal to stand or move),

Treatment: None directly for PRRS. Use antibiotic treatment to help prevent secondary infections. For younger pigs extra warmth is necessary. Electrolytes to help aid in dehydration.

Prevention: Vaccination and not purchasing new animals for at least 8 months to let PRRS run its course through the herd

Porcine Epidemic Diarrhea (PEDv): Is caused by a coronavirus. There are 2 types of PEDv. Type 1 only impacts growing pigs while type 2 impacts all ages of pigs. PEDv harms the villi (cell surface) in the gut of the pig. This in turn reduces the amount of absorptive surface area in the gut and causes diarrhea, dehydration, and loss of fluid. Transmitted mainly through fecal to oral.

Signs/Symptoms: Watery diarrhea, vomiting, and anorexia

Treatment: No specific treatment for this. If affected make sure to keep warm, well hydrated and dry.

Prevention: Strict biosecurity measures and sanitation

Greasy Pig: Caused by the bacteria *Staphylococcus hyicus* which causes damaged skin and also damage to the kidneys and liver. Primarily affects piglets and weaning/grower pigs.

Signs/Symptoms: Lesions behind the ears and flank, flank and belly area will turn brown, skin will become wrinkled and have a greasy feel, if it continues long enough parts of the skin will turn black.

Treatment: Antibiotics for 5 days daily. Some antibiotics that can be used are amoxicillin, OTC, and penicillin. Topical application of antibiotics is also an option. Novobiocin can be mixed with mineral oil and sprayed onto skin.

Prevention: Biosecurity measures, infections may be coming from new concrete surfaces or metal floors that are rough, check up after clipping tails and teeth.

Scours: Also known as diarrhea. There are many ways that pigs can get scours. TGE, PEDv, PRRS, rotavirus, coccidiosis, and E. coli are just some of the main ways that pigs can get scours. Primarily seen in younger pigs (piglets and weaning pigs)

Signs/Symptoms: Dehydration, sunken eyes, huddled together shivering, watery and off colored diarrhea and vomiting

Treatment: Provide electrolytes for dehydration. There are some antibiotics for E. coli but not the virus infections. Cover the pen with shavings or similar bedding to help with the excess fecal matter. Provide extra heat with a heat lamp. Use binding agents like chalk or kaolin to absorb toxins in the gut.

Prevention: Make sure that you implement an all-in all-out procedure with your animals. Disinfect frequently. Be observant with your herd when you start to see issues arise.

Transmissible Gastro-enteritis (TGE): This disease is caused by a coronavirus and is similar to PEDv. Like PEDv the disease destroys the villi. This can be spread very easily within a herd.

Signs/Symptoms: Watery diarrhea, vomiting, and dehydration

Treatment: No specific treatment but antibiotic treatment via mouth might possibly reduce secondary infections on top of this.

Prevention: Disinfecting properly, good management practices (biosecurity), be observant of new or odd appearances within your herd.

Swine Dysentery (SD): This disease is caused by a small bacterium called *Brachyspira hyodysenteriae*. Can be found in all ages but mainly affects growing pigs.

Signs/Symptoms: Fever, depressed, loss of appetite, sunken sides, watery diarrhea with blood and/or mucus and dehydration.

Treatment: Some antibiotics available but can only get them from veterinarian prescription. Lincomycin, Tiamulin, and Tylosin are the antibiotics that are available.

Prevention: Good management practices and cleaning out your trailers everytime they are in use.

Porcine Parvovirus (PPV): This is a virus that is a common cause of infertility in swine. It is harmless to humans and other livestock. Parvovirus is easily widespread as it can stay in the environment for months and is resistant to most disinfectants.

Signs/Symptoms: Mummified piglets at farrowing, increased number of stillbirths, smaller litters, and low birth weights.

Treatment: None

Prevention: Routine vaccinations and good management practices.

Ringworm: This is a fungal infection that appears on the skin. It can be spread from animal to animal and can be transferred from animal to humans.

Signs/Symptoms: Brown, circular, slowly enlarging areas on the back, flank, and behind the ears, lesions

Treatment: Topical fungicide spray to spray directly on it

Prevention: Thoroughly clean brushes, equipment, and anything else that the animal comes in contact with.

Hoof Rot: This is an infection caused by bacteria in the ground that enters the hoof through puncture wounds or constant wet conditions.

Signs/Symptoms: Lameness, swelling, and separation of the skin in-between the hooves.

Treatment: Clean the infected area. Add topical treatment or iodine spray for early treatment. Call the veterinarian if it worsens.

Prevention: Be observant of the constant wet conditions and good management practices.

Breeding and Breeding Cycles

Gestation

Gestation refers to the process or period of time of fetal development inside the womb between conception and birth. A sow's gestation period or pregnancy lasts about 3 months, 3 weeks, and 3 days or about 112-114 days. There are many factors that can affect the length of gestation including: diet, number of piglets, or a number of complications. Producers can use this table or similar tables to help plan out when to breed or not breed so that they farrow in the time frame that is most desirable for that circumstance.

SWINE GESTATION TABLE • 114 DAYS																																
Bred January	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	January
Farrow April	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	May
Bred February	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	--	--	--	February
Farrow May	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	--	--	--	June
Bred March	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	March
Farrow June	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	July
Bred April	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	--	April
Farrow July	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	--	August
Bred May	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	May
Farrow August	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	September
Bred June	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	--	June
Farrow September	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	--	October
Bred July	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	July
Farrow October	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	November
Bred August	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	August
Farrow November	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	December
Bred September	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	--	September
Farrow December	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	--	January
Bred October	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	October
Farrow January	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	February
Bred November	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	--	November
Farrow February	23	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	--	March
Bred December	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	December
Farrow March	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	April

Image Imported from The National Swine Registry

Estrus Cycle

Estrus or “heat” refers to the period of time when the female animals are signaling they are ready for mating or breeding. Estrus is the result of estrogen (female reproductive hormone) being produced within developing follicles on the ovary. Ovulation occurs shortly after the beginning of estrus. Pigs cycle into estrus continuously throughout the year which is called polyestrous. The estrus cycle is the length of time from one heat cycle to another. The estrus cycle of swine is between 18-21 days long and estrus or when the sow is “in heat” lasts around 50-60 hours or close to 2.5 days. For gilts their window for when they are in heat is significantly less at only 10 hours. Ovulation will happen from 36-42 hours after the onset of estrus.

As a producer it is important to be able to recognize the signs of estrus to increase conception rates for the herd. The most common signs of estrus for swine are perked or twitching ears, rigid back and legs (“locked up”), swollen and reddened vulva, vocalization, mounting, heightened activity level, and secretion of the vulva. Looking for these signs is called heat detecting or heat checking. There are certain times when to heat check that would give you the best results when doing so. Generally it is checked twice a day and you want to do it at least 8-12 hours apart. Also heat checking during the cooler hours of the day is ideal.

Nutritional Needs

When getting started with breeding your animals it is important to consider the nutritional needs for the sow and the piglet during gestation and after birth to help minimize complications related to breeding soundness and nutrition. In order to determine if a sow/gilt is ready for breeding, a quality check is necessary. A quality check should be conducted 2-6 weeks prior to breeding to ensure time to prepare the livestock for the breeding season. While conducting the quality check, there are many factors to check in your livestock including: body condition score, up to date vaccinations, overall health, and weight.

Body condition scoring (BCS) is an important management practice that helps optimize production, evaluate health, and assess nutritional status. By scoring body condition, you are evaluating the amount of body reserves an animal has. By using the 1-5 scale for swine body condition scoring, producers can accurately determine if their herd is in good condition to excel during breeding. Both gilts and sows should have a BCS of 3 at breeding time.

Body Condition Scores for Swine

Condition Score 1- Emaciated

Condition Score 2- Thin

Condition Score 3- Ideal

Condition Score 4- Fat

Condition Score 5- Overly Fat

It is important to not only look at body condition during breeding but also after birth as well. The lactation period (when the sow is producing milk) has the highest nutrient requirements so it is important that your sow/gilt has enough body condition to support not only herself but her offspring too. It is also highly important that after birth the piglets need to get colostrum within their system. Colostrum is the “first milk” from the mother and is high in fat, energy, vitamins A and D, white blood cells, and growth factors. Since piglets are born with little to no antibodies, colostrum is important to newborn piglets as it provides them with immunoglobulin (antibodies that help fight off bacterias and viruses) rich nourishment.

Artificial Breeding Methods

Although natural breeding has been proven to work effectively, many producers choose to use artificial breeding in their breeding programs for a number of reasons. Use of artificial breeding can: aid in genetic improvement, allow for access to many more genetic gene pools, and control specific mating pairs. Because of these reasons for artificial breeding, it can often make the cost of artificial breeding worth it in the long run. The two methods of artificial breeding used in swine are artificial insemination (AI) and embryo transfer. AI is most commonly used in both stud and commercial herds, and embryo transfer is more commonly used in research purposes. Stud refers to breeding stock or a herd that was established for selective breeding of livestock to maximize the success of the stock.

Artificial Insemination (AI): A process in which farm managers or employees insert semen from frozen straws into the sow/gilt for impregnation. This process allows for improvement of genetics within the herd, saves time observing traditional breeding, and can allow for more chances of pregnancy.

Embryo Transfer: A process in which sows receive a hormone treatment to produce more than one egg. Sows are then AI'd to impregnate the multiple eggs. Seven days after insemination a veterinarian recovers the embryos to be transferred to another sow or gilt. This process allows for superior genetic pairings to produce more than one offspring in a single breeding season.

Identification System

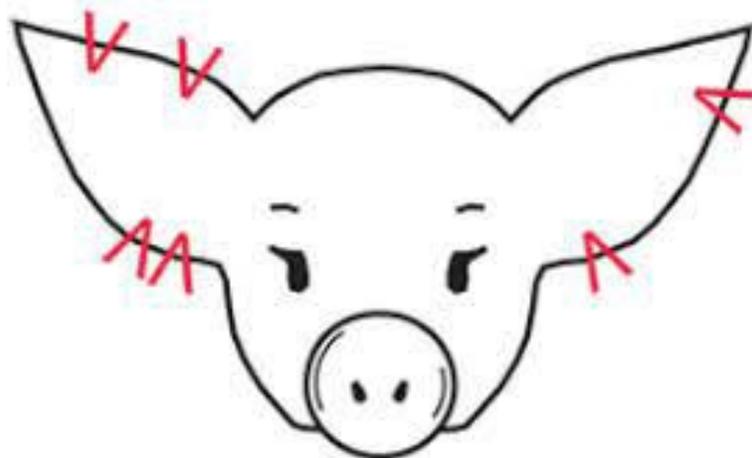
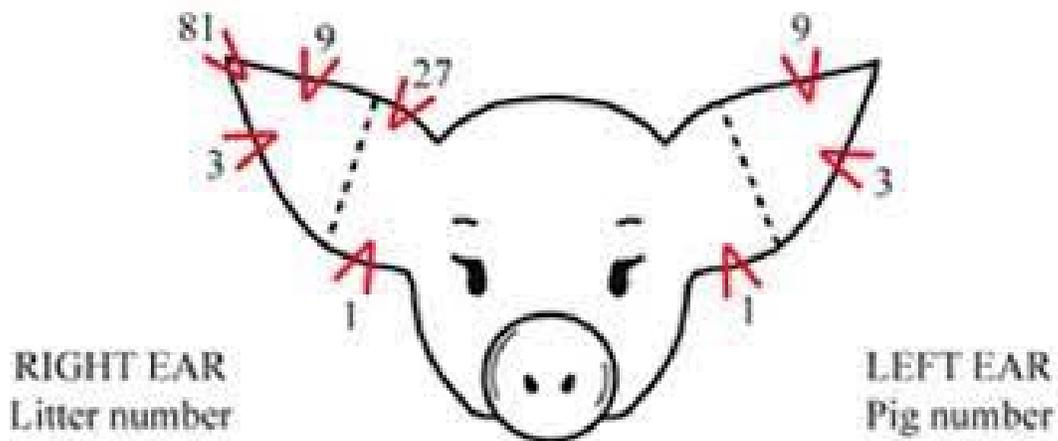
Importance of IDing

Animal identification is the main way to keep track of individual animals within your herd. Not only does it keep track but it helps with keeping accurate records of the animal like birthdate, parentage, production records, health history, and more. More benefits of identification is the ability to quickly identify an animal for use or culling, show origin of the animal, and overall makes the process more efficient.

Different forms of ID

In the swine industry there are multiple ways to identify your animal. You may have to abide by certain standards for identification but that is not always the case. There are five main forms of identification for swine and they are ear notching, ear tags, paint branding, tattooing, and electronic identification.

Ear Notching: This method is only primarily used in the swine industry although it can be used in other species. This is a permanent form of identification. Not every ear notching system is the same but all of them identify the pig by litter number and individual pig number. The process involves removing a V shaped portion of the pig's ear that corresponds to the numbers that they are. Ideally ear notching happens very early in life and will only cause a minimal stress to that animal that will heal in a week. The purebred swine associations of the US use this system. The litter number will be notched in the right ear and the individual number will be notched in the left ear. As you can see in the picture below there are number placements on the pig's ears. Along with the notch number placement you can only have two notches in each section. For example the second picture has an ID number of 38-4 or pig 4 in litter 38. In the right ear you see two notches in the bottom of the ear where the 1 notch is and then on the top of the ear is one notch in the 9 spot and one notch in the 27 spot. In the left ear there is one notch in the 1 spot and one notch in the 3 spot.



Ear Tags: Ear tags come in a variety of sizes and colors. Selection of a tag type depends on the size, age, and environment of the animal. Tags are pierced through the animal's ear, and allow for an animal to be identified from the front and rear. Information on each side of the tag can be identical or differ depending on operation preference. An ear tagger that corresponds with the type of tag should be used for application of the tag. Ear tags are a good identification option that is easy to use, inexpensive, durable to all kinds of weather, and easy to read. The downside to using ear tags is that they can be ripped from the animal's ear, can become too dirty to read, or can be worn to the point of being unreadable.

Paint Branding: This method of identification is a temporary form of identification. Paint branding is mainly used for separating pigs into specific pens, when offspring need to be identified with their parents, in the sale barn to visibly see what animal you want to purchase and many more purposes. Generally the left side of the animal gets "painted" for consistency purposes. Make sure to apply the brand evenly with a slight rocking motion back and forth and perpendicular to the pig's backbone. Also make sure that you do not have too much paint as it can run down the animal's back and become illegible.

Tattooing: This method of identification is permanent and is used in all species. The process involves imprinting an identification number or letters into the skin of the animal using indelible ink. The tool that is used for swine to tattoo is a tattooing hammer. The hammer acts almost like a stamp. Make sure to press enough ink into the hammer so that the tattoo will show up. Once you have enough ink find your placement for the tattoo. The ideal placement for tattoos on pigs is on the shoulder. The hammer should be swung with enough force to penetrate the skin for the tattoo to appear.

Electronic Identification: There are multiple different forms of electronic identification for example, electronic ear tags, electronic collars, and microchips. Some of the benefits of electronic tagging is once you scan the tag or chip you have access to all of the information that you have about that animal at the snap of a finger. It can also be used to automatically dispense feed to animals which is very handy. Although technology has its advantages there are some disadvantages to these methods of tagging. As with any ear tags, they can rip out of the ear or get lost so it is beneficial to have another tag in the ear just in case. Electronic collars are highly easy to use but can get caught on objects or possibly cause choking to the animal if not adjusted properly. A microchip is a small electronic chip that is implanted within the animal generally under the skin. The primary implantation sites are near the neck, between the shoulder blades, or near the base of the ear. There are also microchips that can be ingested. This method is relatively easy to get done but you need specialized equipment to read the microchip and it could also migrate to the meat of the animal which would cause issues down the road.

Breeds

Berkshire

This breed originated in England. Coloring characteristics include a black body with white face, feet, and tail. Known for their carcass quality, dish-faced snouts, and short erect ears.



Chester White

This breed was developed in Pennsylvania. Coloring characteristics include an all white body. Known for mothering ability and has medium-sized droopy ears.



Duroc

This breed was developed in America (New Jersey and New York). Coloring characteristics include a range of light red to dark red/mahogany colored. Known for their quick, efficient, growing ability, good mothering ability, and droopy ears.



Hampshire

This breed originated in England. It is said to be one of the oldest American breeds of swine in existence today. Coloring characteristics include a black body with a white belt around the shoulders and front legs. Known for having heavy muscling and erect ears.



Landrace

This breed originated from Denmark and has very small amounts of Poland China, and Swedish, Norwegian, and Danish Landrace within the breed. Coloring characteristics include an all white body. Known for having strong maternal traits, large floppy ears, and a long body length. This breed is primarily used in production settings.



Meishan

This breed originated in China. Coloring characteristics include a light to dark gray. Known for slow growth, fat, highly prolific, and wrinkled face and skin. Mainly used in the production industry for their high producing pheromones (scent that is given off to aid in arousal).



Poland China

This breed was developed in Ohio. Coloring characteristics include a black body and all white legs, tail, and nose. Highly similar to the Berkshire breed. Has heavy muscling, lean, and droopy ears.



Spotted

This breed was developed in Indiana. Spotted pigs are a cross between Poland Chinas and pigs in Indiana. Coloring characteristics include black and white spots all over the body. Known to be a fast gainer, aggressive breeder, and droopy ears.



Yorkshire

This breed originated from England. Coloring characteristics include an all white body. Known as the “mother breed” because of large litters and heavy milking ability. Has erect ears and a long large frame.



Modified from Oklahoma State University Extension: Breeds of Livestock - Breeds of Swine // Swine Learning Laboratory Kit; 4-H Swine Resource Handbook

Showmanship

Appearance

When in the show ring, it is important to present yourself and your project to the judge in the correct manner. Proper attire for the exhibitor would include a tucked in button-down collared shirt or nice shirt in general, non-ripped jeans, a belt, and boots or similar footwear. Some items that should not be worn in the show ring are baseball hats or similar, shorts, ripped jeans, and t-shirts (if not given for you to wear by show coordinators). It is always good to check dress code for a show if you are uncertain in case of any specific clothing requirements. Along with your appearance, it is important to practice good attitude in the ring as well. It is very important to stay calm and have a good attitude in the show ring, by being upset and nervous you can make your swine project upset and nervous as well.

Just like making yourself look presentable, you want to make your project presentable. Your animal should be clean, well-groomed, and possibly clipped if applicable.

Tools Taken into the Ring

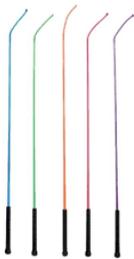
Before entering the ring, it is important that you are prepared and have all the tools necessary to exhibit your animal. When entering the ring you should have a small hand brush, a small rag, a pig whip or pig pole, water sprayer, and exhibitor number.

The brush and rag is used to wipe off any dirt or fecal matter on the pig to ensure your project is looking its best. Your brush and/or rag should be placed in your back pocket when not in use.

The pig whip or pole is the main tool to show your project. Pigs do not use halters so a driving stick is necessary. You use this to control and move your animal in the ring by tapping the pig in the jowl or side areas only. Never tap your animal in the ham or loin as these are high cuts of carcass. Generally exhibitors use the pig whip in their dominant hand and switch if necessary and done smoothly. Having a water sprayer is not always necessary but is handy to have to cool down your animal in warm weather.

The final thing you need in the show ring is your exhibitor number. Exhibitor numbers are needed to identify exhibitors in classes and ensure the correct animals are in the ring when necessary. Exhibitor numbers can be attached to the exhibitor in a number of ways. There are exhibitor number harnesses, clip holders, or a safety pin to attach to the back of your shirt works well.

Pig whip



Pig pole



Water sprayer



Exhibitor number



Modified from Oklahoma State University Extension: Swine Showmanship
Training Your Animal

It is important to keep in mind that showmanship should not start at the fair or day of show. In order to have the best chance of your animal behaving while in the ring it is important to work and train your animal months prior to the fair or show. To excel in showmanship working on your pig by washing, brushing, walking, and using the whip or pole prior to entering the ring is recommended.

Grooming your pig before the fair/show helps your animal create a positive connotation to the common practices of washing and brushing will help them feel more comfortable in a new environment.

Breaking your project should be taught very early on in the process to ensure that your pig will respond to you in the ring. To start breaking your animal, try to handle your pig possibly when they are eating. Doing this ensures trust between you and your project. Next, trying to drive your pig. The act of driving your animal is getting it to move with the whip or pole. When driving your pig it is important to understand how the pig will move when you tap it. If you tap its left jowl area it will move right and vice versa. So if you tap the pig's right jowl area it will move left. When doing it for the first couple times lead them to a place they are comfortable with like the feed bunk or water. Start doing this in smaller pens and work your way up to bigger pens and open spaces to keep control at all times. Breaking your project takes time and practice. Try not to get frustrated with your animal as they will recognize that you are frustrated or upset and will behave the same way.

Once your pig is comfortable with you and the whip and the act of showing, start practicing how to act with a "judge" in the ring. When showing your animal you should always have the pig be in between you and the judge. You should never be behind the judge. This ensures that the judge can see your pig at all times. Watch where the judge is at all times. You want to present all of your pig to the judge so that he can place your project accordingly. Your pig should always be moving around the ring. If your pig gets stuck in the corner, place your hands in front of their face to help move them. Your animal should walk at a moderate pace with its head held up enough to present an impressive style and attractive side view.

Although every judge's ring procedure may vary from judge to judge, there are some basic ring procedures that you should be aware of prior to entering the ring. Sometimes the judge may want you to enter into the ring one at a time or all together. When entering into the ring all together be cautious of other exhibitors and their animals to not hit one another when entering. During the main portion of the show you are going to be walking around constantly making sure that the judge can see all of your animal. At times the judge may stand in the corner or stand in the middle of the arena. No matter where the judge is, ensure that your pig is presented to the judge at all times. Another situation that might arise while in the show ring is the judge wants you to pen your animal. When penning your pig, walk your pig to the assigned area as quickly and efficiently as possible. Once at the pen, open it up, pen your pig, and close the gate. The main thing to remember when you are in a pen is to keep showing. Just because the judge placed you there doesn't mean they can't see you. Keep an eye out for instructions for when to leave or what to do when you are in the pen or just showing in general.

What are the offspring called?

What is marbling?

How by looking at your animal can you tell the age?

Age/Weight/Breed

Where's (insert body part) located on your animal?

What is something you like about your animal?

What is something you would change about your animal if you could?

What percent of protein and fat is your feed?

Name some cuts of meat.

What is your animal's daily rate of gain?

Name 3 other breeds besides the breed you are showing.

Why did you choose the feed you are feeding your animal?

What was your target weight for the fair and why?

How did you prepare your animal for the fair/show?

What is the current market price for your species?