

2022-2023  
Citrus County Fair  
Swine  
Skill-a-thon Study Guide





## Citrus County Swine Skill-A-Thon

A “Skill-A-Thon” is an excellent method of involving FFA and 4-H members in challenging, learn-by-doing activities. This program of helping youth develop both their life skills and swine project skills is designed as a series of mini-learning stations. Use this guide to prepare for the skill-a-thon at the county fair.

### OBJECTIVES:

1. To provide a learning laboratory which will enhance knowledge of the swine industry.
  2. To help youth feel more comfortable communicating with an adult.
  3. To gain self-confidence and skills in one-on-one communication.
  4. To develop responsibility for completing a project.
  5. To develop critical thinking and problem-solving skills.
  6. To provide additional opportunities to recognize youth for their accomplishments.
- To have FUN!

### TOPICS:

The topics are specific for each of the Fair’s age groups for skill-a-thons.

Age as of September 1<sup>st</sup>, 2021:

**J:** Junior ( 8-10 yrs)

**I:** Intermediate (11-13 yrs)

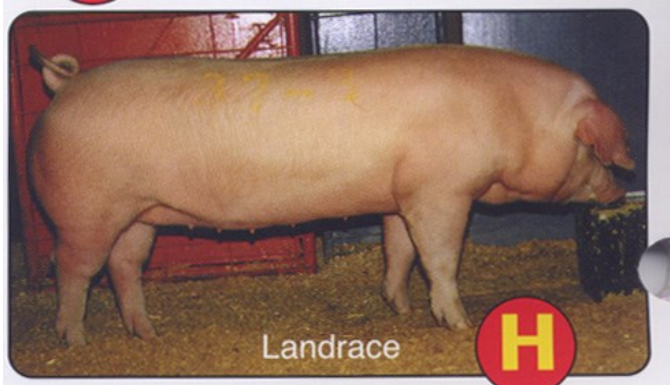
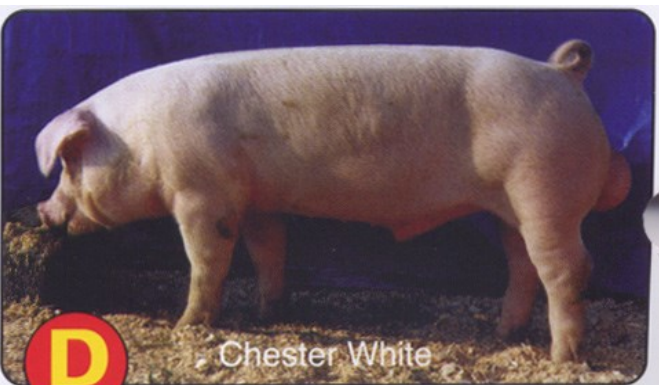
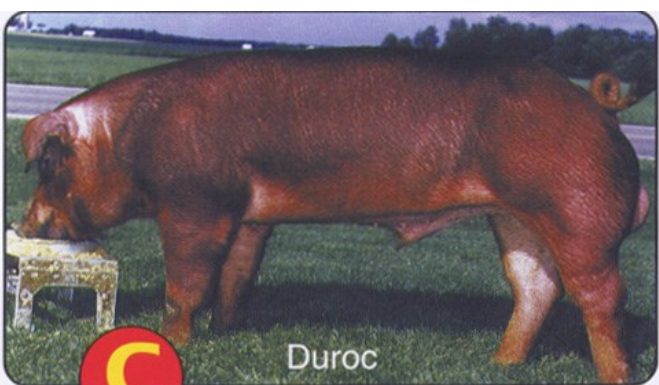
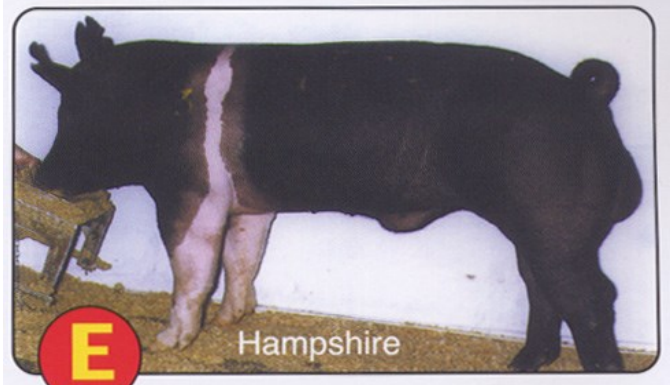
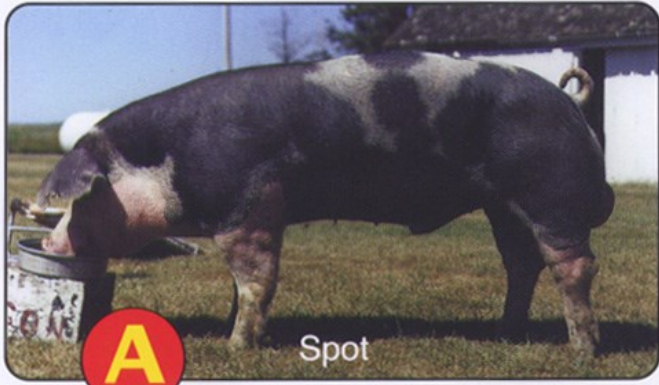
**S:** Senior (14 yrs and up)

1. Swine breeds and characteristics (**J, I, S**)
2. Swine body parts (**J, I, S**)
3. Cuts of meat
  - a. Primal or wholesale cuts (**J, I, S**)
  - b. Retail cuts of pork (**I, S**)
4. Swine By-Products (**J, I, S**)
5. Swine nutrition (**I, S**)
6. Preventative Healthcare (**J, I, S**)
7. Fitting and Showing (**I, S**)
8. Showmanship Terms and Questions (**I, S**)
8. Record book (**S, only**)



# Swine Breeds

(J,I,S)



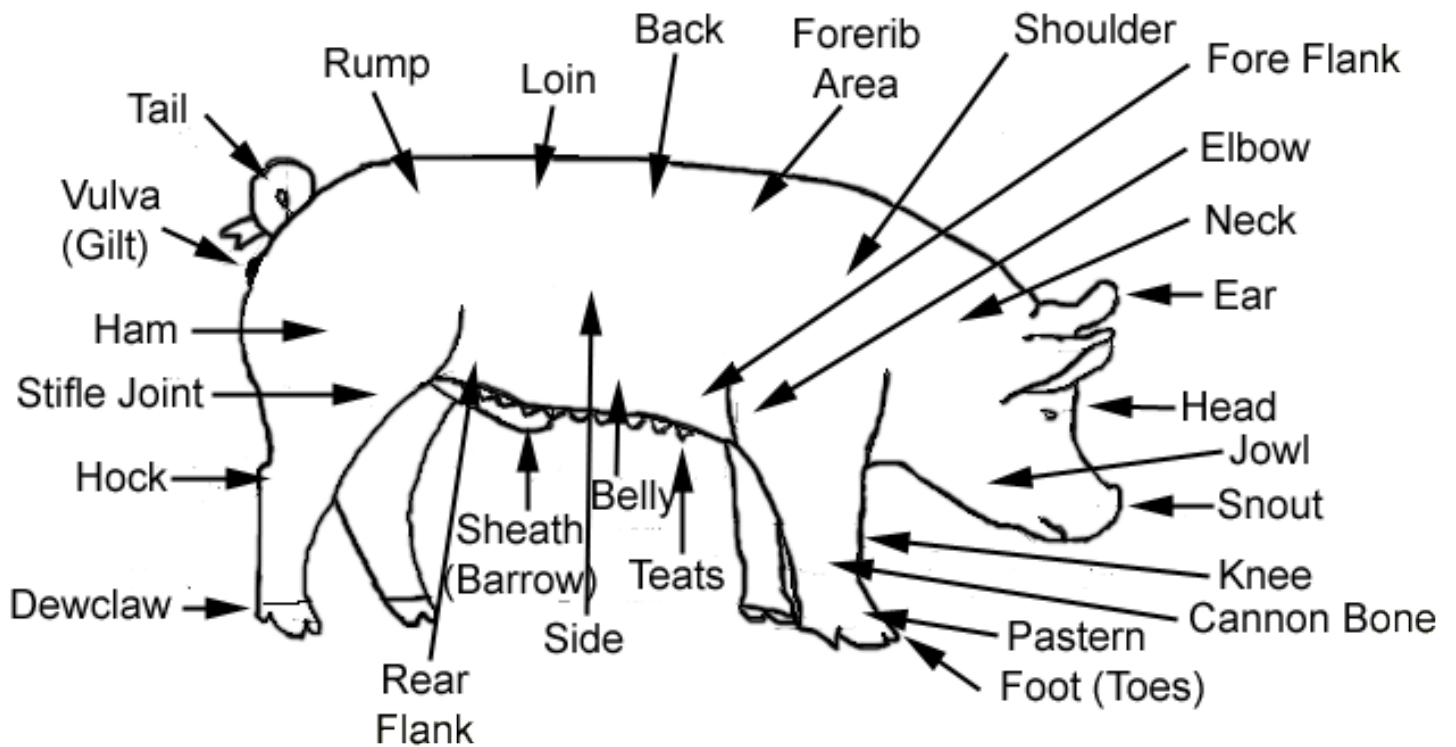
# Swine Breed Characteristics

(J,I,S)

- A) **Spot:** These white bodied pigs have black spots and medium sized, droopy ears. Part of their ancestry can be traced back to the original Poland China hogs of Warren County, Ohio. This breed has continued to improve in feed efficiency, rate of gain and carcass quality, as can be proven in testing stations throughout the country. They are popular with farmers and commercial swine producers for their ability to transmit fast gaining, feed efficient, meat qualities to their offspring.
- B) **Poland China:** The black and white bodied pigs may have a white nose, tail and feet. They have medium-sized, droopy ears and originated in the Miami Valley of Ohio in Butler and Warren counties. This breed stands as the embodiment of perfection in the swine industry and is often selected as a terminal sire.
- C) **Duroc:** These red pigs with drooping ears are the second most recorded breed of swine in the United States and a major breed in many other countries. Their color can range from a very light golden, almost yellow, to a very dark red that approaches mahogany. The growth of the breed is in part due to characteristics such as the ability to produce large litters, longevity in the female line, lean gain efficiency, carcass yield and product quality as a terminal sire. Their advantage in muscle, combined with their rapid growth, has positioned the breed as an outstanding terminal sire choice.
- D) **Chester White:** Known as the durable mother breed, these pigs have white bodies with 2/3 droopy ears. This breed originated in Chester County, Pennsylvania. More than 60,000 animals are recorded by this breed's association each year. Because of their mothering ability, durability and soundness, they have maintained their popularity with pork producers.
- E) **Hampshire:** These black hogs have white belts across the shoulders, covering the front legs around the body. They have erect ears and are heavily muscled. They are the third most recorded swine breed in the United States. They are leaders in leanness and muscle, with good carcass quality, minimal amounts of backfat and large loin eyes. Their ability to produce winning carcasses is unequalled, and they continue to set the standard by which all other terminal sires are evaluated. Often crossed with the Yorkshire to produce the "blue-butt" hog. Hampshire females are known as great mothers and excellent pig raisers and have extra longevity in the sow herd.
- F) **Yorkshire:** This white breed with erect ears is the most recorded breed of swine in the United States and Canada. They are muscular with a high proportion of lean meat and low backfat, in addition to being very sound. They are productive, but more performance-oriented and durable than ever. Often crossed with the Hampshire to get a white pig with black spots. The goal of the breed is to be a source of durable mother lines that can contribute to longevity and carcass merit. The motto "The Mother Breed and a Whole Lot More" indicates improvement and change in the industry."
- G) **Berkshire:** These black bodied pigs have six white points, including their nose, tail and feet. They have erect ears and dished snouts. Legend says that this breed was discovered by Oliver Cromwell's army at Reading (the county seat of the army of Berks) in England over 300 years ago. They are known for providing hams and bacon of excellent flavor. They were the first brought to America in 1823. This breed has had great influence on the swine industry. Much improvement has been made through testing and genetic evaluation to meet the demand for fast, efficient growth, reproductive efficiency, and leanness.
- H) **Landrace:** These white pigs with large drooping ears are the fourth most recorded breed in the United States as well as a major in many other countries. Their purebred females are known for their ability to produce large litters over an extended time. Boars are aggressive and sire large litters that combine growth, leanness and other desirable carcass traits. This, along with their outstanding maternal traits, have made them leaders in swine operations throughout the world.

# Swine Body Parts

(J,I,S)



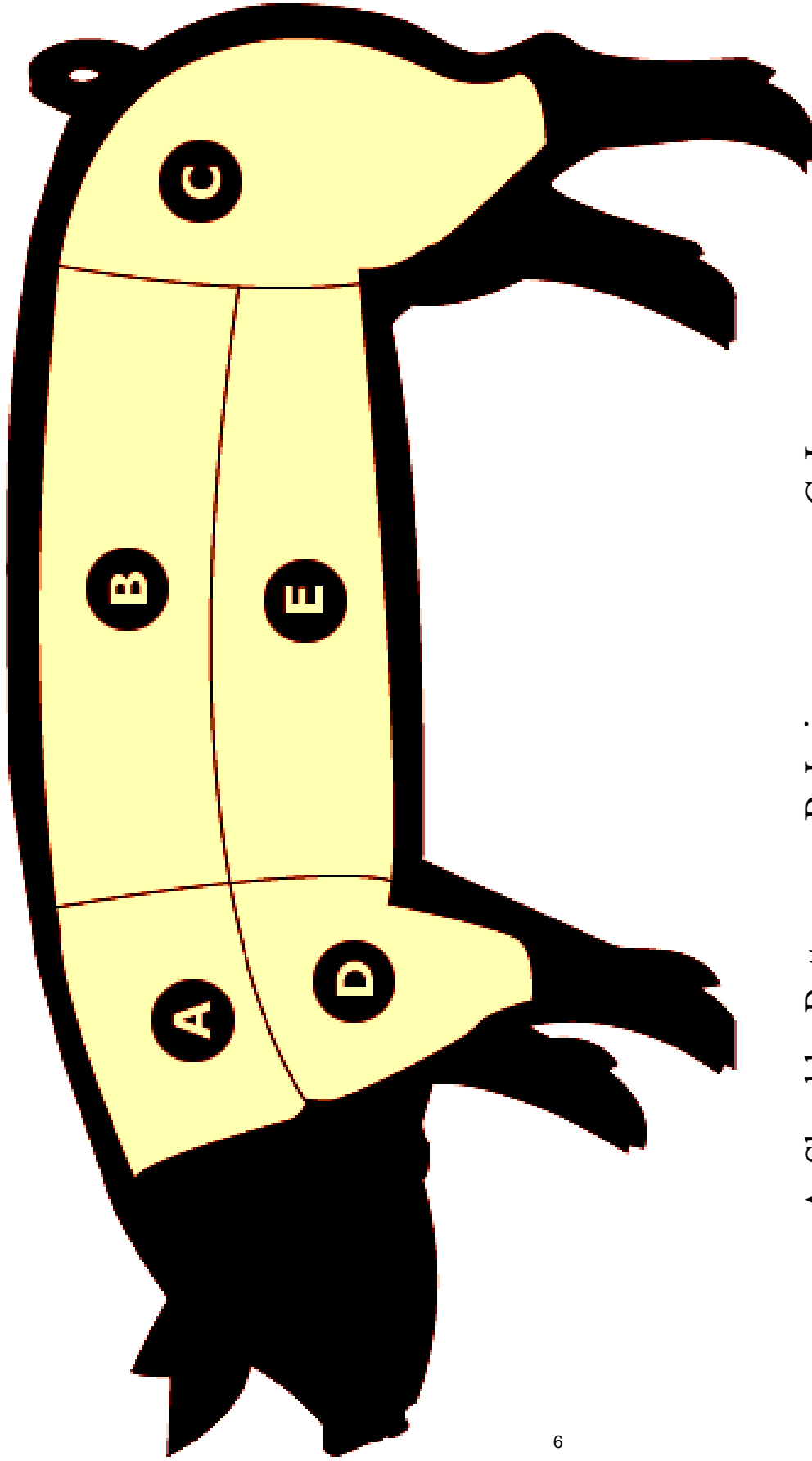
To practice your knowledge of swine body parts, visit:

<http://www.geauga4h.org/swine/index.htm>

This is a useful website!!

# Primal or Wholesale Cuts

(J, I, S)



A: Shoulder Butt

B: Loin

C: Leg

D: Picnic Shoulder

E: Side



# Retail Cuts of Pork

(I, S)

## Shoulder Butt Cuts:



- **Blade Roast:** (or Boston Butt) responds best to cooking methods that involve wet heat, such as barbecuing, braising, or stewing. Blade roasts are sold as both bone-in and boneless varieties.



- **Blade steak:** This steak is most often grilled or broiled.

## Picnic Shoulder Cuts:



smoked hock



smoked picnic shoulder

Also called the arm shoulder, pork from the picnic shoulder is just as flavorful as that from the blade shoulder but is fattier. The meat also tends to be less expensive. The entire picnic shoulder as well as the hock are often presmoked and then sold in ready-to-eat form. The picnic shoulder is also often sold as a roast.



boneless picnic roast

## Side Cuts:



spareribs



bacon

- **Spareribs:** The spareribs are the ribs and attached meat located in the side of the pig. Spareribs can be cooked in a variety of ways, with or without wet heat. In particular, spareribs respond well to grilling or broiling, braising, or barbecuing.
- **Bacon:** Bacon is taken from the side of the pig after the spareribs have been removed. Bacon is cured, smoked, and sold sliced. It is most often panfried but can also be roasted and is surprisingly good when microwaved.

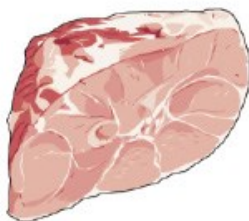
## Leg Cuts:



whole ham



shank ham



butt ham



center ham slice

- **Whole ham:** The entire ham.
- **Shank ham:** The lower half of the leg. Though these cuts contain less meat than the butt hams, they do have the benefit of being easier to carve because they contain just a single central bone.
- **Butt ham:** The upper half of the leg. It's meatier than the shank ham and may be sold bone-in or boneless. Bone-in varieties may be difficult to carve because they contain multiple bones.
- **Center slice or steaks:** The ham may be sliced to form steaks. The steak made by cutting a slice from the center of the ham is called the center slice.

# Swine By-Products

(J,I,S)

## Be able to identify essential household and health products made from swine by-products !!

**EVERYTHING BUT THE Oink**

No other animal provides society with a wider range of products than the hog.

By products from pigs play a vital, though less visible, role in maintaining and improving the quality of human life.

Phonograph records

Bone China

Violin Strings

Drumheads

Porcine Burn Dressings

Pigskin footballs

Cutting oils

Glycerin for explosives and antifreeze

Linoleum

Pet food

Gelatin for marshmallows and photographic film

Industrial lubricants

Stearin for making chewing gum and candies

Hair for artist brushes

Rennet for cheese making

Hearts for xenotransplantation

Gelatin for drug capsules

Insulin and ingredients for other medicines

Ingredients for surgical sutures

Fatty acids and glycerin used for matches

Compiled by Alyssa Auer (2009)

Frobose, D., G. Bowman et al (2001) Swine Resource Handbook. The Ohio State University Extension.

Pork is the most widely consumed meat in the world. People eat many different pork products, such as bacon, sausage and pork chops. You might grill pork ribs in the summer, or you might enjoy a Christmas ham. A 250 pound market hog yields about 150 pounds of pork. In addition to pork, several valuable products come from swine. These include insulin for the regulation of diabetes, valves for human heart surgery, suede for shoes and clothing, and gelatin for foods and non-food uses. Swine by-products are also important parts of products such as water filters, insulation, rubber, antifreeze, certain plastics, floor waxes, crayons, chalk, adhesives and fertilizer (USDA, 2016). Lard is fat from pig abdomens and is used in shaving creams, soaps, make-up, baked goods and other foods.

<https://animalsmart.org/feeding-the-world/products-from-animals>



A dependable and economical source of feed is the basis of a profitable hog operation. In fact, 40 to 60% of the total cost of producing hogs is feed. Thus, 4-H'ers who raise hogs need to be keenly aware of the types of feed available.

## Ingredients Needed

Swine rations, whether bought or mixed on the farm, usually contain a ground cereal grain, a protein source (usually soybean meal), salt, a calcium source, a phosphorus source, a vitamin-trace mineral premix, and an antibiotic premix. Other ingredients commonly added are milk by-products such as dried whey, ground alfalfa hay, or dehydrated alfalfa meal; meat by-products such as meat and bone scraps or tankage and cereal grain by-products such as wheat bran, wheat midds, or rice bran.

- **Starter (young pigs 20 to 40 pounds)** This diet type should contain approximately 1.10% lysine which will result in a dietary protein level of 18-21%. These diets are designed to be self-fed to pigs weaned at 5 weeks of age or older. These diets can be used as creep feed for young pigs still nursing the sow.

- **Grower (40 to 120 pounds)** This diet type is usually fed to pigs from 40 - 120 lbs. Grower diets generally contain about 0.75% lysine to provide 15 - 16% crude protein and are self-fed to the pigs. Daily consumption is about 3-5 pounds of feed a day. Grower feeds are usually mixed on the farm or can be purchased commercially.

- **Finisher (120 pounds to market)** Finisher diets are usually fed from 120 lbs to market weight. The diets contain 0.60% lysine with 13 - 14% crude protein and are self-fed. Daily consumption is about 6-7 pounds of feed a day. Finisher diets, much like grower diets, are usually mixed on the farm in most operations, but are also available commercially. Nutrient requirements (as a percent of diet) of finishing pigs are lower than that of growing pigs. Therefore, finisher diets contain lower levels of protein, vitamins and minerals in order to reduce diet costs.

## Feeding for Show

Feed is the fuel that propels a hog's growth. If you are readying a hog for show ring competition, you need high-octane performance. Toward that end, show projects differ in the feeding management methods than those of a regular swine producer. Swine are often fed specially formulated commercial feeds specific for preparing animals for the show ring. If a producer were to feed the commercial show diets he would never be able to make a profit.

The goal is to have your pig enter the show ring at the ideal weight of 270 lbs with the ideal amount of muscling and fat finish. To meet this goal participants must carefully regulate the growth and weight gain of the pig. Techniques include utilizing self-feeders that allow the pig to eat "on demand", hand-feeding specific meal portions, and altering the protein and fat levels being fed. However, note that in the latter stages of the finishing period you must be wary of either throwing the hog into a complete stall, or slowing its growth curve and causing it to pack on more fat than lean gain.

Make any change in the ration a gradual one as a sudden shift can cause gastric upsets, a serious problem for a pig on its way to the show ring.

**Don't forget the water!** Do not neglect the most important nutrient. It is vital to keep the water clean and fresh for it to be appealing to the pig and to encourage maximum consumption.

*Information found here taken from: Types of Swine Diets, W.R. Walker and R.O. Myer and Storey's guide to Raising Pigs, K. Klobner*

## PREVENTATIVE HEALTHCARE HEALTHY ENVIRONMENTS

Animal caretakers are responsible for providing safe, secure, and healthy environments. This section will focus on providing healthy environments. In Florida, hot temperatures are commonplace. So, maintaining a healthy environment requires a knowledge of heat and heat management. If not managed, too much heat results in heat stress. This can lead to reduced feed intake and weight loss, poor breeding efficiency, changes in behavior, and in extreme cases death can occur.



### HEAT AND HEAT STRESS

High temperatures are uncomfortable and can be stressful for livestock. Heat stress increases when combined with humidity, wind speed, and solar radiation (sunlight).

### HEAT INDEX

To predict the likelihood of heat stress, ranchers, livestock producers and exhibitors can use a heat index. A Heat Index combines temperature, humidity, wind speed, and solar radiation to determine the stress on an animal for the specific environmental. The National Weather Service (NWS) maintains the Heat Index used by weather stations across the nation to forecast heat conditions (Table 1).

Table 1. The Heat Index is a measure of temperature and relative humidity. This table can be accessed on-line at <https://www.weather.gov/safety/heat-index>

NWS Heat Index		Temperature (°F)															
		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
Relative Humidity (%)	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	126	135								
	90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127											
100	87	95	103	112	121	132											

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution     
  Extreme Caution     
  Danger     
  Extreme Danger

The Occupational Safety and Health Administration (OSHA) and National Institute for Occupational Safety and Health (NIOSH) have created a heat tool (OSHA-NIOSH Heat Safety Tool) available on the App Store or Google Play. It can be used to monitor local heat conditions and predict the likelihood of heat disorders.



## SIGNS OF HEAT STRESS IN LIVESTOCK

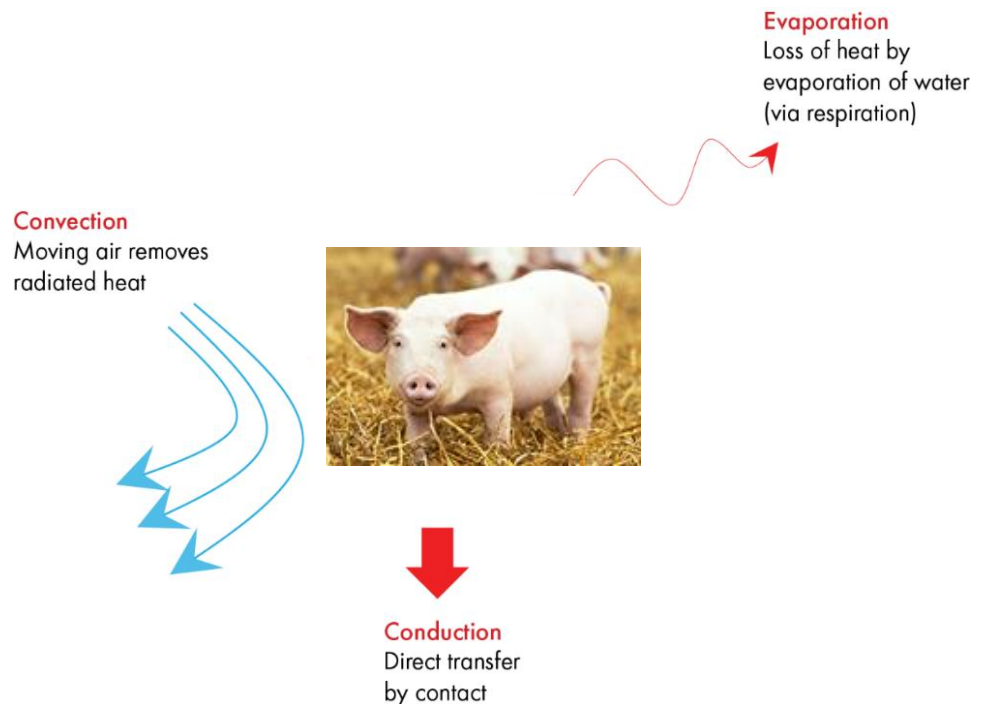
Livestock exhibitors know that it is in their best interest to keep livestock and poultry healthy and in good condition. Preventative healthcare seeks to identify potential issues before they become problems. Here are some of the symptoms indicating heat stress in livestock and poultry:

- Maximize contact with ground/concrete
- Slobbering or excessive salivation
- Foam around the mouth
- Panting or open mouth breathing
- Dig wallows
- Use dung areas to lounge and cool themselves

Temperature Range	
	°F
Poultry	105.0 - 107.0
Rabbit	101.0-103.0
Beef	100.5 - 103.0
Swine	101.5-102.5
Goat	101.5 -103.5
Sheep	101.5 -103.5

Swine, along with humans, cattle, swine, poultry, rabbits, sheep, and goats, are HOMEOTHERMS meaning they can control body temperature within a range of temperatures. Swine are exposed to many heat sources. Swine do not sweat; however, they do have other ways of controlling body temperature.

Figure 1. Swine and heat transfer occur by 3 primary modes. Conduction – transfer of heat to the ground, convection – heat dissipation with air movement, evaporation – loss of moisture from respiratory tract. In swine, the rate of blood flow to the skin increases moving internal heat to the surface to be lost to cooler surrounding air.



Based on the photo above and what you learned about heat transfer in swine, answer the following.

Assume it is mid-August, the air temperature is 95°F, there is no wind, humidity is 95%:

1. Should you be making plans to reduce heat stress?
2. If so, what can you do to reduce heat stress?

# Fitting and Showing

(I, S)

The show ring is filled with the fun and the excitement of friendly competition. Showing your pig lets you compare your pigs with those of others. It is a pleasure to drive a well-trained and groomed pig into a show ring. Livestock judges like to observe and handle well-mannered pigs. However, it is difficult to judge unruly pigs. Also, it is discouraging to show a pig that refuses to do what you want it to do.

## Things to do at home:

1. Practice walking your pig every day in the months before the show. Teach your pig to change direction when lightly tapped with a lightweight cane or whip. A fenced grass lot is an excellent place to practice driving your pig.
2. Brush your pig daily for 2 months before the show. Brush the hair back and down so it lies naturally. Brushing also adds “bloom” to the hair and makes the pig gentle.
3. Wash your pig once or twice the last month before the show and the day before the show, using a stiff brush and a mild soap. White pigs may need extra washings. Be careful not to get water inside the pig’s ear.
4. Clip the hair on the tail, from under the ears and the underline to make the pig appear trim. Check the swine rules on the fair website for guidance on hair length.

## Things to do before the Fair:

1. Know when and where the show is going to take place.
2. Plan transportation for your pig.
3. Take a small feed trough or pan, a water bucket, and a small shovel to clean pens.
4. Take an equipment box with the necessary items for fitting and showing your pig. Some things you should include:
  - a. soap
  - b. brush
  - c. cane or whip
  - d. work clothes and boots to wear when washing your pig
  - e. water hose
  - f. soft cloth

## Thing to do at the Fair:

1. Feed lightly at the show. Your pig should not appear gaunt or shrunken, but too much feeding will cause it to appear wasty in the middle.

2. Wash your pig at the assigned time.
4. Brush the hair back and down.
5. Brush all straw or shavings off the pig before entering the show ring.
6. Care for your pig at assigned times. Do not abandon your pig’s care to others.

## In the Show Ring

1. Keep your eyes on the judge and on your pig at all times.
2. Keep your pig between you and the judge.
3. Drive your pig slowly about the show ring. Do not let it stand if the judge is watching.
4. Keep your pig out in the open. Do not let it crowd in the corner with a large group of other pigs. Also, do not crowd the pig close to the judge.
5. Do not let your pig get into an awkward position.
6. Use a small whip, cane, or show stick while in the show ring.
7. Do not beat your pig on the back or rump with your cane or brush.
8. Do not lean on your pig’s back or knee him in the ham area.
9. When the judge is looking at your pig, do not point at the pig’s strong points or wave your hand at the judge.
10. Stop your pig if the judge wishes to handle him.
11. Be well groomed and neat when showing your pig. Review the swine rules on the fair website for guidance on required dress code.
12. Be ready to answer questions from the judge. He might ask about your pigs breed, weight, age, feed you have used, average daily gain, etc..
13. Be a good sport. Be respectful to the judge and fellow 4-H/FFA members. Do your best and represent yourself with pride.

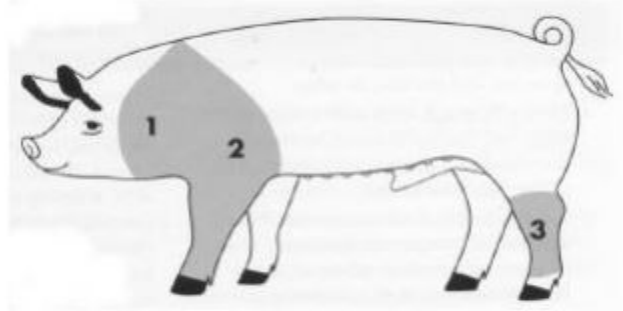
*Information for this page provided by: The Southern Region 4-H Literature Committee, Dr. William G. Luce, Extension Service Emerti, Swine.*

**SEE FIGURE ON NEXT PAGE  
FOR AREAS TO TOUCH THE PIG  
WITH DRIVING TOOLS (CANE  
OR WHIP)  
LABELLED 1, 2, OR 3**



# Showmanship Terms/Questions (I, S)

Gilt: young female pig  
Sow: an adult female pig  
Boar: an adult male pig  
Barrow: a castrated male pig  
Farrowing: the birth process in swine  
Piglets: swine offspring  
Pigs are monogastric



## Practice Questions

1. What is the feed conversion ratio for a hog? ..... 3 lbs. feed/1 lb. gain
2. What is the average daily weight gain of a hog?..... 1 – 2.8 lbs.
3. Young pigs are fed a diet containing what percent of crude protein? ..... 20 – 22%
4. Finishing pigs are fed a diet containing what percent of crude protein? ..... 13 – 15%
5. Name three commonly used nutrients in hog rations to provide energy?  
— Corn, wheat, milo, barley, oats
6. What are three examples of feed ingredients used as a protein source in a ration?  
— Soybean meal, blood meal, fish meal, dried whey
7. What is the normal temperature of a hog? .....101.5°F - 102.5°F
8. The gestation period for a sow is...? ..... 3 months, 3 weeks, 3 days
9. How many pigs are born in a litter? ..... 9 - 13
10. In commercial hog farms, tails are docked to prevent what? ..... Injury from tail biting
11. Name a disease swine may get.  
— Parvovirus, leptospirosis, transmissible gastroenteritis, baby pig anemia, brucellosis
12. Where is the first place you're most likely to notice fat deposits on your pig?  
— In the jowl (chin) area
13. What are the top hog producing states?  
— Iowa, Minnesota, North Carolina, Illinois, Indiana
14. The acceptable weight range of an ideal hog should be...? ..... 240 – 300 lbs.
15. What is the average dressing percent for a hog? ..... 70-78%
16. True or False: Compared to 50 years ago, pigs today are leaner. ....True
17. What are the more expensive cuts of a hog?  
— Loin, leg (ham), blade shoulder (boston), picnic shoulder
18. What is the average backfat for a hog? ..... 0.6-0.75 in.
19. Where is loin eye area measured? ..... Between the 10th and 11th rib.
20. What is the average loin eye area on a market hog? ..... 5 – 8.99 sq. in

# Record Book

(S)

The record book enables those with hog projects to accurately keep health, expense, inventory, and feed records on their pigs. Accuracy is extremely important. Participants should be able to answer questions and work examples in the following areas of the record book for the skill-a-thon contest.

## Rate of Gain/Feed Conversion

The starting weight should be recorded as your best estimate of the weight of the pig on “tag-in” day. Ending weight will be measured when the pig is entered into the Fair in March. Total days on feed should be calculated from the “tag-in” to the weigh-in. These are important values to know to determine the rate of gain for your pig and the feed conversion rate. Both of these measures are calculated based on the pounds of food fed to your pig.

Rate of Gain = Total Weight Gained (lbs.)/Days Fed

Feed Conversion = Total Feed Fed (lbs.)/Rate of Gain of Swine (lbs.)

### Practice calculating Feed Conversion:

You purchased a 100 pound swine and fed him 600 pounds of feed. He gained 150 pounds in 150 days.

For this swine, what was the rate of feed conversion?

Determine the Rate of Gain \_\_\_\_\_

Determine the Feed Conversion \_\_\_\_\_