



Swine Project Guide

The Texas 4-H Swine Project Guide was developed by the Texas 4-H Swine Project Team of Texas Cooperative Extension.

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Acknowledgments

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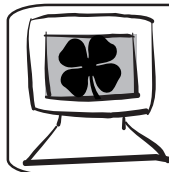
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For more 4-H
information click on
<http://texas4-h.tamu.edu>

4-H Swine Project Guide

Many 4-H'ers who have swine projects hope to raise champions. While only one entrant in a show is named champion, all exhibitors can benefit from the project. You will learn about the swine industry and how to produce a safe, wholesome product. You will also learn to assume responsibility and build life-long friendships with people all over Texas. The swine project is the largest livestock project in the state. About 26,000 youth exhibit pigs each year.

Raising and showing a champion pig requires dedication, hard work and a little luck. Selecting a good animal, providing good facilities, developing a sound feeding and health program, learning showmanship and paying attention to details every day are all important. Overlooking any one of these areas can prevent you and your pig from making it to the first pen.

Selecting a good animal

It is extremely helpful to know and understand the rules of the show in which your pig will be exhibited before you purchase your animal. The rules vary from show to show and change each year. Many factors, such as weight limits, will dictate the type of pig you will want to purchase. You will probably want to look at several young animals before making your choice. It would be helpful to have a parent, project leader, 4-H Master Swine Volunteer or county Extension agent go with you and help you make your decision.

Whether or not gilts (female pigs that have not had litters) are allowed to show may limit your selection. The date of ownership and validation procedures (such as ear tagging and ear tattooing) used to establish ownership by a certain date are important considerations. And, of course, the breed you choose is important as well. Understanding the rules of each show will prevent you from being disqualified because

your pig does not meet the criteria set by the show.

If you are showing your pig in a breeding gilt show, you will likely be required to show the registration papers for the animal that come from the breed association. Registration papers include a number assigned to the animal, the animal's date of birth, and the parents' registration information. The breeder is responsible for transferring the papers from his or her name to yours. The deadline to have papers processed for most shows is December 1. Read and follow the rules for the show carefully. You may have to allow a few weeks of turnaround time for the breed association to process the paperwork.

The importance of selection cannot be overemphasized. An animal's genetics largely determine its growth, muscling and leanness. Youth exhibitors usually select their animals when the pigs are 8 to 10 weeks old and weigh 40 to 80 pounds. The challenge is to try to predict what a 50- to 70-pound feeder pig will look like at market weight, which is about 260 pounds or 6 months of age. If you are able to wait until the pig is closer to 70 pounds before purchasing it, you will have a better chance of predicting how the animal will turn out. However, if you wait too long before buying your pig the selection may be slimmer.

Each exhibitor is looking for the "ideal" pig, but the criteria for "ideal" will depend on the preferences of the exhibitor, the rules for the particular show, the judge's opinion, the amount of time until the show, the season of the year and other factors. Before you go to the farm or sale to purchase your pig, decide what your "ideal" pig should be.

Whether you buy your pig at a sale or directly from a farm, you should buy from a breeder you trust.

Buying animals directly from a farm has some advantages. The animals are generally not exposed to other pigs where they could pick up diseases. You can often see pigs that

are related to yours (such as littermates and parents) at different stages of growth. That can help in predicting how your animal will perform in the future. The producer can give one-on-one attention to you as a customer and offer suggestions about feeding and raising your animal. It is likely that he or she will also have experience in finishing pigs. Finishing refers to the time period when the animal's growth slows and fat begins to deposit within and around the muscle.

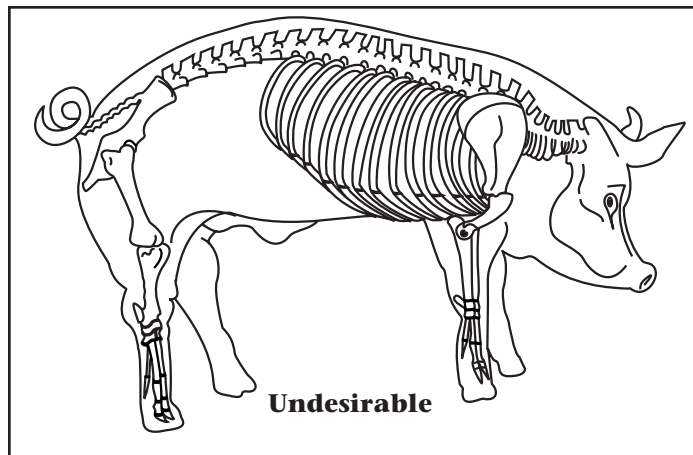
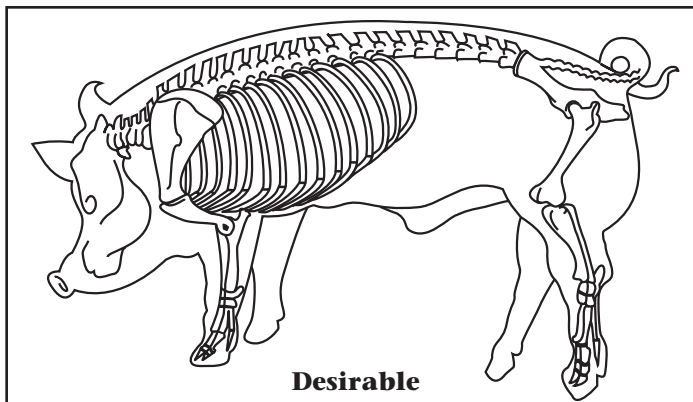
Most market swine are exhibited at about 6 months of age. Pigs younger than 6

months may have trouble making the minimum show weight. Pigs much older than 6 months may have to have their feed limited to stay under the maximum weight. Pigs that are "held" (given reduced feed) for a long period may appear drawn and stale and will not look their best on show day.

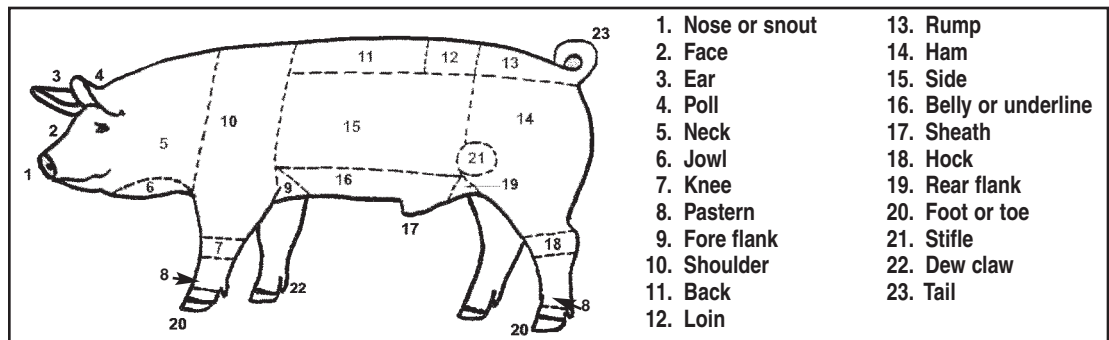
On the other hand, you would probably find a larger selection of animals at a sale where many breeders bring pigs to sell, especially if you are looking for a specific breed and weight. At a pig sale you can compare pigs from different breeders and save time driving from farm to farm comparing animals.

One of the most common mistakes exhibitors make when selecting a pig is not placing enough emphasis on feet and leg soundness. Soundness is an animal's ability to walk smoothly with body weight evenly supported on the feet and legs. Show pigs will become very muscular and large-framed, and if they have structural defects of their feet or legs they can become lame. Muscle tendons can attach only to bone, and extreme muscling places stress on the skeleton, causing lameness.

To help prevent lameness, select a pig with an adequate width of bone and angulation to the joints. Feet and leg problems in feeder (young) pigs will usually worsen as more weight and stress are added. When you are examining a prospective animal, step back from the pen or pig about 10 to 20 feet and watch the animal walk and move. Pigs should take long strides and appear to be comfortable while walking. Many show pigs "goose step" or swing their feet in front of them before placing them on the ground. This is definitely something to avoid. Any problems that are apparent when a pig weighs 50 pounds will probably get worse by the time the animal reaches 250 to 270 pounds.



Illustrations courtesy of the American Yorkshire Club.



As with other animals, pigs don't begin to fatten much until the end of their growing period, so the feeder pigs from which you will select your project animal will not and should not have much noticeable fat. Young animals usually look muscular because they do not have much fat on them. Young pigs should be lean. If an animal is heavily muscled in the top or loin area, it will likely be heavily muscled throughout the rest of the body. Places on the pig's body to look for muscle include the shoulder, the loin or top and the ham.

As a pig ages, it will begin developing fat. Animals fatten from the front to the rear of the body. The first place you may notice your pig laying down fat is in the jowl or chin area. Then fat develops in the shoulder area, down the top loin edges, the lower third of the body (underline area), the seam of the ham, and finally the pones, or around the tailhead. A pig won't drastically change its overall shape during the growing period; it will just change its dimensions and get bigger. For example, if the pig is short-bodied at 50 pounds, it will probably be short-bodied at market weight.

One criterion you should consider when selecting your pig is the presence or absence of the porcine stress gene. Ask if the breeder knows whether the boars or sows he or she used are stress-free. The stress gene causes a pig to be more muscular and lean but have lower quality meat. It may also cause the animal to be so excitable that stress can kill it. The swine industry is attempting to eliminate this gene from hogs. Most purebred swine associations now require a negative result on a DNA test of all animals applying for pedigrees or artificial insemination certificates. Although the stress gene is seldom found in commercial hogs, it is common in show pigs. Today, genetic practices can produce muscling and leanness without this detrimental gene.

Facilities

There is no one "right" facility for raising your pigs. The important factors to consider are:

- Will the facility protect your pig from the weather?
- Is it affordable?
- Is it easily cleaned and disinfected?

An animal that is not stressed by its environment (too hot or too cold) grows better and tends to be healthier. The primary goal is to provide an environment that allows the animal to fulfill its genetic potential to the greatest extent. In Texas, heat stress is a concern. Shade is extremely important, especially for white pigs that sunburn. Fans, misters and common sense can provide your pig with a suitable environment. Facilities do not have to cost a lot of money. For example, you can make a mister by poking small holes in a garden hose. In Texas, misters are not generally required during the winter. In fact, exhibitors should be cautious because pigs will not gain weight as well when they are cold and wet and may also be more susceptible to illness.

The pen should be long and rectangular in shape and open to the south, out of the north wind. In most situations, animals need access to a covered or enclosed area as well as an outside pen. Most pens have more than enough space, many being at least 6 feet wide and 12 feet long, although this varies a great deal. The more space you have, the more pigs you can put into the pen. Some type of bedding (straw, sand, shavings) should be used to keep the pigs warm, especially during the winter. It also helps keep them cleaner.

The flooring of a pen can be dirt, sand, wood or concrete. There are advantages to each. Dirt and sand are the cheapest and the easiest on the feet and legs of an animal, but



Strongly enforced fencing or livestock panels work best for pens. Facilities should include a covered and an open area with a wall to shelter animals from the north wind. Three-sided sheds open to the south work well.

it is impossible to completely remove microorganisms from such floors. To reduce pathogens from one year to the next, till the soil and expose it to sunlight for at least 3 days. Then you can put a new group of animals into the pen.

Concrete is the most expensive flooring and the hardest on the feet and legs of a pig. However, it is the easiest to clean and disinfect. A combination of sand and concrete is often used to get the advantages of both. Concrete laid in a portion of the pen, such as around the waterer, prevents mud holes from forming. Or you might lay sand on top of a concrete floor to ease the stress on an animal's joints. After animals are gone, remove the sand, disinfect the concrete, and lay new sand before the next group of animals arrives.

Nutrition and feeding management

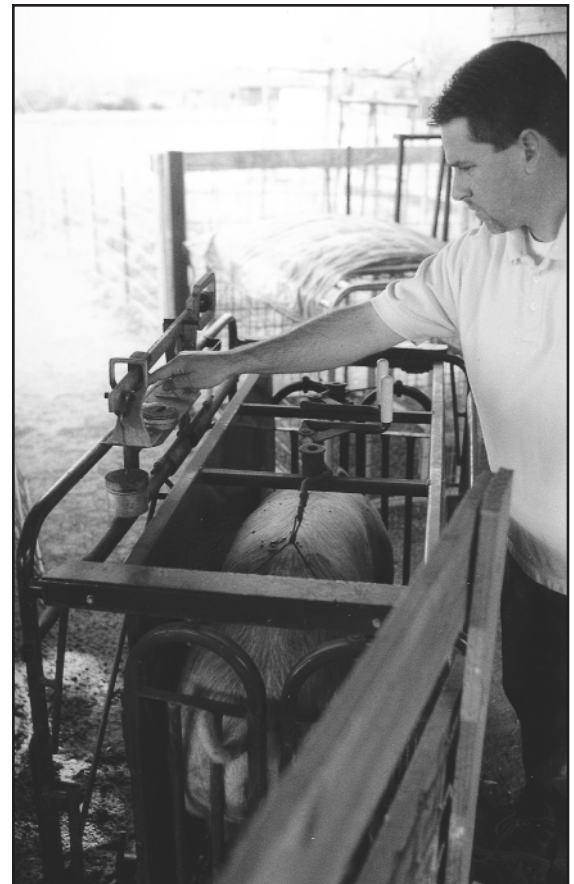
Genetics, nutrition, environment and the health of your pig will determine the animal's growth rate. Ideally you will leave the pig on a self-feeder until the day of the show. In fact, in commercial production, pigs are encouraged to grow as fast as possible while still keeping them lean. This reduces labor and increases average daily weight gain and profitability.

With show pigs you try to have the pig reach the point when it looks its very best on the day of the show. Because the show might have weight restrictions, you may need to control the pig's growth rate so that its best weight occurs at the time of the show.

It is important to check the self-feeder twice a day to make sure that it has feed in it and that the feed is flowing to the bottom of the feeder. In humid weather feed may cake along the sides of the feeder. This feed should be pushed down daily to prevent spoilage. Feeders should be allowed to run empty occasionally to keep feed from spoiling. Adding fresh feed to the top does not ensure that the feed on the bottom gets eaten first. Of course, to promote maximum growth, feeders should not be left empty for more than a few hours.

When a pig reaches about 125 pounds it is time to start monitoring its growth closely. Start by weighing the pigs once a week. The pigs should be weighed at the same time of day and on the same day of the week (for example, Sunday afternoons or Thursday evenings after school), since a pig's weight will change throughout the day, depending on the amount of feed or water it has had. Weighing at the same time of day keeps you from recording large variations in weight that may be due only to water intake.

It is helpful to use scales that are stationary. While many clubs or counties share scales, moving them from one place to another increases the chance of damaging them and causing them to become inaccurate. A set of scales is a good investment if there are several 4-H'ers in the same family who will be showing for some time. Scales can almost always be resold for a price close to what was originally paid for them.



Pigs should be weighed regularly to determine their rate of gain, especially as show time approaches.

Record the weight of each pig every week. After a few weeks, the average daily gain can be calculated by dividing the weight gain by the number of days between weighings. It is important to know how many days are left in the growing period (how many days until weigh-in at the show). After noting how your pig is growing for a few weeks and knowing exactly how many days until the show, you can start controlling the feed intake. That way, you can control the weight gain so the animal will be at its optimal weight for the show.

The desired weight is different for each animal, and depends on the animal's frame size and degree of muscling and fat. Depending on the animal's growth rate and length of the growing period, you will probably start hand-feeding your pig at some point to control how much it eats. Hand-feeding means feeding a known amount of feed to each pig individually. Pigs should be fed at least twice a day. If a pig needs to gain weight quickly, feed it more often (it will eat more feed if it is fed more often).

To determine how much a pig will eat on its own, feed a known amount to the animal at the normal feeding time and return

in about an hour. If there is feed still left in the trough or pan, give a slightly smaller amount at the next feeding until the pig cleans up all of the food within an hour of feeding. This is the approximate amount of feed that the animal would eat until full. Feeding this amount is called limit-feeding. As the pig gets closer to its target weight, adjust the amount of feed you give it to achieve the target weight gain. You should not feed pigs less than 4.5 to 5 pounds of feed each day.

Most diets are formulated for animals that are allowed to eat all they want. When limit-feeding, you may need to add vitamins and minerals to the pig's diet to provide necessary nutrients. Diets with a higher percentage of protein are often used when limit-feeding.

Nutrients

Water is the most essential of all nutrients. If you use nipple waterers, check them often to make sure the flow rate is right. Nipple waterers for grow-finish pigs (40 pounds to market weight) should provide 1 quart of water per minute. Fresh, clean water should never be withheld from an animal. Lack of water harms an animal's health and also causes muscles to lose shape and expression, because muscle is made up mostly of water.

Carbohydrates give the animal energy and should make up the majority of its diet. Energy is needed for growth. However, over-



Weigh feed to be certain you know how much your animal is receiving.



Valve waterers or nipple waterers work best for hogs. This valve waterer has a small bowl for water and more is delivered as the hog presses on the valve with its snout.

feeding carbohydrates can cause an animal to store the excess in the form of fat.

Proteins are made up of amino acids that are linked together to form long microscopic chains. There are 10 amino acids that a pig's body does not produce in adequate amounts and that must be added to the diet. Of these, lysine, threonine, tryptophan and methionine are the most important. Most diets contain grains such as corn and soybean meal, which are low in these amino acids.

Most commercial rations are balanced to give an animal what it needs during a certain stage of growth. The diet provides adequate amounts of energy, protein, vitamins and minerals according to the amount the animal will eat in a single day. These are referred to as "complete" feeds. It is better to use a complete feed than to overfeed protein, which is expensive and causes the animal to use the excess protein as added energy or store it as fat.

Health maintenance program

The prevention of diseases begins before pigs are purchased or born. Show pigs that are farrowed (born) at one location, fed at that location and never exposed to other swine until exhibition should be very healthy. It is best to buy show pigs directly from a single farm that has a history of excellent herd health. Pigs purchased from a single farm can be housed together unless they are fighting too much (a common cause of lameness) or need to be fed different rations. You should never buy a sick or lame pig.

If you purchase show pigs directly from several farms, it is best to keep the pigs from each farm isolated in separate pens (even during transport) and away from fence-line contact with other pigs for 60 days. Consider these separate isolation pens as totally different farm locations. Wash and disinfect boots, equipment, etc. before going from one pen to another.

If show pigs are bought at a sale, or if pigs from more than one source are mixed while being transported, they may be exposed to disease. The longer the exposure, the greater the risk.

If pigs are shown several times during a season, they should be isolated after each return to the farm so that other swine (such as breeding stock) on the farm won't be exposed to the many disease-causing organisms animals can pick up at a show or exhibition.

Treating sick pigs with antibiotics to compensate for poor health management is a common practice but only a temporary cure. Highly effective vaccines are not available for all swine diseases, and vaccines must be given weeks before exposure to protect animals. It is usually much easier to prevent swine diseases with good management practices than to successfully treat pigs that have become sick.

It is important to make sure that the pigs find the water and start drinking as soon as they arrive. Some pigs accustomed to trough or bowl-type waterers may not drink from nipple waterers. Temporarily wedge a small piece of cardboard in the nipple so that water will drip into a pan and the pigs can find it quickly. If using a trough-type waterer, make sure it is secured to a solid object or is heavy enough that it cannot be rooted over.

Surgeries

Any surgeries, such as castration, should be performed using sanitized instruments under clean conditions. Recovering pigs should be housed in clean areas, such as a clean trailer. It is strongly recommended that pigs be castrated as early as possible. In the commercial swine industry, pigs are castrated 2 to 3 days after birth. The earlier this surgery is performed, the less stressful it is on both the pigs and the people involved. Recovery is quicker, and there is less chance of infection.

If surgeries are performed by a veterinarian, follow his or her post-surgical care instructions carefully. Many veterinarians will use a tetanus antitoxin injection in addition to antibiotics to prevent post-surgical complications. The highest risk for tetanus in pigs is when the castration site is left open for drainage. It may become contaminated with dirt that contains tetanus spores (which are everywhere in the envi-

ronment). Another possible complication is the formation of an abscess or cyst, which creates an obvious skin enlargement at the castration site after healing. These must usually be removed surgically to allow a barrow (castrated pig) to be exhibited. However, lack of healing time before exhibition is always a concern after abscess removal.

It is best to use a veterinarian who administers anesthesia during castration, practices aseptic surgical techniques, and closes the castration site to prevent complications such as abscesses. Veterinarians commonly perform other surgeries that require anesthesia, such as removal of a retained testicle (cryptorchidism), removal of an infected and enlarged urine pocket (preputial diverticulum), repair of scrotal or umbilical hernias, and removal of tumors. Obviously, gilts have fewer potential problems than barrows.

Diseases from the mother

Even when pigs are raised under the best management techniques to minimize disease exposure, they may receive certain disease-causing bacteria and viruses from their mothers during birth and nursing.

Additional exposure may occur when several litters are mixed in the nursery. Infection with roundworms, whipworms, lice or mange may also occur at this time.

Therefore, even if pigs have been farrowed and raised on one farm (the best possible disease prevention), they may still carry disease-causing organisms in their respiratory tracts and other places. So, disease can occur later on, particularly after a stressful experience such as hauling.

Vaccination

There are effective vaccines for a number of diseases and they should be used.

Vaccines for **erysipelas** (causes sudden death, skin disease and lameness) and **APP**, commonly called **pleuropneumonia** (causes pneumonia, sudden death and chronic unthriftiness), are routinely used in a combination vaccine. It should be administered to healthy pigs within 1 week of arrival and repeated 1 month later. Within 2 weeks after the second vaccination, pigs

have developed an immunity that should make either disease less severe if it occurs.

Another extremely important disease is **porcine reproductive and respiratory syndrome (PRRS)** virus. This disease can cause pneumonia and death or become a chronic disease that causes a pig to gain weight more slowly or stop growing.

Modified-live PRRS vaccines are effective, but vaccinated pigs can still spread (shed) the virus to non-vaccinated swine.

Therefore, veterinarians often recommend using an inactivated, or killed, vaccine in show pigs that are housed near breeding stock. This inactive vaccine causes no virus-shedding to other animals. Inactivated PRRS vaccine is approved for use only in pregnant females. Using it in show pigs is extra-label (not a use that is recommended on the product label). Therefore, it must be recommended by a veterinarian with a working knowledge of your herd. The schedule for vaccination for PRRS is similar to that for erysipelas and APP—vaccinate upon arrival and 1 month later. Modified-live PRRS vaccine should be given only once and should be used only in barrows that are isolated from gilts and other breeding swine.

Deworming

Deworm healthy pigs upon arrival and again 1 month later. Use a dewormer that is effective against whipworms, such as Safe-Guard® (fenbendazole) or Atgard-C® (dichlorvos) at least once. Pigs suffering from diarrheal disease can be especially sensitive to deworming products. Safe-Guard® is probably the least toxic product for pigs with diarrhea from whipworm infections. Ivomec® (ivermectin) and Dectomax® (doramectin) are excellent injectable dewormers that also kill lice and mange, but they are not always effective against whipworms.

Medications

Lincomix® and Denagard® are commonly used, approved antibiotics. Ask your veterinarian to help you develop a herd health management plan or to diagnose and treat sick animals. When using any type of medication, including feed additives and top

dressings, carefully read and follow label instructions. See Texas Cooperative Extension publication L-5203, "Swine Pneumonia," for information on the proper use of drugs by animal owners and veterinarians. If you are in doubt about using a drug, medication or other product on your animal, do not use it unless you have consulted a veterinarian and know it is acceptable.

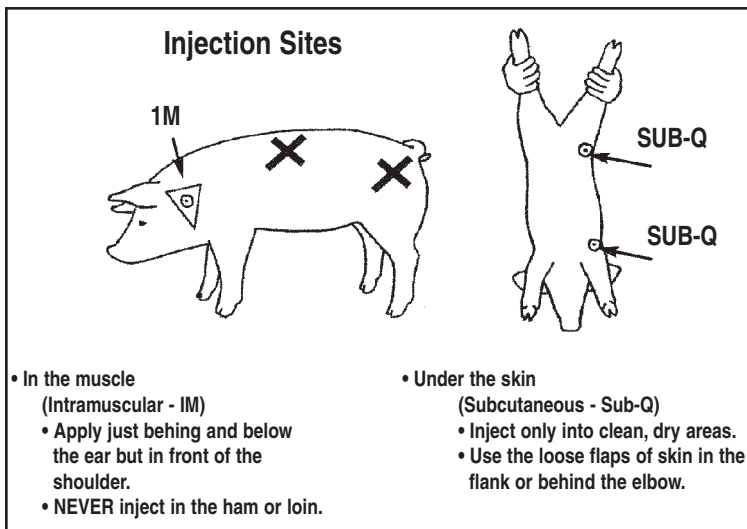
Misuse of animal health products can leave residues in the meat that could make it unsafe for human consumption. Also, if residues are found during a competition the exhibitor could be disqualified. Your county Extension agent and the Extension Veterinary Medicine office have other publications on animal health. Also see these Web sites:

<http://animalscience-extension.tamu.edu>
<http://agpublications.tamu.edu>

Injection sites

Intramuscular (IM) injections are given directly into the muscle. IM injections should be given just behind and below the ear (shown by the bulls-eye on the diagram below). You should NEVER inject into the ham or loin. These areas include the most valuable cuts of pork, and the meat can be damaged by injections.

Injections also can be subcutaneous (Sub-Q), meaning under the skin. Sub-Q injections should be given into the loose flaps of skin in the flank or elbow. Make sure the area you inject is clean and dry to prevent infection.



Showing the Pig

Training the hog for exhibition is an important part of the weeks leading up to the show. Your hog should be walked regularly to improve fitness and give you a chance to train it. Purchase or make a "pig stick" or "pig bat." This is a stick about 30 to 40 inches long. As you walk the pig, lightly tap it on the left side of the neck and shoulder to make it turn right. Tap it on the right side to make it turn left. When the pig is walking straight, gently tap it on the top of the back between the shoulder blades. Eventually the animal will learn that if you tap it on the top of the back you mean for it to walk straight. When a pig places its nose in the corner of the show ring, an easy way to get it to move out is to place your palm over the pig's eye. It will move away in the opposite direction and turn out.

Instead of a pig stick, some exhibitors use a stiff brush or the palm of the hand to control their animals. Practice a variety of ways to determine which works best for you and your animal.

It is important to be able to control your pig because when you are exhibiting it you will want the animal to keep walking about 10 to 15 feet in front of the judge's viewing area. You'll need many weeks of practice to train the animal well. At a show, it is obvious which exhibitors have worked with their animals and which have not. Pigs that have never been out of their pens and worked with usually run around in circles and are unruly.

When show day arrives, you will want the judge to get a good look at your pig. The way pigs are shown in the arena will depend on the size of the show. At most shows, announcers tell you when a particular breed and weight range should come to the holding pen. From the



Most exhibitors use a pig stick or bat and a stiff brush in the show ring.

holding pen, pigs are released one at a time into the larger show arena. As the pigs come out of the holding pen the judge will have a good look at each one. Sometimes, if the judge really likes the pig, he or she will point to the pig and ask that it be penned. If that happens, you (the exhibitor) should put your hand up in the air so the ring helpers will know your pig is to be penned. It is up to you to walk your pig to the pen, but the ring helpers usually assist. Once the judge pens the pigs he or she likes best, the other pigs will be excused from the show ring and the penned pigs released into the show ring for a more detailed evaluation.



Hogs should be walked regularly and trained. When the hog is walking forward tap gently on its back so it associates a tap on the back with walking forward.

Texas 4-H Market Swine Project Guide—Texas Essential Knowledge and Skills (TEKS)

Instructors who use this curriculum will address the following TEKS components as outlined by the Texas Education Agency:

Social Development

The student understands the basic components such as strategies, protocol, and rules of individual activities.

Business Education

The student implements components of productivity. The student demonstrates an understanding of personal financial management.

English and Language Arts

Communication Applications—The student is able to explain the importance of effective communication skills in professional and social contexts.

Speech Communication—The student is able to recognize and explain the importance of communication in social, academic, citizenship and professional roles.

Agricultural Science and Technology

Education (Introduction to World Agricultural Science and Technology)—To prepare for a career in the broad field of agriculture/agribusiness, the student attains academic skills and knowledge related to agriculture/agribusiness.

Plant and Animal Production—The student knows the importance of animals and their influence on society.

Agribusiness Management and Marketing—The student defines and examines agribusiness management and marketing and its importance to the local and international economy; the student defines the importance of records and budgeting in agribusiness.

Personal Skill Development in

Agriculture—The student demonstrates effective personal leadership skills; the student communicates effectively with groups and individuals; the student demonstrates the factors of group and individual efficiency.

Animal Science—The student explains animal anatomy and physiology related to nutrition, reproduction, health and management of domesticated animals; the student determines nutritional requirements of ruminant and nonruminant animals; the student explains animal genetics and reproduction; the student recognizes livestock management techniques.

Advanced Animal Science—The student demonstrates understanding of the interrelationships between humans, science and animals in agriculture and the resources necessary for producing domesticated animals; the student examines animal anatomy.

Developmental Assets and Life Skills

Youths who participate in this curriculum may develop the following assets and life skills that contribute to their personal development.

Developmental Asset Search Institute Extension	Targeting Life Skills Model Iowa State Univer
Support #1 Family Support #3 Other adult relationships Positive Values #30 Responsibility Social Competence #32 Planning and Decision Making Positive Identity #37 Personal Power #39 Sense of Purpose #40 Positive View of Personal Future	Nurturing Relationships Self Responsibility and Self-esteem Social Competence Goal Setting and Personal Feeling

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