

PENNSSTATE



College of Agricultural Sciences • Cooperative Extension

REFERENCE GUIDE

4-H Market Swine Project



Name _____

Address _____

Name of Club _____

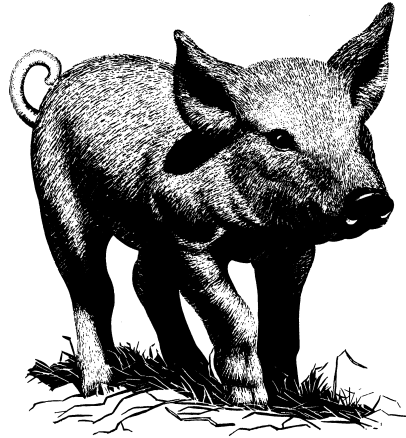
Leader's Name _____

Name of Project _____

CONTENTS

Section 1: Getting Started.....	1	Section 7: Swine Behavior, Movement, and Transportation....	29
Introduction	1	How Pigs Behave	29
How to Use Your Reference Guide.....	1	Handling Swine.....	30
Purpose of the 4-H Market Swine Project	1	Transporting Pigs	31
Project Options	2		
What Do You Need?	2	Section 8: Keeping Swine Healthy	34
		How Pigs Digest Food.....	34
Section 2: Knowledge and Skills Checklist	3	What Makes Pigs Sick	34
Project Requirements.....	3		
Required Swine Activities, years 1 and 2	4	Section 9: Pork Quality Assurance	37
Required Life Skills Activities, years 1 and 2.....	4	Using Antibiotics.....	37
Required Quality Assurance Skills and Activities, years 1 and 2	5	Using Feed Additives—Paylean®	38
Additional Swine Activities, years 3 and beyond	5	Live Animal Treatment.....	39
Additional Life Skills Activities, years 3 and beyond.....	7	Meat Quality	39
Additional Quality Assurance Skills and Activities, years 3 and beyond	9	Pork Quality Assurance (PQA) Program.....	39
Section 3: Background Information.....	13	Section 10: The Roundup	41
Why Do We Raise Pigs?	13	Ethics.....	42
What Do We Call a Pig?	13	Four Areas of Livestock Ethics.....	42
The Swine Industry in the United States.....	13	What Do You Need to Do and Have?	42
		Loading and Unloading Pigs	43
Section 4: Breeds of Swine	15	Fitting Your Pig.....	44
Major Breeds	15	Showing Your Pig.....	46
Your Pig's Pedigree.....	15	Being a Good Sport	47
Registration of Purebred Swine	17	Questions from the Public	47
Advantages of Crossbreeds	18	The Sale.....	48
Section 5: Selecting Project Animals	19	Section 11: Keeping 4-H Records.....	51
Naming External Parts of the Pig	19	Why Keep Records?.....	51
Selecting Feeder Pigs	19	Kinds of Records	51
How Big Should My Feeder Pig Be?	21	Your 4-H Accomplishment Records	53
Deciding How Much to Pay	22		
When You Get Your Pigs Home	22	Section 12: Pork and By-Products.....	55
Market Hog Budget	24	Pork	55
		Other Products from Swine	55
Section 6: Caring for Your Swine.....	25		
Housing Needs.....	25	Section 13: Market Hog Management Schedule.....	57
Keeping Your Pigs Clean	26	Plan.....	57
Handling Equipment.....	26	Assumptions	57
Feeding Your Pigs	27		
How Much Feed Will My Pig Eat?	28	Appendix A: Sample Medication Chart	59

1

Getting Started**Introduction**

Welcome to the 4-H market swine project! This project can be an unforgettable learning experience. You will do many things that will help you grow personally and develop skills that will help you become a more responsible person. Skills you learn from raising a pig will be valuable in the future and will carry over into other aspects of your experience as a 4-H'er. We hope you will have fun, too.

This book will teach you most of the things you need to know to raise a 4-H market hog. There are skills to learn and activities for you to do. There are some activities everyone should do and others you may choose to do. You should complete eight activities per year. Sixteen of these activities are required and should be completed in the first two years of the project. After the first two years, eight activities should be selected either from the suggested activities list in this book or from the "4-H Skills for Life" series, if your county uses them. Do as many of the activities as you can by yourself, but be willing to call on others for help. As you get older and advance through the swine project, you should select more advanced activities to accomplish. Your parents and project leaders will be happy to teach you all they know about raising swine!

How to Use Your Reference Guide

Your reference guide is designed to fit into a three-ring notebook with your project record books. You will receive only one reference guide for your entire 4-H career, so take care of it! The things to do and learn are grouped into sections about swine. Each section includes:

- objectives for that section
- information about swine and how to care for them
- words to learn
- ideas for presentations and talks
- suggested activities
- things to talk about with your leaders and other 4-H'ers.

Purpose of the 4-H Market Swine Project

In this reference guide, you will learn the fundamentals of being a good swine producer and build skills that will prepare you for life.

Some of the things you will learn about swine management are:

- why people raise swine
- how to select pigs for your project
- how to feed and care for swine
- how to keep your pig healthy
- what is normal swine behavior
- the parts of the pig
- how to fit and show swine
- how to keep records
- how to prepare for the roundup

Working with your pigs and taking part in 4-H activities will help you to develop personally and build skills for living. These skills include:

- being a leader
- being a citizen
- communicating effectively
- developing personally
- relating to people
- developing values
- preparing for a career

Project Options

Two basic kinds of 4-H swine projects are:

1. Market Swine—selection and feeding of one or more feeder pigs to market weight.
2. Breeding Swine—care and management of swine raised for breeding purposes. This includes: (a) selection and management of one or more gilts to breeding and farrowing age, or (b) management of sows and their litters (not recommended for beginning 4-H members).

You will be responsible for caring for your swine. You may choose to take market swine, breeding swine, or both kinds of projects each year. Some things for you to think about when choosing market or breeding projects are:

- do you want a short-term or long-term project?
- how much money can you afford to spend?
- what kinds of buildings, equipment, and feeds do you need?
- how much help can your parents give?

Market swine projects can be completed in a few months and require fewer facilities and management skills than breeding swine projects. Breeding swine projects are usually continued for more than one year.

This book contains information on market swine projects only. You will need to get a different reference book if you elect to take a breeding swine project.

What Do You Need?

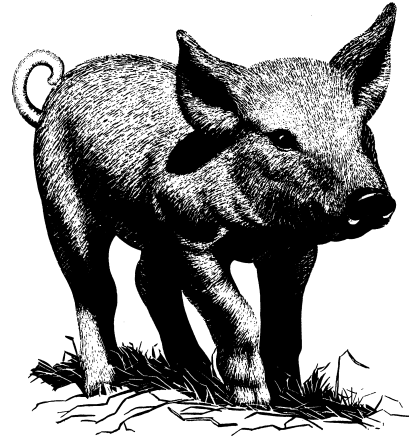
Before purchasing any pigs, make sure you have everything you need to properly manage them and keep them healthy. If you plan to take a swine project, you will need:

- an interest in swine
- a place to keep your pigs
- equipment for feeding, watering, and handling swine
- money to purchase and care for your pigs
- support from your parents and leaders



2

Knowledge and Skills Checklist



Project Requirements

Your market hog project has three major parts.

1. Caring for one or more market hogs each year.
2. Completing activities and learning skills needed to complete the swine project. You should complete a total of eight knowledge skills, life skill activities, and quality assurance skills each year. There are a total of 16 required activities. For the first two years of the project, do eight of the required activities each year. A list of the required activities for the first two years is found on pages 4 and 5. After the first two years, choose eight activities from either the lists of additional activities in this book or from the "4-H Skills for Life" series. You may do more than the required activities if you want to.
3. Keeping records. The records to keep are:
 - For the first two or three years, a "4-H Animal Project Record for Beginning Members." Start a new one each year. More experienced 4-H'ers should keep a "4-H Livestock Record for Intermediate and Advanced Projects" instead.
 - The Knowledge and Skills Checklist found in your reference guide.
 - A record of your entire 4-H career. Your leader may ask you for this information if you want to be considered for some 4-H awards.

Do these things each year:

1. Plan with your parents and leaders what you will do for your project. Identify the skills

you would like to learn and the activities you would like to do. Write your goals in your 4-H project record book.

2. Prepare a budget for your 4-H market hog project. (See Section 5)
3. Select and care for one or more market hogs.
4. Keep records of your goals, numbers of pigs, things you do to feed and care for them, money you spend and receive, and your 4-H experiences. Write them in your 4-H project record.
5. Participate in 4-H meetings and activities.
6. Do at least eight activities each year. Select eight activities from the required list each of the first two years. After the first two years, choose eight activities from either the lists of additional activities in this book or from the "4-H Skills for Life" series. Have your leader or parent sign the checklist as you finish each activity. You may substitute other activities with your leader's permission.
7. Turn in this reference manual and your project record to your leader by the due date for your club or county.

Required Swine Activities, years 1 and 2 

Choose three the first year and three the second year.

Things to do	Date done	Signature
Explain the meaning of these sex-related terms for swine: boar, sow, barrow, and gilt.		
Name and locate at least 10 of these body parts on a live hog or diagram of a hog: ham, loin, shoulder, belly, tail, feet, knees, hocks, pasterns, jowl, ears, snout, teats, vulva, testes, and sheath.		
Show and tell the proper way to drive and handle pigs.		
Lead your parent or project leader on a tour of the place where you keep your swine and point out the things you are doing to take care of your pigs.		
Name the three main things that cause pigs to get sick and at least four signs to look for to recognize sick pigs.		
Tell what the normal body temperature of swine is and show or tell the proper way to use a veterinary thermometer.		

Required Life Skills Activities, years 1 and 2 

Choose three the first year and three the second year.

Things to do	Date done	Signature
Know and recite the 4-H Pledge, 4-H Club Motto, and colors.		
Plan what you will do for your project with your parents or leaders each year.		
Select a project gilt or barrow using your knowledge of parts and desirable types.		
Keep records of your goals, numbers of swine, things you did and accomplished with them, money spent and earned, and your 4-H activities in your 4-H project record.		
Give a presentation on something you learned about swine at a club meeting or your county presentation contest.		
Exhibit your animal or something you made for this project at your county roundup.		

continued

A. Required Quality Assurance Skills and Activities, years 1 and 2

Choose two the first year and two the second year.

Things to Do	Date Done	Signature
Properly place an ear tag in a project animal.		
Record the temperature of your refrigerator. If a medication was to be stored between 36 and 42 degrees Fahrenheit, would your refrigerator be a good place to keep it?		
Make your own “sharps” container for used needles or scalpel blades out of a plastic or metal container. Make sure the container has a lid and is properly labeled.		
Read and fill out a Pennsylvania “Animal Owner or Caretaker’s Verification of Veterinarian-Client-Patient Relationship” found in the Farm Show Premium book.		

Additional Swine Activities, years 3 and beyond

Choose three of these activities each year after the first two years. Additional activities are found at the end of each section in this reference manual.

Things to do	Date done	Signature
Tell what to look for when choosing animals for market hog projects.		
Name at least six breeds of swine raised in Pennsylvania.		
Identify at least six breeds of hogs from their photos or from seeing live hogs.		
Describe the important characteristics of your breed of swine.		
Visit a fair or show and listen to the swine judge give reasons for placing the pigs the way he or she did.		
Attend a fitting and showing clinic.		
Train and fit a pig for show.		
Visit a feeder pig auction to learn how pigs are bought and sold or to look for pigs that might make suitable project animals.		
Visit a large swine facility and learn about its feeding and watering system. Also observe how the owner keeps the pigs comfortable.		
Find out what veterinary examinations and documents are needed to show a pig at a state show, such as the Pennsylvania Farm Show.		
Describe the normal sounds and behavior of swine.		

continued

Things to do

Date done

Signature

Keep a journal or chart about the health of your pig.

Label the wholesale or primal cuts of pork on a diagram of a pork carcass.

Name four or more nutrients people get from eating pork and tell a use for each in the human body.

Name examples of three or more swine by-products.

Start your own library of books, leaflets, and magazines about swine.

Make a kit filled with first-aid supplies and equipment needed to keep your swine healthy.

Graph futures prices for a "lean carcass" contract over an eight-week period.

Find 10 Web sites about selecting, feeding, or showing pigs.

Do a swine skill activity not named on this list.

Additional Life Skills Activities, years 3 and beyond

Choose three of these activities each year after the first two years. Additional activities are found at the end of each section in this reference manual.

Things to do	Date done	Signature
Lead the Pledge of Allegiance at a 4-H meeting.		
Lead the 4-H Pledge at a 4-H meeting.		
Lead a song or game at a 4-H meeting.		
Serve as a committee member.		
Serve as chair of a committee.		
Serve as an officer of your club.		
Help plan your club's yearly program.		
Help with a fund-raiser for 4-H.		
Help with a parents' night or club achievement program.		
Help with a 4-H event or activity.		
Help with a community service project.		
Give a committee or officer's report to your club.		
Give a talk to your club about something you learned or did with your swine project.		
Give a presentation or talk to a group other than your club.		
Act out a skit or pretend you are making a radio or television commercial about 4-H or pork.		
Make a poster to tell people about 4-H or something you have learned in this project.		
Help prepare a booth or window display to tell about pork, swine, or 4-H.		
Help prepare a parade float to tell about pork, swine, or 4-H.		
Help to educate the public about the benefits of raising swine or eating pork.		
Write a letter to someone you want to buy your market hog. Tell why he or she should buy your hog.		
Write a thank-you letter to a buyer of your pig or someone who helped you or your 4-H club.		
Write a news story about your club or your project for a local paper or a 4-H newsletter.		

continued

<i>Things to do</i>	<i>Date done</i>	<i>Signature</i>
Bring a friend who is not a 4-H member to a 4-H meeting or activity to interest him or her in 4-H.		
Attend a 4-H camp or overnigher.		
Attend a livestock or meats judging practice session, workshop, or clinic.		
Participate in a quiz bowl contest.		
Participate in a stock grower's contest.		
Help another 4-H'er with his or her project.		
Teach a swine skill to another 4-H member.		
Start a scrapbook of photos, newspaper clippings, ribbons, and other materials related to your 4-H experiences.		
Develop your own activity with your leader's approval.		

B. Additional Quality Assurance Skills and Activities, years 3 and beyond

Choose two of these activities each year after the first two years.

Things to Do	Date Done	Signature
IDENTIFY AND TRACK ALL TREATED ANIMALS.		
<ul style="list-style-type: none"> • Show your leader how to properly read swine ear notches. 		
<ul style="list-style-type: none"> • Research and do an educational talk for other club members about methods of electronic animal identification. 		
<ul style="list-style-type: none"> • List at least three alternate methods of animal identification (besides ear tags, tattoos, ear notches, and electronic identification) for your leader. Label each as permanent or temporary. 		
<ul style="list-style-type: none"> • Describe to your leader how a pen, lot, or room could be used as a method of identification for treated animals. 		
MAINTAIN MEDICATION AND TREATMENT RECORDS.		
<ul style="list-style-type: none"> • Create and show your leader a “barn copy” of the medication and treatment record found in your record book. Describe where it is kept near your project animal's pen. 		
<ul style="list-style-type: none"> • Draw 3 cc of water using a disposable syringe (without the needle). Pretend you were giving this dosage to your project animal. Write down how you would record it on your medication and treatment record (you're giving the injection in the muscle and there is no withdrawal period for water). 		
<ul style="list-style-type: none"> • Visit a feed store and ask for copies of medicated and un-medicated feed tags. Write down how you would record the medicated feed on your medication and treatment record. 		
<ul style="list-style-type: none"> • Explain to your leader why it is important to record who gave a medication on the medication and treatment record. 		
<ul style="list-style-type: none"> • Answer this question to your leader's satisfaction: Should routine worming treatments be included on the medication and treatment record? Why or why not? 		
<ul style="list-style-type: none"> • Write a scenario in which it would be important to keep medication and treatment records from your project for at least 12 months after the animal is slaughtered. 		
PROPERLY STORE, LABEL, AND ACCOUNT FOR ALL DRUG PRODUCTS AND MEDICATED FEEDS.		
<ul style="list-style-type: none"> • Make a list of all drug products and medicated feeds on your farm. (If you don't have any medications, ask a farmer if you can inventory his or her drug products). Record the expiration date. 		
<ul style="list-style-type: none"> • Explain to your leader why drug products have expiration dates. Why should drugs that have passed their expiration date be discarded? 		

continued

<i>Things to do</i>	<i>Date done</i>	<i>Signature</i>
<ul style="list-style-type: none"> List all pieces of information that can be found on a drug product label. Tell why each is important. 		
<ul style="list-style-type: none"> Ask a veterinarian how you should properly dispose of a full “sharps” container. Report your findings to your leader. 		
OBTAIN AND USE ONLY VETERINARIAN PRESCRIPTION DRUGS BASED ON A VALID VETERINARIAN/CLIENT/PATIENT RELATIONSHIP (VCPR).		
<ul style="list-style-type: none"> Tell your leader the difference between prescription and over-the-counter drugs. Give an example of each. 		
<ul style="list-style-type: none"> Tell your leader how to calculate the new withdrawal period for a medication if a veterinarian told you to administer twice the dosage listed on the label. (Trick question) 		
<ul style="list-style-type: none"> In your own words, white the criteria for a valid veterinarian/client/patient relationship. 		
<ul style="list-style-type: none"> Who would be a better provider of medication advice for a sick animal—a veterinarian or a farmer? Tell your leader why. 		
<ul style="list-style-type: none"> Tell your leader the difference between “extra-label” and “off-label” medication use. 		
<ul style="list-style-type: none"> List five things, if changed from label directions, constitute extra-label use. 		
USE PROPER ADMINISTRATION TECHNIQUE AND WITHDRAWAL TIMES.		
<ul style="list-style-type: none"> Using a live animal and syringe (or suitable substitute) describe how and where you would give an intramuscular and a subcutaneous injection. 		
<ul style="list-style-type: none"> Research needle gauge sizes. What is an appropriate gauge and needle length for injecting a mature cow? A baby pig? A lamb? 		
<ul style="list-style-type: none"> Write a paragraph explaining why intramuscular injections should always be given in the neck. 		
<ul style="list-style-type: none"> Using a pair of pliers and extreme caution, bend and straighten a disposable needle. Count the number of times you can bend and straighten the needle before it breaks. Tell your leader why bent needles should never be re-used and where how you dispose of used needles. 		
<ul style="list-style-type: none"> Show your leader how you would restrain your animal for an injection, if necessary. 		

continued

<i>Things to do</i>	<i>Date done</i>	<i>Signature</i>
<ul style="list-style-type: none"> Calculate the dosage of a medication and the safe marketing date if the medication was injected at 2 cc per 5 pounds of body weight. Assume you are giving it to your project animal today. Withdrawal time is 10 days. Prove to your leader when the animal would be safe for slaughter. 		
<ul style="list-style-type: none"> Find a feed store feed tag with a withdrawal period of at least five days. 		
USE DRUG RESIDUE TESTS WHEN APPROPRIATE.		
<ul style="list-style-type: none"> Demonstrate drug residues using either chocolate milk or breakfast cereal. 		
<ul style="list-style-type: none"> Research ELISA tests used to test for drug residues. Explain to your leader how to accomplish one of these tests. 		
ESTABLISH AN EFFICIENT AND EFFECTIVE HERD HEALTH MANAGEMENT PLAN.		
<ul style="list-style-type: none"> List the pros and cons of purchasing a project animal at an auction barn. List the pros and cons of purchasing a project animal from an individual. 		
<ul style="list-style-type: none"> Make a biosecurity plan to keep your animals from getting sick. Include a rodent and bird control program. 		
<ul style="list-style-type: none"> List five things you can do to make sure your pig yields a safe, wholesome carcass. 		
<ul style="list-style-type: none"> Tell your leader the difference between a modified-live vaccine and a killed vaccine. 		
<ul style="list-style-type: none"> Look up three potential vaccines you could use for the same disease in a veterinary supply catalog. List each as a modified-live or killed vaccine. Describe any differences in the method or frequency of administration. 		
<ul style="list-style-type: none"> List one disease for which your project animal should be vaccinated. Classify that disease as respiratory, digestive, or reproductive. 		
PROVIDE PROPER ANIMAL CARE.		
<ul style="list-style-type: none"> List each ingredient in your animal's feed tag as a protein source, energy source, vitamin, or mineral source. (Note: some feed tags have non-specific ingredients—like animal products, or grain products. Therefore, some ingredients may be difficult to categorize). 		
<ul style="list-style-type: none"> Tell your leader the main purpose of protein, energy, water, vitamins, and minerals in an animal's diet. 		

continued

Things to do**Date done****Signature**

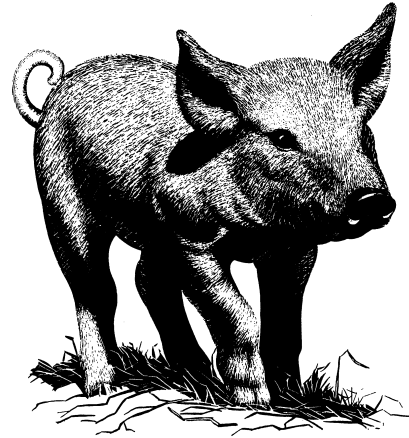
- Write a plan of how you will load your project animal from your facility. Include details on how you will keep from bruising the animal's carcass.
- Describe the watering system for your animals. Would you be willing to drink from the animal's waterer? List ways to improve your watering system.

FOLLOW APPROPRIATE FEED PROCESSOR PROCEDURES.

- Evaluate your feed storage area. Could your feed be contaminated by medicated feed, bird droppings, rodents, or other chemicals? Create a plan for improving your feed storage area.
- Weigh the amount of feed your animals eat every day. Do they waste any feed? If that wasted feed contained medication, could the animals access that medicated feed at a later date? Develop a plan to reduce wasted feed.
- Describe to your leader differences among ground meal feeds, pelleted feeds, rolled feeds, and cracked feeds. Collect a sample of each. Which are in your project animal's diet?

3

Background Information



There are some things you should know about pigs before you get started.

Objectives

After studying the materials and completing the suggested activities for this section of your project you should be able to:

1. Name the two major products we get from a pig's carcass and which is the most important in today's society.
2. Write the scientific name for swine.
3. Explain the differences among the terms swine, pig, hog, feeder pig, and shoat.
4. Name two management practices used in today's swine industry to help keep pigs healthy.

Why Do We Raise Pigs?

For most of the history of swine production (before about 1950), pigs were raised for both meat and fat. At that time, fat was important in people's diets. Rendered pig fat is called lard and was used in cooking before vegetable oils became popular.

Today, we raise pigs for meat production. Pork meats you may be familiar with include ham, bacon, pork chops, and sausage. Pig fat, or lard, currently is not very valuable. Therefore, modern market hogs are bred to maximize meat production and minimize body fat. However, pigs must have enough fat to produce flavorful, juicy meat.

Before buying your pig for a market hog project, you must realize that at the project's end your pig's purpose is to produce meat for people to eat.

What Do We Call a Pig?

The scientific name for domestic swine is *Sus scrofa*. "Swine" is a generic word, generally used in reference to any and all *Sus scrofa*. "Pig" is a term that is often interchanged with swine, but can also mean young swine up to market weight. "Hog" is a term usually associated with pigs approaching market weight. "Feeder pig" is a term that refers to young, newly weaned pigs. "Shoat" is sometimes used in place of feeder pig.

Pigs also have different names depending on their gender. "Gilts" are young female pigs before they have farrowed their first litter of pigs. "Barrows" are castrated male pigs. "Sows" are female pigs after they have farrowed their first litter. "Boars" are uncastrated male pigs.

The Swine Industry in the United States

The swine industry has changed quite a bit since 1970. Before then, many farmers kept a few sows and fed the baby pigs until they reached market weight. Pigs were often a second or third source of income for farmers. At that time, most full-time hog farmers would have owned less than 200 sows.

Today, more hogs are raised on fewer farms. This is called industry "consolidation." Now, a full-time hog farmer may own many thousands of sows. Of course, one farmer can't take care of that many pigs, so people who own large numbers of pigs hire other people to manage their pigs for them. There are many jobs available in the swine

industry for people who like to work with pigs!

There also have been changes in the way hogs are raised. Instead of raising baby pigs to market weight on the same farm where they were born, sows usually are kept at one farm, nursery-sized pigs (12–50 pounds) at another, and finishing pigs at yet a third farm. This management system helps keep pigs healthy and is called “multiple-site production.”

In addition to raising pigs on different farms, pigs are moved and fed by age groups. Keeping pigs of different ages separated also helps keep pigs healthy. In this system, all pigs from the first age group are completely moved out of a building or room before any pigs from another age group are moved in. The building is washed and disinfected between groups of pigs. This is called “all-in, all-out production.”

Words You Should Know

Lard: Rendered pig fat.

Sus scrofa: The scientific name for domestic swine.

Swine: Generic term for all *Sus scrofa*.

Pig: Usually young pigs up to market weight.

Hog: Pigs approaching market weight.

Feeder pig/Shoat: Newly weaned pig.

Gilt: A young female swine that has not yet farrowed a litter of pigs.

Sow: A female swine that has farrowed one or more litters.

Boar: A male pig that has not been castrated.

Barrow: A male pig that was castrated at a young age.

Castration: Removal of a male’s testes.

Farrow: Give birth.

Industry consolidation: Raising more hogs on fewer farms.

Multiple-site production: Raising different aged pigs on different farms.

All-in, all-out production: Raising pigs of the same age together and keeping them separate from other age groups.

Vertical integration: One person or company controlling two or more parts of the pork production chain (production, packing, processing, retailing).



Suggested Activities

- Make a chart of the different names used for pigs.
- Have members of your club answer roll call at a meeting with one name used for swine.
- Name the two major products we get from a pig’s carcass.
- Explain the difference between multiple-site production and all-in, all-out production.

Extra Activities to Try

- Ask a local swine producer if the names they use for pigs mean the same thing as the names you’ve learned.
- List all the cuts of pork you can think of.

Ideas for Presentations and Talks

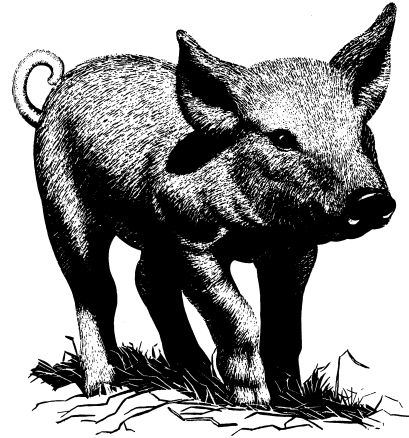
- The history of swine domestication
- How uses of pigs have changed
- Changes in the swine industry

Things to Talk About

- How will you react when your project pig is sold for slaughter?
- What are some good and bad things about industry consolidation?

4

Breeds of Swine



Swine come in many shapes, sizes, and colors. Swine that are alike in color patterns and body structure often belong to the same breed.

Objectives

After studying the materials and completing the suggested activities for this section of your project, you should be able to:

1. Name examples of some of the major breeds of swine raised in Pennsylvania.
2. Identify at least four major breeds from looking at photos or from seeing live animals.
3. Identify and describe the important characteristics of your selected breed of swine.
4. If your project animal is crossbred, name the breeds of the sire and dam and describe the traits that each of those breeds possess.
5. List some advantages crossbred pigs have over purebred pigs.

Major Breeds

Many breeds of swine are commonly raised in Pennsylvania. Each breed has characteristics that distinguish it from other breeds of swine.

Swine producers choose to raise a particular breed of swine instead of another breed because that breed has a combination of qualities that producers want to have in their herds. For example, swine from white breeds usually make good mothers, while swine from colored breeds usually make good sires when crossbreeding.

Some of the major breeds of swine raised in

Pennsylvania and their characteristics are listed below.

Berkshire: Black with white on the face, legs, and tail. Erect ears. Exceptional meat quality.

Chester White: White with small, partially drooping ears.

Duroc: Red with partially drooping ears. Muscular. Good sires. Exceptional meat quality.

Hampshire: Black with a white belt. Muscular. Good sires.

Landrace: White with large, drooping ears. Very long-bodied. Good mothers.

Poland China: Black with white on the face and legs. Partially drooping ears.

Spotted Swine: Black and white spotted. Partially drooping ears.

Yorkshire: White with erect ears. Long-bodied. Good mothers.

Your Pig's Pedigree

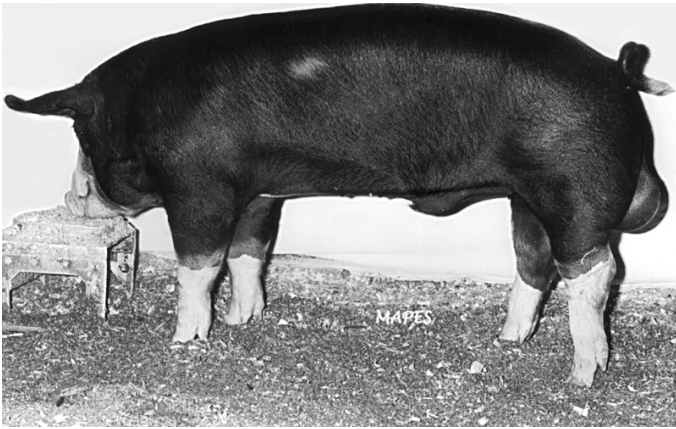
A written record of the names of a pig's parents, grandparents, and other ancestors is called its pedigree. Some words you will see used on a pedigree, and their meanings, are listed below.

Sire: The pig's father.

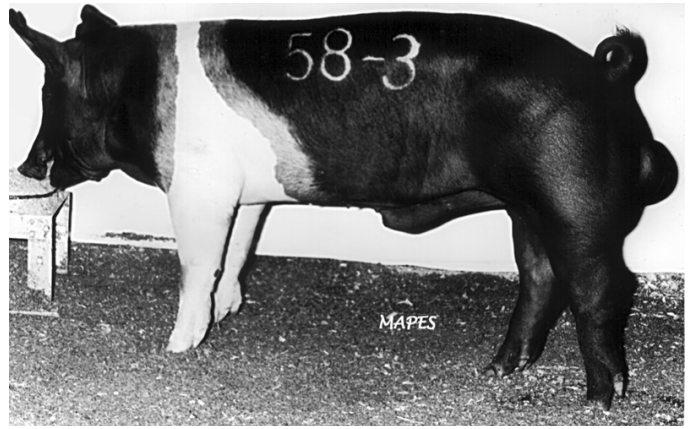
Dam: The pig's mother.

Grandsire: The father of the sire or dam (the pig's grandfather).

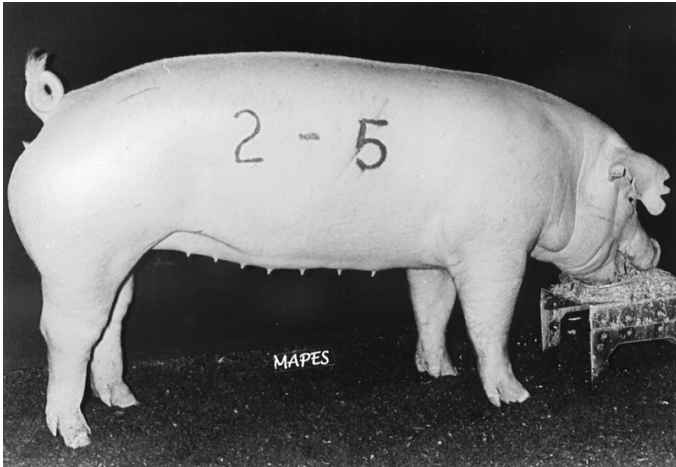
Granddam: The mother of the sire or dam (the pig's grandmother).



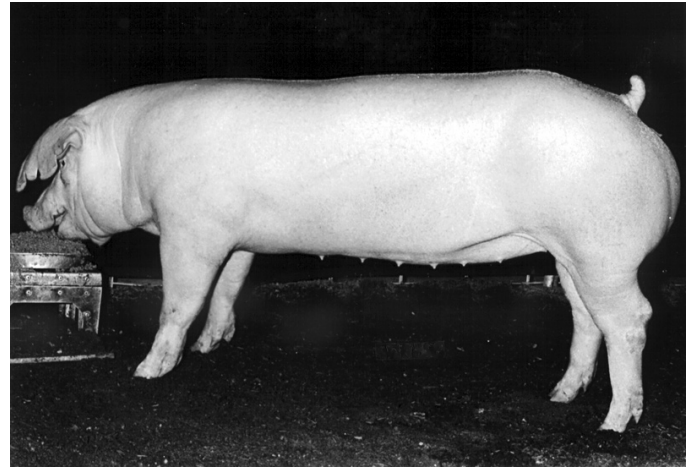
Berkshire



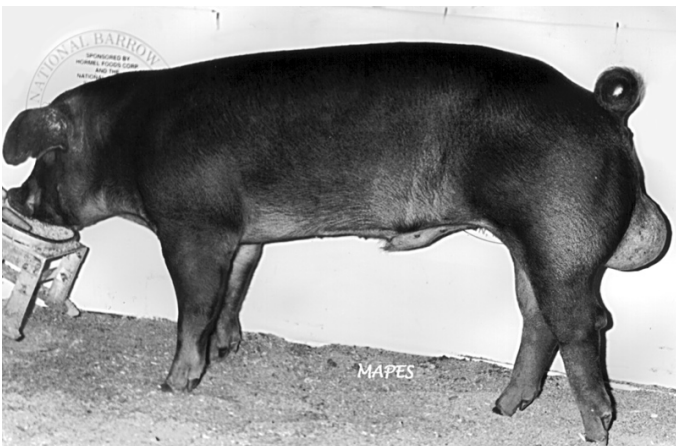
Hampshire



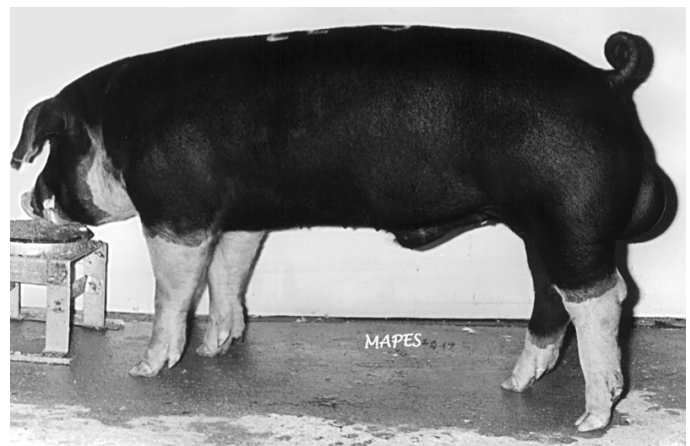
Chester White



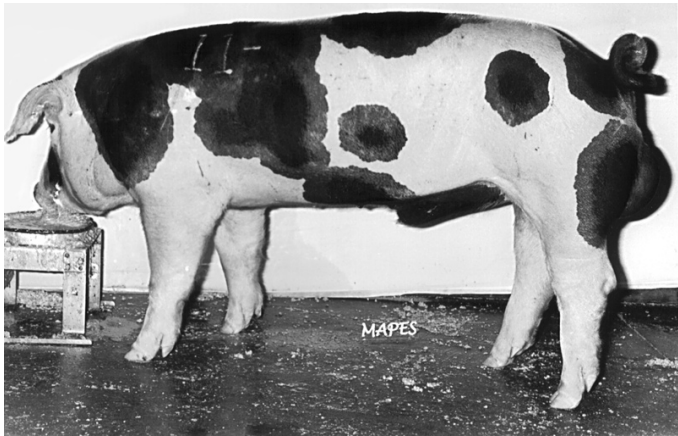
Landrace



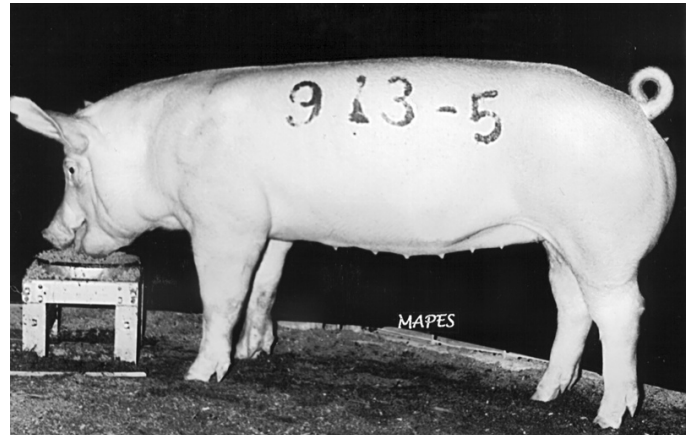
Duroc



Poland China



Spotted



Yorkshire

REGISTRATION NUMBER 303263002 SEX Boar EAR NOTCH 5-2 DATE BORN 07/05/95 ANIMAL NAME PSU5 REGAL 5-2 303263002	CERTIFICATE OF REGISTRY PSU3 REGAL 3-4 261874004 SIRE SPI 103.69 PSU4 PR SUSAN 17-5 272709005 DAM SPI 104.91	PSU1 REGAL 2-11 208189011 SIRE OF SIRE SPI 104.55 PSU1 C2 SUSAN 13-1 208207001 DAM OF SIRE SPI 106.35 BV2 PROSPECT 1-8 248858008 SIRE OF DAM SPI 103.78 PSU2 GG SUSAN 3-1 237342001 DAM OF DAM SPI 109.31
TOTAL PIGS BORN 9 NUMBER BORN ALIVE 8 BREEDER PENNSYLVANIA STATE UNIVERSITY OWNER PENNSYLVANIA STATE UNIVERSITY DAVID HOSTERMAN 124 SWINE CENTER - PORTER RD UNIVERSITY PARK, PA 16802 AMERICAN YORKSHIRE CLUB, INC. P.O. BOX 2417 • W. LAFAYETTE, IN 47906 09/07/95 <i>Danell R. Anderson</i> DATE REGISTERED EXECUTIVE SECRETARY	DATE OF SALE PERFORMANCE RECORD TRAITS EPD INDEXES EPD PIGS BORN ALIVE 21 DAY WEIGHT DAYS TO 230 BACKFAT THICKNESS MATERNAL LINE TERMINAL SIRE SPI	A pig's pedigree

Registration of Purebred Swine

When both of a pig's parents are registered members of the same breed, the pig is purebred. If its parents are members of different breeds, it is crossbred. A registered pig is a purebred pig whose name, herd and registration numbers, date of birth, pedigree, and name of owner are recorded with a breed registry association. A pig must meet all of the requirements of the breed registry association to be registered.

Breed registry associations issue registration certificates or papers to owners of registered swine. When a registered animal is bought or sold,

the seller must send the registration certificate back to the breed association so ownership can be transferred to the new owner. If you buy a registered animal, make sure the seller transfers the registration papers for you. If you plan to show the animal, make sure that ownership is transferred to you before the show's entry deadline.

If you would like to find out more about a breed, write to the breed registry association for information. Addresses for the various breed associations can be found on the Internet at www.ansi.okstate.edu/breeds/swine/.

Advantages of Crossbreeds

Crossbred pigs have some advantages over purebred pigs because of heterosis. Heterosis usually gives a crossbred an improvement over the average of its parent purebreds in a certain trait. For example, if the average daily gain of a Yorkshire purebred was 1.5 pounds per day and the average of Hampshire purebreds was 1.7 pounds per day, we would expect the average daily gain of a Yorkshire x Hampshire crossbred to be 1.6 pounds per day. In reality, the average daily gain might be something closer to 1.8 pounds per day, which is higher than either of the parent breeds. The improvement of the actual daily gain over the expected daily gain is a result of heterosis.

Heterosis affects several important traits in pigs. In addition to improvements in average daily gain, crossbred pigs are usually leaner, more heavily muscled, and resist disease better than purebreds.

Words You Should Know

Breed: A group of animals that have unique color patterns or body structure because they share common ancestors that were selected for those characteristics.

Purebred: An animal with parents from the same breed.

Crossbred: An animal with parents from different breeds.

Sire: An animal's father.

Dam: An animal's mother.

Heterosis: The usual improvement of a crossbred over the average of its parent purebreds in a certain trait.

Suggested Activities

- Answer the roll call at a meeting with the name of a major swine breed.
- Look through swine magazines to find pictures of different breeds. Make a poster or display with pictures of the major breeds of swine. Describe the special uses and features of each breed pictured.
- Visit a fair or show and try to identify the different breeds that are there. For crossbred pigs,

try to identify the breeds used in the cross.

- Write to the breed association to find out more about the breed of your project pig. Be able to describe what is special about the breed of pig you have chosen.
- Make a poster to promote or advertise your favorite breed of swine.
- List some advantages crossbreeds have over purebreds.

Extra Activities to Try

- Start a collection of model pigs from different breeds or your favorite breed.
- Discuss with a producer which breed traits are important to a breeding program and why they are important to a herd.
- Ask the manager or owner of a purebred swine farm why he or she raises a particular breed of purebred swine.
- Examine the registration papers of a registered boar or gilt. Be able to name the sire and dam of that animal.
- Ask the manager of a commercial hog farm why certain breeds are used for crossbreeding.

Ideas for Presentations and Talks

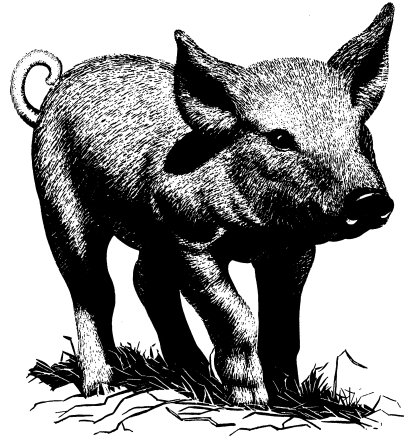
- Make a poster with photographs or drawings of the major breeds of swine, then use it to lead a discussion of the different characteristics of each breed.
- Describe the important characteristics of your breed of swine and tell why these characteristics are desirable.

Things to Talk About

- What are the major breeds of swine raised in Pennsylvania?
- What are the characteristics that are associated with each breed of swine?
- What is a crossbred pig?

5

Selecting Project Animals



The conformation and size of the pig you choose will affect the success of your project. Try to choose high quality, lean, meaty animals that will be productive. You don't need the most expensive animals to succeed.

Objectives

After studying these materials and completing the suggested activities, you should be able to:

1. Name the external parts of the hog and be able to point them out on a live hog or label them on a diagram.
2. Calculate the correct starting weight for your feeder pig.
3. Tell what to look for when choosing animals for market hog projects.
4. Complete a market hog budget.

Naming External Parts of the Pig

It's important to know the words used by swine producers. When you know and use the right words, other people who own swine will be able to understand you.

The parts of a pig's body have special names. Some parts have the same names as the meat products produced from them. For example, the upper hind leg of a pig is called the ham. Of course, this is where the ham we eat comes from.

Learn the terms listed on the diagram on the next page. On a sow or gilt, you also should be able to identify the underline (teats) and vulva.

On a boar, you also should be able to locate the scrotum, testes, and sheath.

Selecting Feeder Pigs

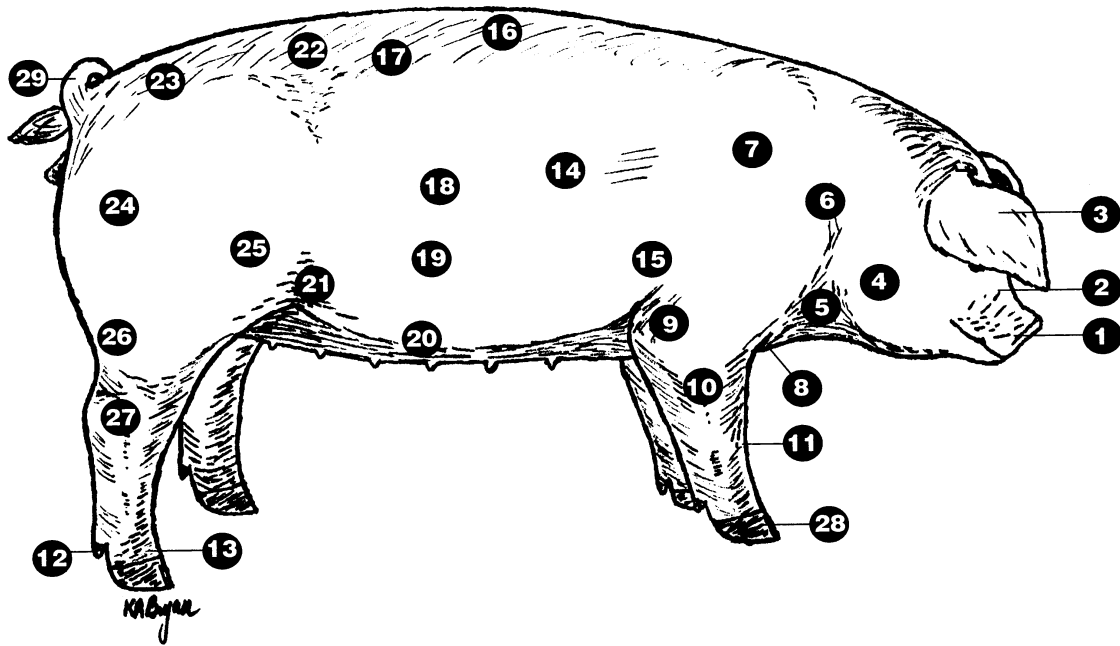
You may choose to buy feeder pigs from a reliable source or raise your own for your project. Market swine are raised to be slaughtered for meat. Choose healthy pigs that will grow fast and efficiently and that have the potential to produce meat that packers will want to buy and people will want to eat. Consumers prefer to eat pork that is lean and has very little fat or bone to go to waste, so we need to grow meaty hogs that are not too fat.

Most hogs are marketed and slaughtered when they weigh between 220 and 270 pounds. The average market weight is around 245 pounds. Hogs that have around 0.6 inch of 10th rib back fat are preferred.

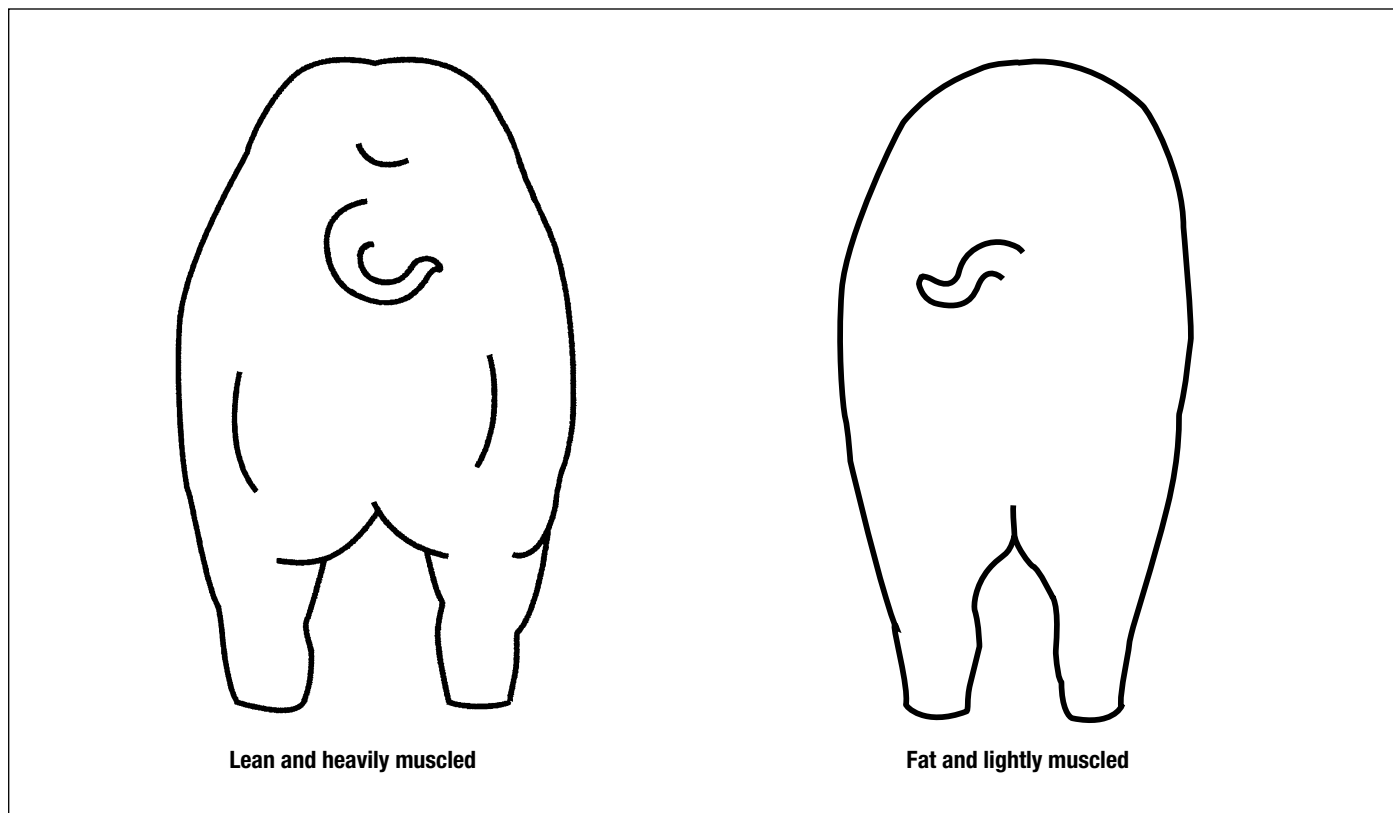
At slaughter weight, ideal market hogs are long-bodied and level over their top when viewed from the sides. They have wide, muscular loins, and large, meaty hams. They should be free of excess fat covering their back and shoulder.

For your project, select healthy feeder pigs that are big for their age and have sound feet and legs. They should walk easily. Look for long-bodied pigs with level, muscular tops and big hams at a young age. At slaughter weight, gilts are generally leaner and more heavily muscled than barrows. Study the breed photographs on pages 16 and 17 and the rear view of the lean, heavily

EXTERNAL PARTS OF SWINE



- | | | | | | |
|----|-------------------|----|----------------|----|-------------------|
| 1 | snout | 11 | knee | 21 | rear flank |
| 2 | face | 12 | dewclaw | 22 | ham-loin junction |
| 3 | ear | 13 | pastern | 23 | rump |
| 4 | jaw | 14 | rib | 24 | ham |
| 5 | jowl | 15 | forerib | 25 | stifle |
| 6 | neck | 16 | top or topline | 26 | base of ham |
| 7 | shoulder or blade | 17 | loin | 27 | hock |
| 8 | chest | 18 | side | 28 | foot or toes |
| 9 | elbow | 19 | middle | 29 | tail |
| 10 | forearm | 20 | underline | | |



muscled pig on this page. Try to select a pig that is a miniature version of these.

Barrows should be castrated and healed. The pigs should be relatively free of parasites and may or may not be tail-docked.

How Big Should My Feeder Pig Be?

In the real world of swine production, pork producers try to get pigs to market weight as quickly as possible. 4-H market hog projects are different from the real world of swine production because you are trying to get a pig to the correct size (240–250 pounds) on the day of the show. The size of pig you start with is closely related to the size of pig you end up with on show day. Use the following four steps to estimate the size of pig you should buy.

The first step is to figure out how many days you will be feeding your pig from the day you buy it until show day. You may have to use a calendar to count the days. This feeding period is usually between 90 and 130 days. The second step

is to estimate how fast your pigs will grow. An “average” pig eating a balanced, self-fed diet will gain about 1.6–1.8 pounds per day. Your pigs will gain weight faster or slower depending on genetics, health, and whether the pig is a barrow or a gilt. Barrows usually grow faster than gilts. Cross-breds grow faster than purebreds. Ask the person you are buying the pig from how fast their pigs usually grow.

The third step is to calculate the amount of weight your pig will gain during the feeding period. This is done by multiplying the number of days in the feeding period by the amount of weight you expect your pig to gain each day. For instance, if you are feeding your pig for 100 days and you expect it to gain 1.6 pounds per day, your pig should gain 160 pounds.

The fourth step is to calculate the size of pig you should start with. Subtract the expected weight gain (160 pounds in this example) from the desired ending weight (245 pounds). In this example, you should start with a pig weighing

about 85 pounds ($245-160=85$). You can use the following table to estimate the size of pig you should start with:

<i>Days Until the Show</i>	<i>Feeder Pig Size (Pounds)</i>
90	80–100
100	65–85
110	45–70
120	30–55
130	25–40

Remember, these are only guidelines. Your pigs may grow faster or more slowly than the average pig.

Deciding How Much to Pay

Pigs for 4-H projects can be bought from different places. Many 4-H members buy pigs from the farms of neighbors or other persons known to raise high-quality, healthy pigs. Pigs also may be bought at feeder pig auctions. Some people are paid to take orders for pigs and buy them for other people. Look for pigs from producers who have sold pigs to other successful 4-H'ers. Try to buy pigs from someone who can show you good records of the vaccinations, other shots, and dewormers the pigs have had before you buy them. Farmers who feed and sell hogs for a living need to get more money when they sell their hogs than it costs to raise them to market weight, or they will lose money. If you pay too much for your pig or spend too much to feed and care for it, and you do not get a high enough price when you sell your pig, you will lose money, too.

Before you purchase a feeder pig, you need to fill out a budget for your entire project. A sample budget can be found on page 24. To decide how much you can afford to spend to purchase your pig, first estimate what it will be worth when you will sell it. Subtract what you think it will cost to pay for feed (see "How Much Feed Will My Pig Eat," page 28, to estimate how much feed will be required), veterinary care, supplies, transportation, bedding, marketing costs, entry fees, interest on borrowed money, and other costs. After

subtracting these projected expenses, you'll know how much you can afford to pay for your feeder pig.

Pigs sold at 4-H auctions, especially champions, often sell for more money than pigs sold at local sale barns or directly to packers. Most 4-H pigs will not be champions, so don't expect a grand champion price when you make your plans for the year. Real-world prices for hogs change from day to day, so it's a good idea to follow market reports in farm newspapers or on the radio to find out what most hogs are worth. Ask your leader or extension agent for help in estimating your expenses.

When You Get Your Pigs Home

Much of the training required to show your pig correctly should be done at home before the roundup. When you first bring your pig home, get it used to you by spending time in the pen each day. Pigs will soon approach you out of curiosity. Make slow movements to avoid frightening them. Attempt to scratch them behind the ears and along the back. You will soon gain their confidence and trust. With time, your pigs will come to expect their daily scratching. Some pigs will even lie down and roll over to have their bellies scratched.

Words You Should Know

Budget: An estimation of the profitability of raising market hogs.

Conformation: A general term describing the way a pig is put together and its appearance.

Feeding period: The time from when you buy your pig until the show.

Sound: Free from defects.

Tail-docked: Has had the tail cut short.

Suggested Activities

- Label the parts of a hog on a diagram or point them out on a live hog.
- Have members of your club answer roll call at a meeting with the name of a swine part.
- Participate in a swine judging practice session, workshop, or contest.

- Select a project gilt or barrow using your knowledge of parts and desirable type.
- Visit a fair or show and listen to the swine judge give reasons for placing the pigs the way he or she did.
- Visit a feeder pig auction to learn how pigs are bought and sold or to look for pigs that might make suitable project animals.
- Calculate how big your feeder pig should be, based on the dates of your show.
- Compare your budget with real-world hog and feed prices.

Extra Activities to Try

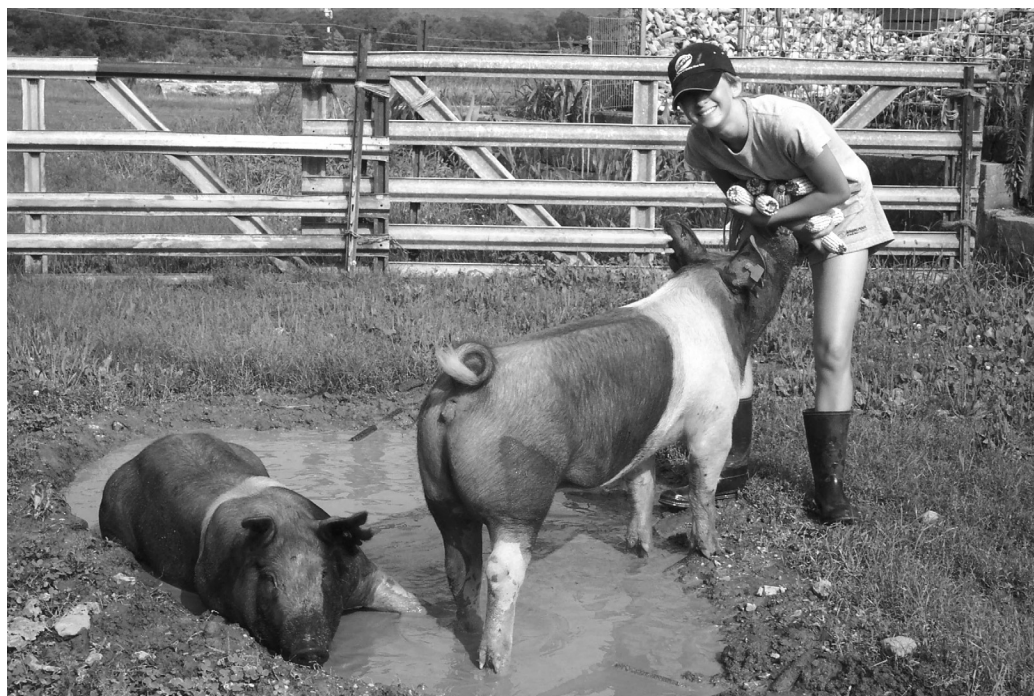
- Visit a feeder pig sale.
- Look up the local market price of hogs each week in a farm newspaper or other source of price information. Make a graph of swine prices each week for several months.
- Check feed prices with a local feed supplier.

Ideas for Presentations and Talks

- Identifying the parts of pigs
- What to look for when selecting project gilts or barrows
- What it costs to buy and raise a pig

Things to Talk About

- What are the main parts of a pig's body?
- What factors should you look for when choosing feeder pigs for market swine projects?
- What is the normal weight of market hogs when they are sold for slaughter?
- What is the market value of your feeder pig or market hog?



MARKET HOG BUDGET

Receipts

Sell market hog Weight () x cents per pound () = value _____

Premiums _____

Other income _____

Expenses

Feed Pounds needed () x cost per pound () = feed cost _____

Pig cost _____

Bedding _____

Veterinary cost _____

Supplies _____

Transportation _____

Marketing costs _____

Entry fees _____

Interest on borrowed money _____

Other _____

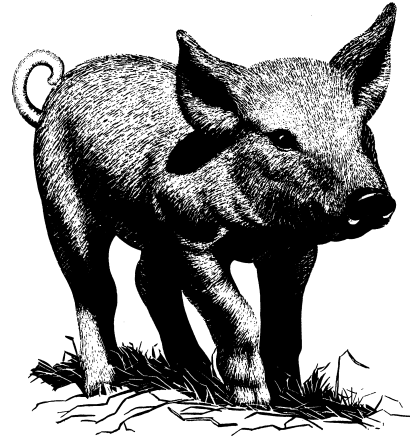
Total expenses _____

RECEIPTS MINUS EXPENSES = EXPECTED PROFIT (OR LOSS) _____





Caring for Your Swine



Taking proper care of your project swine will be a great learning experience for you. Your pigs have many needs that must be met in order to live comfortably. To grow and produce efficiently, swine need clean, comfortable housing, fresh air, clean water, and a good supply of feed.

Objectives

After studying the materials and completing the suggested activities for this section of your project, you should be able to:

1. Outline the basics of swine care, including proper bedding and living conditions.
2. Lead a parent or project leader on a tour of the place where you keep your swine and point out what you are doing to take care of them.
3. Calculate the amount of feed required to feed out a market hog.

Housing Needs

Don't buy any pigs until you have a good place to keep them. In some areas, people are not allowed to keep farm animals. Find out if local regulations restrict where you can keep your pigs. Also find out if there are special laws or rules you must follow to care for your swine.

Make sure you have the right kind of facilities and equipment to house and care for your pigs. Pigs don't need fancy or expensive facilities to do well. Many people raise pigs in confinement systems, but it will cost less to keep your pigs on a pasture or dry lot. A small building with a sloping

roof will make a good shelter. The building may have an open front, but it should have its sides enclosed during fall, winter, and spring.

Pigs need space to lie down, move around, and eat. Provide at least 10 square feet of barn or pen space for each pig to be housed in a shelter or pen. Pastures or dry lots should contain about 200 square feet for each pig.

When pigs breathe smelly, stale air, they may get sick or grow more slowly than normal. Provide a good source of fresh air (ventilation), but keep your swine out of drafts that could make them sick.

Pigs don't grow very well when they are too hot or too cold. Comfortable pigs will sleep on their sides with their legs outstretched. Market hogs are most comfortable and grow best when the temperature is between 55° and 70°F.

Pigs that huddle, pile up, or sleep on their stomachs are usually too cold. Cold pigs will use most of their feed to keep warm instead of growing. If the place where you keep your pigs is too cold, provide straw or other bedding so the pigs can lie in it and keep warm. It may help to lay boards over the pen and stack straw bales on the boards to create a warm spot in the pen for pigs to sleep in.

During hot weather, pigs may breathe with their mouths open if they are too hot. When pigs are too warm, they will grow slowly because they don't eat enough feed. Provide shade to keep your pigs comfortable in the summer. Exposing your

pigs to long periods of sun in the summer could give them sunburns or cause sunstroke. A good, cheap source of shade for pigs kept outdoors is a frame of poles covered with straw, cornstalks, or plastic feed bags. Trees will give shade, too.

Pigs do not have sweat glands, so they do not sweat when they are hot like people do. Instead, to cool off, pigs like to lie in the mud or in water. Some pigs like to play in their water bucket or the automatic waterer. During very high temperatures, you may want to spray water on your pigs several times a day to keep them cool.

Keeping Your Pigs Clean

Pigs usually pick one spot in their pens to use as a bathroom. They will try to leave their urine and manure in the same general place and keep the rest of the pen clean.

Try to keep the pens of your swine clean to reduce the chance of disease. Some swine barns are built in ways that keep manure from piling up in them. If yours is not, you will need to scrape the manure from your pen often to keep it clean.

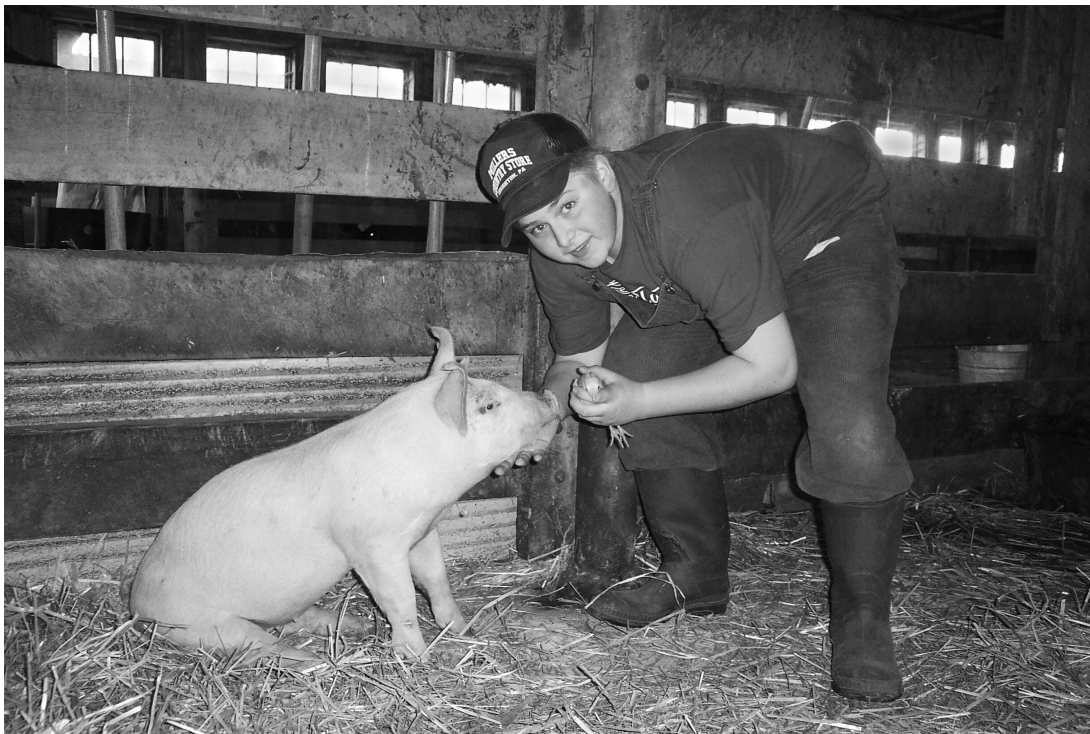
Swine manure contains nitrogen, phosphorus, and potassium. All three of these nutrients are necessary to make plants grow. If you have a garden, you can use the manure your pigs produce instead of buying commercial fertilizer. Large swine producers are required to have a certified plan for where their manure will be spread so that the nutrients in the manure match the nutrient needs of plants.

Some places have laws controlling what to do with manure, so find out if there are special rules you must follow in your area.

Handling Equipment

In addition to finding a place to keep your pigs, you also will need equipment to move, transport, feed, and water them.

Have a good loading ramp to move pigs in and out of your facilities. You can get loading chute designs from your extension agent. If you feel a loading chute is too expensive, have an area of the pen or pasture where the pigs can be cornered for easier loading.



Feed and water can be provided by self-feeders and automatic waterers. Provide one feeder hole for every three pigs and one waterer for every 10 pigs in the pen or pasture. If you use troughs, provide space for all pigs to eat at the same time. Make them sturdy enough so pigs won't walk in them or turn them over.

Feeding Your Pigs

Pigs need to eat to stay alive, grow, and reproduce. Pigs can not break down hay and grass as well as cows and sheep do, so swine feeds contain mostly grains.

Pigs need energy to grow and protein to build and repair muscle tissue. Feed grains are usually either a good source of energy or a good source of protein, but rarely a good source of both. Balanced diets for pigs usually combine a good energy source (such as corn, wheat, or barley) with a good protein source (most often soybean meal). Grains don't contain all the vitamins and minerals pigs need, so they must be added to the feed in one of three ways: individually, as a vitamin/mineral pre-mix, or combined with soybean meal as a protein/vitamin/mineral supplement.

If you are raising market swine, start feeder pigs on a self-feeding program using a grower feed containing 16–18 percent protein. If you follow directions carefully, the feed can be medicated. Switch to a developer feed when the pigs reach 125 pounds. Remove the medication and lower the protein by one or two percentage points. When pigs reach about 200 pounds, you may consider decreasing protein again.

Percent crude protein for:	Average	Range
40-pound pig	17%	16–18%
125-pound pig	16%	15–17%
200-pound pig	15%	14–16%

You may purchase commercial feed or make your own. If you make your own, be sure the feed contains the right amounts of vitamins and minerals, as well as protein. A simple way to make sure

you are feeding the right amounts of vitamins and minerals is to mix a commercial supplement with your grain. For example, a mixture of 75 pounds of ground shelled corn and 25 pounds of a typical commercial protein supplement would contain about 16 percent protein and all the necessary vitamins and minerals. Use 80 pounds of ground shelled corn and 20 pounds of commercial supplement for a mixture with 14 percent protein. Ask your leader for help if you're not sure what to feed.

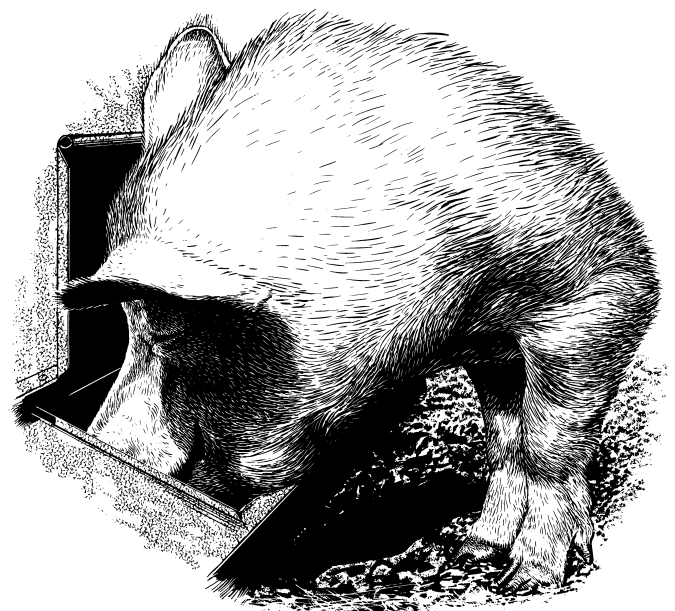
Be sure to provide plenty of clean water. Pigs will drink about 1.5 quarts of water for every pound of feed they eat, so a pig weighing up to 125 pounds will need 1 to 2 gallons of water every day. Pigs weighing more than 125 pounds will need about 2.5 gallons of water each day.

Water consumed per pig per day (does not include water wasted)

40-pound pig, 1 gallon

125-pound pig, 2 gallons

200-pound pig, 2.5 gallons



How Much Feed Will My Pig Eat?

Pigs' eating habits are like those of people. Some eat a lot, and some not so much. Also, the bigger they are, the more they eat. A 40-pound pig on a self-feeder may eat only 2.5–3 pounds of feed per day. A self-fed market weight pig may gobble over six pounds per day. Most pigs will average around five pounds a day over the entire feeding period.

You need to be able to calculate the total amount of feed each pig will eat between the time you buy it until the time you sell it. This calculation is simple. First, you need to know the amount of weight you expect your pig to gain. This will depend on your pig's starting weight and how many days there are between purchase and show day (see "How Big Should My Feeder Pig Be?" page 21). Let's say your pig needs to gain 180 pounds. A pig eats about three pounds of feed for every pound of weight it gains. If your pig needs to gain 180 pounds, multiply 180 by 3 to arrive at the total amount of feed your pig will eat. In this instance, it's 540 pounds of feed.



Suggested Activities

- Visit a large swine facility and learn about the feeding and watering system. Also observe how the owner keeps the pigs comfortable.
- Figure out how much feed your pig is eating each day.
- Lead your parent or project leader on a tour of the place where you keep your swine. Point out the things you are doing to make your pig comfortable. Show that each of the following are taken care of:

- _____ Is there plenty of feed?
- _____ Is the pig being fed properly?
- _____ Is the water plentiful and clean?
- _____ Is the pig comfortable?
- _____ Is the pen clean?
- _____ Is there enough fresh air?
- _____ Is it too cold or too hot?
- _____ What did the feed cost?
- _____ Are records being kept?

Extra Activities to Try

- Collect samples of ingredients typically used in swine rations so you can learn to identify them. Discuss with your leader or parent what each ingredient contributes to the ration.
- Look at a tag from a commercial swine feed. Name the main ingredients and tell how much protein is in the feed.

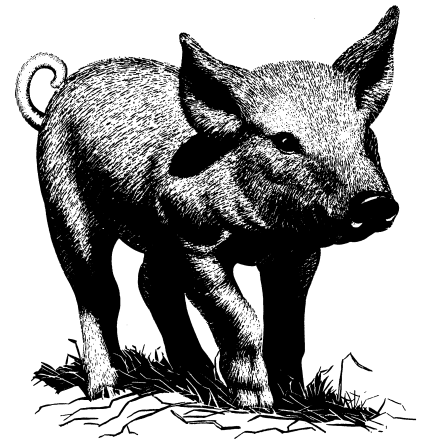
Ideas for Presentations and Speeches

- How I take care of my pig
- My pig's basic needs
- Swine facilities and equipment
- Swine identification systems

Things to Talk About

- What do you need to do to take care of your pig?
- How do you know if your pig is too cold or too warm?
- Why do pigs like to play in the mud?
- Why should you keep records of the feed your pig eats?

7 *Swine Behavior, Movement, and Transportation*



Pigs can tell you whether they are sick or healthy by the way they act and the sounds they make. Learn to watch and listen to your pigs, because they can tell you when they are okay and when they need you to do something for them.

Pigs under stress, angry, or excited can hurt people or themselves. If you understand how pigs normally behave and what they like and dislike, they will be easier to handle and you will be less likely to get hurt working with them.

Objectives

After studying the materials and completing the suggested activities for this section of your project, you should be able to:

1. Describe the normal sounds and behavior of swine.
2. Recognize whether your pig is behaving normally when you watch and listen to it.
3. Calmly move pigs using the principles described in this section.
4. Describe the importance of space and weather when transporting pigs.

How Pigs Behave

One of the most interesting things about pigs is the way they act. They can be very funny to watch. Like people, pigs tend to be active during the day and to sleep at night. However, they tend to sleep a lot during the day, too. By contrast, you could walk into a cow barn at three o'clock in the morning and find the cows all wide awake!

Generally, you will observe your pigs doing a few different things. First, pigs root with their snouts. They try to dig up the dirt or bedding in their pens. Next, because pigs are very curious animals, they tend to chew on things. They will chew on feed buckets, fences, and even on other pigs' tails. Pigs will fight with one another, especially when new pigs are introduced into the pen. Pigs make three types of sounds. They grunt, woof, and squeal. Grunting and woofing usually mean that the pig is content and happy. Pigs squeal when they are ready to be fed or when someone or something makes them angry.

Pigs usually walk when they move around their pens. If they run, they are feeling energetic and happy. Because pigs are so meaty and heavy for their size, they are not fast and they do not run like a dog would.



Pigs like to interact with people. It is normal for them to chew on people's shoes or pant legs. They do not bite the way dogs would, but you should use caution around boars or mothering sows because they can hurt you.

Pigs are very curious, so they pay a lot

of attention to their feeders and waterers. They will chew on other pigs' tails or play with "toys" you give them if they are curious or bored. You might consider hanging an old towel or rubber hose in the pen for them to play with. They can get into trouble and hurt themselves or damage equipment when they are curious about electric wires and lights.

Pigs normally will lie on their sides or on their stomachs to sleep. If they are lying on their backs, for example, there is probably something wrong.

Some pigs get excited very easily. People who understand normal behavior of pigs can build equipment and facilities that keep pigs calmer and make them easier to move and handle. For example, loading chutes should have solid sides so pigs will not see things on the outside of the chute that could scare them. Pigs will follow another pig if they can see it moving. Pigs prefer to move toward light and away from darkness. They do not like to move toward moving objects and loud noises. Pigs do not like to step over obstacles like a garden hose or door frame.

Pigs living in the same pen develop a social structure in which one pig is "boss," another is

second in command, and so on down to the bottom-ranking pig. To establish the chain of command, pigs fight with each other and the winner claims the higher spot on the pecking order. In a pig fight, the combatants stand side by side, taking turns biting at each other's head and shoulders until one of them runs away.

Normally, pigs do not suffer lasting injuries from these scraps, but most do receive scratches, and the chance for serious injury is higher as pigs approach market weight. When pigs from separate pens are mixed, expect them to begin fighting with their new pen mates. Fights between market-weight pigs in a show ring should only be interrupted by an adult carrying a sorting panel. The panel should be placed between the fighting pigs' heads. When the pigs can no longer see each other, the fighting will stop.

Handling Swine

To properly handle pigs, you'll need to use some principles of swine behavior. Here are four steps to successfully move pigs.

The first step is to get behind the pig or pigs. Standing in front of or even beside a hog will not



make the hog go forward.

Step two is to use a sorting panel (sometimes called a hurdle). Most obstacles near the aisle—corners, sudden open spaces, or doorways—will cause a pig to hesitate. At that moment the pig will always look to the rear (sometimes without completely turning his head). If he sees the hurdle, he'll usually continue in the right direction. With no hurdle, the only things behind him are two legs and a lot of open space, so he'll probably try to return to where he knows it's safe.

Therefore, the biggest advantage of using a sorting panel is to block the hog's view. If a panel isn't available, even a feed sack will help in a pinch. A practical size for a small sorting panel is 30 inches wide x 24 inches high x 1/2 inch thick. Larger sorting panels may be 36 inches wide x 28-30 inches high. Heavy-duty plastic hurdles are now available; they are much lighter and more manageable than those made of plywood.

The other obvious function of the hurdle is to physically prevent hogs from going in the wrong direction. When handling the panel, always lean the top edge toward you. That prevents the hogs from lifting the hurdle and running underneath.

Step three is to have good facilities. Alleys 36 to 42 inches wide function very nicely. The idea is to keep hogs moving. Making the aisle wide enough for hogs to move past one another and to turn around is an advantage, not a drawback. Also, alleys should have solid sides and gradual corners whenever possible. Open sides distract hogs, and blind corners confuse them.

Loading chutes should also be wide enough for two hogs to walk side by side.

Step four is to simply slow down. The most obvious mistake most 4-H'ers display when moving pigs is simply a lack of patience. Shouting and



slapping only excite and confuse hogs, making them more difficult to handle. If that seems hard to believe, try loading pigs in complete silence. You might be surprised to find that pigs load just as quickly.

What do you do when your hog comes to a stop? A slap on the back often works to get him moving again, but too many or too aggressive slaps can cause a bruised loin. You could also simply close off any escape routes and wait until the pig feels like moving again. Once a pig starts moving, let it move.

How do you turn a hog around? By using its head. Use your hand or a hurdle to move a pig's head to the side. If a pig's head turns around, the rest of the body will soon follow.

Transporting Pigs

Two important things to worry about when trucking hogs are weather and space.

Weather

A combination of hot weather and high humidity can kill pigs on a truck. Keep the sides and front of the truck as open as possible. If the temperature exceeds 80 degrees, wet the hogs down before or immediately after loading. If you have to wait in line to unload in hot weather, make provisions to wet the hogs down again. The National Institute for Animal Agriculture (see www.animalagriculture.org) provides an index to identify dangerous conditions for trucking hogs, based on temperature and relative humidity (next page).

Anytime the index is in the ALERT range, load 10 percent fewer hogs on the truck. When the index is in the DANGER range, load 20 percent fewer hogs and haul at night. If the index is in the EMERGENCY zone, postpone shipments until weather moderates.

Cold weather can also kill hogs, but the dan-

gers are easier to prevent than in hot weather. Protect hogs from wind and rain (especially freezing rain). Use straw bedding when temperatures drop below 60 degrees. Note that when the outside temperature is 40 degrees and a truck is traveling at 50 mph, the hogs on the outside of the truck are exposed to a wind chill of eight degrees.

Space

A rule of thumb is to provide roughly 4.25 square feet of space on the truck for each 250-lb hog. When the weather-safety index (see illustration below) is in the ALERT zone, increase space to 4.75 square feet. If the index is in the DANGER zone, increase space to 5.25 square feet. Keep in mind that these estimates are for large trucks. For pickup trucks and small livestock trailers, the space will have to be increased somewhat. Always use partitions in the truck to keep hogs from piling up.

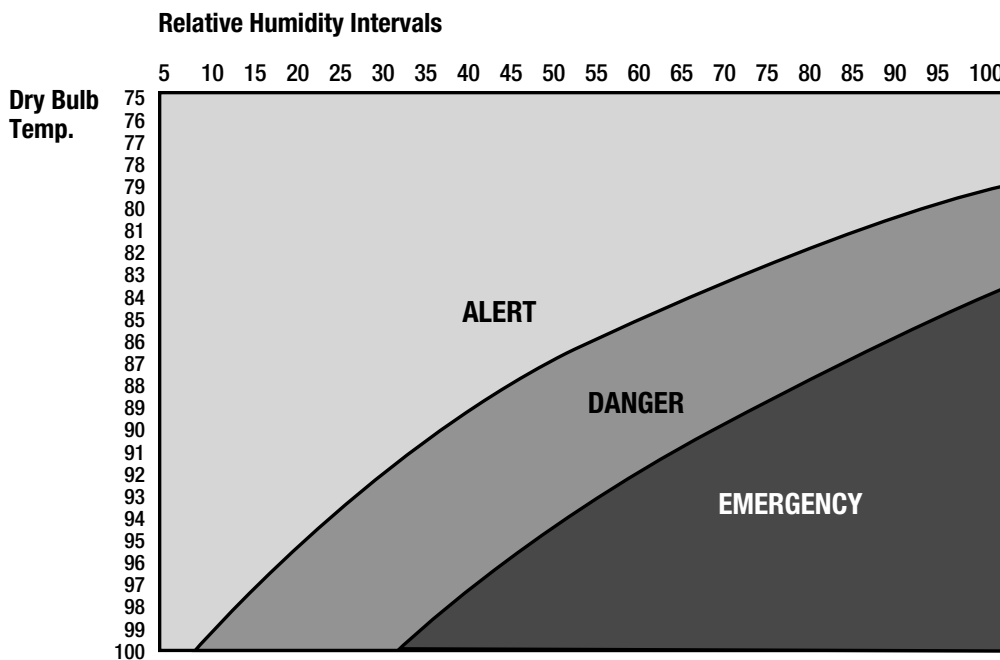
Feeding

Hogs with full stomachs are more likely to die during transport. If hogs are to be slaughtered the same day as shipment, withhold feed for 12-18 hours before loading. This helps reduce death losses and will also reduce the incidence of PSE (pale, soft, and exudative) pork.

Stress

Porcine stress syndrome (PSS) is the leading cause of death during transport. Hogs suffering from PSS will show labored breathing, may have tremors, and often have red or purple blotches on the skin. Stress causes body temperature to increase more than normal, and this can lead to heart failure on hot days. Lying down is a clear sign that the hog is in trouble. If a pig appears to be suffering from PSS, leave it alone or wet the ground around it. Pouring cold water directly on a stressed hog may cause shock and sudden death.

LIVESTOCK WEATHER SAFETY INDEX



(ADAPTED FROM NATIONAL INSTITUTE FOR ANIMAL AGRICULTURE)



Words You Should Know

Ethology: The study of animal behavior.

PSS: Porcine Stress Syndrome.

PSE: Pale, Soft, and Exudative pork.

Suggested Activities

- Spend time observing pigs as they eat and sleep. Point out the different sounds you hear and behavior you see to your parent or leader.
- Attend a swine show and observe the behavior of the animals.
- Observe other farm animals or house pets and compare their actions to pigs' actions.
- Plan how you will move your pigs out of their pen and onto a truck or trailer. Include needed equipment.
- Calculate the number of square feet in your truck or trailer and decide how many pigs would fit under normal, ALERT, and DANGER temperature conditions.
- Watch others move pigs at your county fair or show. Make a list of things that are done correctly or incorrectly.

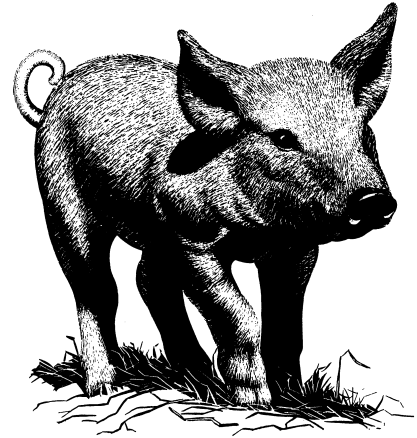
Ideas for Presentations and Speeches

- Sounds that pigs make
- How to tell if your pig is acting normally
- How to improve swine-handling facilities
- How to handle a stressed pig
- Why pigs fight

Things to Talk About

- How does a pig usually act during a typical day?
- What sounds do pigs make and what do these sounds mean?
- What should you do if you think your pigs sound or act as if something is wrong?
- How would you improve the swine-handling facilities at your county fair or roundup?
- What should you do if you observe someone handling pigs improperly?

8

Keeping Swine Healthy

The success of a swine operation depends upon the health of the swine. Healthy, well-managed swine will grow and produce efficiently. Disease in a swine herd can be costly and can quickly destroy a herd.

Objectives

After studying the materials and completing the suggested activities for this section of your project you should be able to:

1. Identify signs of a healthy hog.
2. List four or more symptoms of a sick hog.
3. List ways to keep a pig healthy.
4. Name the three main things that make pigs sick.
5. Show and tell how to use a veterinary thermometer.

How Pigs Digest Food

Although pigs are farm animals, their digestive systems are unlike those of other farm animals—and very similar to the digestive systems of humans. Perhaps you've heard that cows and sheep have four stomachs. Well, they do in a way. Actually they have a stomach with four compartments. One of these compartments is called a rumen. Here, tiny bacteria break down grass and hay. This gives cows and sheep the ability to eat and digest hay. This is why we call cows and sheep "ruminants."

Pigs only have one stomach, like people, so pigs eat the same kinds of foods as people. Corn,

oats, and other grains are all part of a pig's diet. Pigs are called nonruminants or monogastric animals. "Mono" means one and "gastric" means stomach.

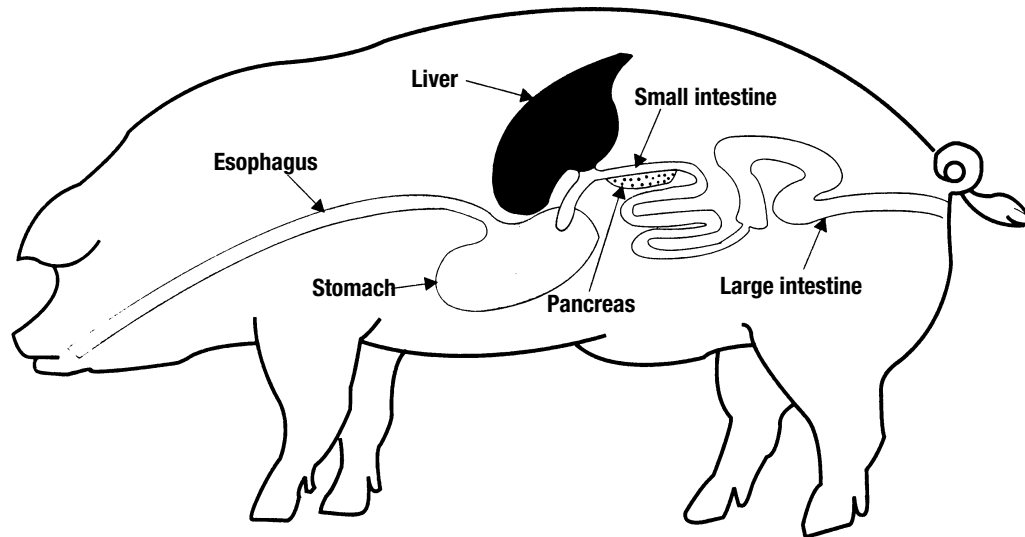
In addition to their stomachs, pigs have a small intestine, a large intestine, and a liver to help digest their food. Their hearts pump blood to all parts of their body and pigs breathe with their lungs. These internal parts of a pig's body are very important. They must all work properly in order for the pig to be healthy. If your pig is not healthy, the organs and body systems will not work properly.

What Makes Pigs Sick

Knowing a pig's normal body temperature is important because the body temperature goes up if the pig gets sick. A higher temperature is a sure sign that your pig is not feeling well. The normal body temperature for people is 98.6°F. The normal body temperature for pigs is 102°F. However, if a pig's temperature is between 101.5°F and 103°F, it is normal. A veterinarian may ask what your pig's temperature is if you call when your pig acts sick.

You should learn to use a veterinary thermometer to take your pig's temperature. Use one that has a loop on the end. Tie a string through the loop so the thermometer will not be easy to "lose" inside the pig. Put a clip on the other end of the string so you can clip the string to the pig's hair. To take the pig's temperature, place the thermometer into the pig's rectum and leave it there about

INTERNAL PARTS OF SWINE



three minutes before taking it out and reading it.

A healthy pig will eat and drink all day long, but less at night. If your pig is not eating or drinking, it may be sick. There are three main ways that pigs can get sick. First, pigs get diarrhea. This affects the digestive system. Runny feces with a strong smell is characteristic of diarrhea. It is very important to realize that germs are contained in the diarrhea, so it is necessary to keep the pen clean. Dirty pens and equipment can spread bacteria and germs that cause disease.

Young pigs are more likely to get diarrhea, and it is more serious for them than for older pigs. In fact, pigs can die if diarrhea is not treated right away. If you notice that your pig has diarrhea, get help from an adult and try to remember when the diarrhea started.

The second kind of major health problem is respiratory diseases, or those related to the pig's breathing. This problem affects the lungs, throat, and nose. The easiest way to know if your pig has such problems is by hearing it cough, sneeze, or have trouble breathing. The biggest cause of

respiratory problems is poor ventilation. The pig is not getting enough fresh air. Germs are carried through the air or are picked up through nose to nose contact. Again, if you see any of these problems, ask your parent or leader for help.

Another large health problem for pigs is parasites. Parasites affect the digestive system or the skin. Worms are the main kinds of internal parasites. There are many different types of worms: they come in different shapes and sizes. Some are only visible with a microscope, while others are large and look like spaghetti. Although worms rarely kill pigs, they are not good for pigs. Worms consume feed nutrients that pigs should be using to grow. Sometimes you may not know if your pig has internal parasites. Many farmers assume their market pigs have worms and they deworm their pigs after they are weaned or shortly after they buy them. Farmers deworm their pigs again when the pigs reach 100 pounds if they are in an outside lot. You should follow the same steps as farmers do.

Lice and mange are the two kinds of external parasites that can affect pigs. The main thing these

parasites do is make the pig itch. An itchy, uncomfortable pig does not grow well because it spends most of its time scratching instead of eating! To recognize lice, check behind your pig's ears to see if you spot any tiny insects.

If your pig is scratching its entire body up against the fence, it probably has mange. Tell your parent or leader if your pig appears to have lice or mange. In general, to prevent your pigs from getting lice or mange, keep the pigs and their pens clean and treat for worms and external parasites at the recommended times.

In addition to the health problems listed above, it is important for you to know that pigs can get many other diseases. Such diseases may be contagious and passed from pig to pig and from herd to herd. Therefore, to maintain "biosecurity" (a disease-free environment), it is suggested that you do the following:

- Isolate new animals.
- Place a foot bath with disinfectant at the entrance to your barn, or wear disposable boots.
- Avoid wearing the same clothes from farm to farm.
- Don't allow people who have recently been around other pigs to be near your pigs.

The most important thing to do to keep your pig healthy is keep the pig and the pen clean. Also, make sure the pig is comfortable. Get help from an adult if you think your pig is sick.

Words You Should Know

Monogastric: An animal, such as a pig, that has one simple stomach.

Parasite: A living being that lives and gets its food in or on another living being, called a host.

External parasites: Those parasites causing problems on the outside of the pig, such as lice and mange.

Internal parasites: Those parasites causing problems on the inside of the pig, such as worms.

Biosecurity: Practices to keep your pigs from catching diseases from other pigs, people, or the environment.

Suggested Activities

- Name the three main things that cause pigs to get sick.
- Describe at least four signs to look for to recognize a sick pig.
- Show or tell the proper way to use a veterinary thermometer to measure a pig's temperature.
- Keep a journal or barn chart about your pig's health.
- Find out what veterinary examinations and documents are needed to show a pig at a state show, such as the Pennsylvania Farm Show.

Extra Activities to Try

- Observe your pig's behavior to see if it is eating, drinking, and breathing properly, and if it is scratching too much.
- Observe your pig's urine and feces to see if they look normal.
- Have your parent or project leader check to see if the ventilation in your pig's pen is okay.
- Check behind your pig's ears to see if it has lice.
- Visit a local veterinarian. Ask to see internal parasites under a microscope.
- Travel with a veterinarian and watch him or her examine a sick pig.
- Deworm your pig shortly after you buy it and after it reaches 100 pounds if it is in an outside lot.
- Set up a health plan for your herd.

Ideas for Presentations and Speeches

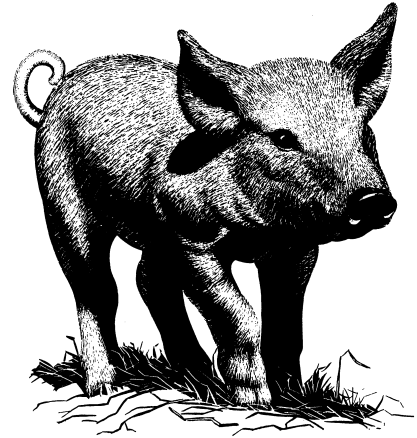
- The normal pig
- Health problems of pigs
- How to keep a pig healthy and happy
- Parasites and how to control them
- Biosecurity practices

Things to Talk About

- What steps should you take to keep your pig healthy?
- What should you do if your pig gets sick?
- What are the three main health problems pigs can have?
- How does a healthy hog act?

9

Pork Quality Assurance



Because you have a 4-H market hog project, you are a swine producer. All swine producers are linked to the human food chain because they produce meat for people to eat. It is your responsibility that the pork you produce is wholesome and safe.

Objectives

After studying the materials and completing the suggested activities for this section of your project, you should be able to:

1. Name two ways antibiotics can be given to pigs.
2. Tell why it is important to handle pigs carefully.
3. List three things consumers evaluate before buying fresh pork.

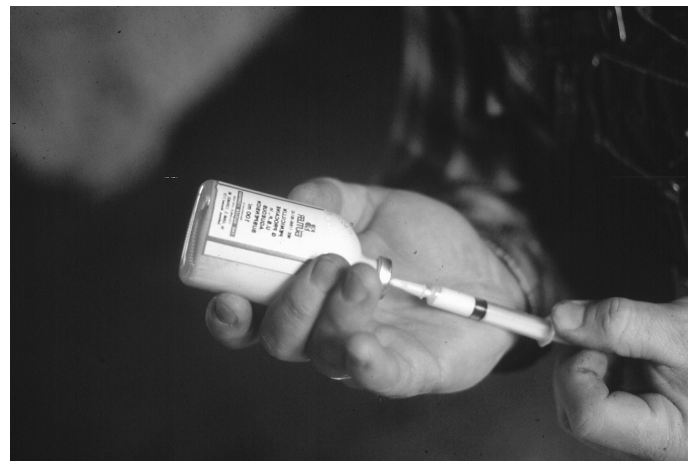
Using Antibiotics

Things you do to a live pig can affect the safety of the pork it produces. Antibiotics in pig feed make pigs grow faster and more efficiently. Both injectable and feed-grade antibiotics can help them get over being sick. However, if the pig is slaughtered before the antibiotics have had time to clear the pig's system, the pork from the treated pig could contain antibiotic residues. Antibiotic residues are illegal and can be a public health hazard.

All antibiotics have an approved withdrawal time. Withdrawal time is the minimum time that must pass between when the antibiotic is given to the pig and slaughter. This time period allows the antibiotic to clear the pig's system. Some antibiot-

ics can be used safely until the pig is marketed. Others must be discontinued for several days before marketing. It is up to you as a pork producer to make sure you observe the proper withdrawal times for any antibiotics given to your pigs.

The withdrawal times for medicated feeds (feeds containing antibiotics) are printed on the feed tag. For safety's sake, the feed you give to your pig for the last month or so of the feeding period should be completely free of medications. Check tags of medicated feeds fed earlier in the pig's life because some feed-grade medications have withdrawal periods of up to 2.5 months! If you give your pigs medicated feed, write down the name of the medication, the level of medication in the feed, and the dates when you started and stopped feeding it.



Injectable antibiotics should be used only after consulting with a veterinarian.

Injectable antibiotics should be used only when a pig is sick, and then only under the supervision of a veterinarian. If you must treat a sick pig, ask your veterinarian what withdrawal times must be observed. Record any injections given, which pigs they were given to, the dates, and where you injected the pigs. All injections should be given in the neck muscle, in the area between the ear and shoulder blade.

Using Feed Additives—Paylean®

Paylean® is the trade name for a feed additive (ractopamine) approved in December 1999 by the FDA for use in finishing swine. The additive is approved for feeding to market hogs (NOT approved for breeding swine) during the last 90 pounds (150-240 pounds) before slaughter. If used properly, Paylean® increases rate of gain by about 9 percent, increases protein (muscle) accretion by about 24 percent, improves feed efficiency by about 14 percent, and reduces carcass fat by about 14 percent.

Paylean® MUST be mixed into a complete feed and not top-dressed. When label directions are followed, the additive is safe and has no withdrawal period. However, protein levels must be adequate during the feeding period for the additive to achieve its full effect. For example, most swine finishing diets for the period of 150 to 240 pounds contain about 14 percent crude protein. Pigs fed Paylean® require at least 16 percent crude protein to support the additional protein (muscle) deposition.

Although legal and widely used in both the show pig and commercial swine finishing industries, Paylean® should be used with caution on show pigs for the following reasons:

1. The use of Paylean® may increase the incidence of downer pigs. General observations indicate problems are more likely to occur with heavily muscled, lean pigs that tend to be excitable.
2. Label directions must be followed carefully to avoid health problems for the animal or meat safety issues for the consumer.

**#PS HOG GROWER T-40/M
MEDICATED**
Grower/Finisher Feed For Pigs

For increased rate of weight gain and improved efficiency, grower feeds.

ACTIVE DRUG INGREDIENT	
Tylosin	40 g/ton

GUARANTEED ANALYSIS	
CRUDE PROTEIN (MINIMUM)	16.00 ‡
LYSINE (MINIMUM)	1.00 ‡
CRUDE FAT (MINIMUM)	3.00 ‡
CRUDE FIBER (MAXIMUM)	2.80 ‡
CALCIUM (MINIMUM)	0.75 ‡
CALCIUM (MAXIMUM)	1.25 ‡
TOTAL PHOSPHORUS (MINIMUM)	0.60 ‡
SALT (MINIMUM)	0.30 ‡
SALT (MAXIMUM)	0.50 ‡
SODIUM (MINIMUM)	0.17 ‡
SODIUM (MAXIMUM)	0.21 ‡
ZINC (MINIMUM)	86 PPM
ADDED SELENIUM (MINIMUM)	0.3 PPM

INGREDIENTS

GRAIN PRODUCTS, PLANT PROTEIN PRODUCTS, PROCESSED GRAIN BY-PRODUCTS, PORK MEAT MEAL, HYDROLYZED POULTRY FEATHERS, POULTRY BY-PRODUCT MEAL, CALCIUM CARBONATE, ETHOXYQUIN (a preservative), DICALCIUM PHOSPHATE, SALT, L-LYSINE, ROUGHAGE PRODUCTS, VITAMIN A ACETATE, VITAMIN D-3 SUPPLEMENT, VITAMIN E SUPPLEMENT, MENADIONE SODIUM BISULFITE COMPLEX, NIACIN SUPPLEMENT, CALCIUM PANTOTHENATE, RIBOFLAVIN, CALCIUM IODATE, COPPER SULFATE, FERROUS SULFATE, MANGANOUS OXIDE, ZINC OXIDE, SODIUM SELENITE, MINERAL OIL, IRON OXIDE, METHIONINE SUPPLEMENT.

LIMITATIONS FOR USE: Feed continuously.

AGWAY INC.
PO BOX 4746
SYRACUSE, NY 13221-4746

124483 3 01-21-1999

Tag from medicated feed that can be safely fed until marketing.

APRALAN® 7.5
(apramycin)

MEDICATED

For control of porcine colibacillosis (weanling pig scours) caused by susceptible strains of *Escherichia coli*.

ACTIVE DRUG INGREDIENT	
Apramycin (as apramycin sulfate)	7.5 g/lb

INGREDIENTS

Calcium Carbonate, Roughage Products, Mineral Oil

MIXING AND FEEDING DIRECTIONS

Thoroughly mix 20 lbs of Vigortone Handi Pac Apralan® 7.5 Medicated with 1,980 lbs of non-medicated complete pig feed. The resulting complete feed will contain 150 grams of apramycin per ton. Feed this complete feed continuously as the only ration for 14 days.

WARNING: Withdraw 28 days prior to slaughter.

NOTICE: Strains of organisms vary in their degree of susceptibility to antibiotics. If no improvement is observed after recommended treatment, diagnosis and susceptibility should be reconfirmed.

Apralan® is the registered trademark for apramycin manufactured by Elanco Products Company, a Division of Eli Lilly and Company.

Tag from feed-grade medication with 28-day withdrawal period.

3. Water must not be restricted when pigs are fed Paylean®.
4. Paylean® is not approved for use in breeding swine.
5. Paylean® use adds to the cost of raising a show pig. In addition to the cost of the product itself, feed costs are higher because of additional required protein.

Dr. Jodi Sterle, Extension Swine Specialist at Texas A&M University, writes in an article entitled *Paylean® use in Show Pigs*:

“Not every pig needs Paylean® to win. Pigs that are not completely structurally sound may not be able to withstand the added muscle (and corresponding stress on the joints) associated with feeding Paylean® and may experience feet and leg problems. Additionally, many argue that we have selected pigs to be lean enough (or even too lean) for the industry today. Bacon is currently one of the most valuable cuts from a hog carcass (although certainly not a lean cut) due to the increased demand for bacon on hamburgers and deli sandwiches. However, approximately .6 inches of backfat are needed to produce a good belly for bacon. Many of the show pigs are much leaner than that and hence their bellies cannot be used, forfeiting value. Some pigs are naturally lean enough and also carry plenty of muscle. While Paylean® did not affect belly thickness or belly yield in research trials, many industry professionals feel that we should moderate the muscling and leanness in our show pigs. Which pigs to feed Paylean®, for how long (within label directions), and at what dosage (4.5, 9, or 18 g/ton) remains part of the ‘game’ of producing a champion.”

More information about feeding Paylean® to show pigs can be found at: animalscience.tamu.edu/ansc/publications/swine-pubs/ASWeb-89-Payleanuseinshowpigs.pdf.

If you decide to use Paylean®, consider using less than the maximum dosage. The product is labeled for up to 18 grams per ton of complete feed from 150-240 pounds. Anecdotal evidence from experienced feeders indicates that pigs may be visibly leaner and more heavily muscled after being

fed for only 10 days to 2 weeks at one of the lower dosages (4.5 or 9 grams per ton of complete feed).

Live Animal Treatment

The way you physically treat live pigs also can affect pork quality. If you handle pigs roughly, they could have bruises that will show up on the carcass after slaughter. Bruised meat must be cut off and thrown away, lowering the value of the carcass. To avoid bruised carcasses, be especially careful when loading and unloading pigs. Never hit a pig hard with a solid object. Even show whips, used improperly, can cause bruising. Also check pens, trucks, and alleyways for sharp or protruding objects that could puncture or bruise the pig.

Meat Quality

Meat quality is how good pork looks and tastes to the people who eat it. Consumers look at color, leanness, and marbling in fresh pork cuts. Color should be a light reddish pink. The outside of a pork cut should be trimmed of nearly all fat, but there should be flakes of visible fat sprinkled in the lean portion. These fat sprinklings are called marbling. Moderate amounts of marbling make the pork juicy and flavorful. Go to a grocery store and look at packages of fresh pork chops to observe differences in marbling and color.

Marbling is mostly controlled by genetics. The amount of fat remaining on the outside of fresh pork is mostly determined by the person doing the trimming. However, pork producers can help ensure that pork cuts are the correct color.

If pigs are stressed in the few hours before slaughter, they stand a greater chance of producing off-color pork. Therefore, they should be handled carefully and calmly and should not be allowed to overheat. Also, pigs should be rested for several hours after unloading at the slaughter plant before being killed.

Pork Quality Assurance (PQA) Program

The National Pork Board offers a program to certify pork producers in proper management techniques to assure pork quality. The program

outlines ways that producers can be sure the pork they produce is wholesome and safe.

The “Quality Assurance Skills and Activities” in this reference guide are modeled after the PQA program. If you sell pigs to a major packer or show at the Pennsylvania Farm Show or Keystone International Livestock Exposition (KILE), you must have current PQA certification. For youth from 8 to 19 years old, PQA must be renewed annually.

Words You Should Know

Antibiotic: Substance fed or injected to improve growth rate or treat disease.

Marbling: Flakes of fat in lean meat.

Pork Quality Assurance Program: Program sponsored by the National Pork Board to ensure that meat is safe and wholesome.

Withdrawal time: The minimum time that must pass between when an antibiotic or vaccination is given to the pig and slaughter.

Suggested Activities

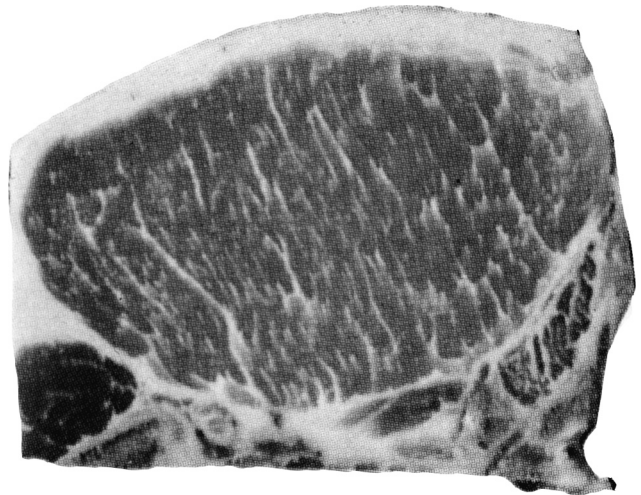
- Visit a grocery store and note differences in meat quality.
- Ask local pork producers what steps they take to ensure pork quality.
- Become certified in the Pork Quality Assurance Program.

Ideas for Presentations and Talks

- The Pork Quality Assurance Program
- Factors affecting pork quality
- Identifying good quality pork in the supermarket

Things to Talk About

- How do you ensure the pork from your pigs will be of high quality?
- What are some different definitions of pork quality?



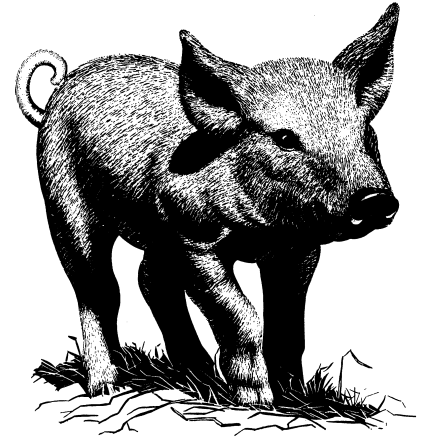
Pork chop with too much marbling



Pork chop without enough marbling

10

The Roundup



At the start of your swine project, decide if you are going to show your pig in a livestock show or roundup at some point. If so, you need to plan and prepare for the show.

Objectives

After studying the materials and completing the suggested activities for this section of your project, you should be able to:

1. Plan for a swine show from start to finish.
2. Prepare a pig for show.
3. Acquire basic equipment needed to show a pig.
4. Understand the basics of being a good show person.
5. Understand basic concepts of good sportsmanship and ethics.

Showing your pig has several benefits. You will learn a lot about yourself and your pig. You are sure to learn how to be patient with your animal! Most 4-H'ers enjoy the fun and excitement of friendly competition in a show ring. Showing your pig also gives you a chance to compare your project animal to those of other 4-H'ers.

If you plan to show your pig, the first thing to do is obtain a copy of the rules and regulations for the show you want to enter. This will give you the proper dates to go by and information about the show, including prize money you could win. Where you want to show your pig will affect where and when you should buy your 4-H project pig. The show rules will also tell you the following information:



- Entry forms needed
- Animal health regulations and papers needed
- Required identification (some counties require a weigh-in at the beginning of the project)

Besides continuing to feed, water, and keep your pig clean, there are several items you need to prepare for before the roundup.

Ethics

Being ethical means “doing the right thing.” It is your responsibility to behave ethically before and during the roundup. Some counties require that roundup participants sign a “code of ethics” before the roundup. Things you do or say, and the way you behave toward your animals and other participants, reflect directly on the public’s perception of agriculture.

Four Areas of Livestock Ethics

For livestock projects, ethics includes the following principles:

Animal Care and Ownership

1. You should purchase your animal by your county’s ownership deadline.
2. You should feed, water, and care for your own animal each day.
3. You should be able to present proof of ownership and age of animal if requested.
4. Adults should mentor, coach, demonstrate, and teach—but not do the work.
5. You should watch out for your animal’s well-being, making sure it is comfortable and handled with minimal stress.

Honesty and Sportsmanship

1. You should act with honesty and integrity, and display good sportsmanship at all times.
2. You should not interfere with show officials, program sponsors, other exhibitors, or judges.
3. You should treat everyone with courtesy and respect.
4. You should do your best in competition but realize you may not always get or win a blue ribbon.

5. When you compete, you should have a performance goal, not a “beat everyone else” goal.
6. You should not criticize officials, sponsors, other exhibitors, or judges nor should you allow anyone else to criticize them.

Animal Health and Biosecurity

1. You are responsible for the health and welfare of your animals.
2. You are responsible for reading show rules and obtaining required health tests and papers from a licensed veterinarian.
3. You should present required health certificates upon the request of authorities.
4. You are responsible for ensuring that your animals do not infect other animals at a show or roundup. In other words, if it’s sick, leave it at home!

Ethics and Conduct

1. You should be involved in this animal project to develop animal, personal, and interpersonal skills, not simply to win in the show ring and make money.
2. You should read and abide by any county or state codes of conduct.
3. You should read and abide by all show or project rules.
4. You, your parents, or your guardian are absolutely responsible for your project animal and your behavior. Your conduct reflects all of 4-H and the entire agricultural industry.

If you observe someone else acting in an ethically wrong or questionable manner:

1. Bring any questionable acts you observe to your parents.
2. Speak to show supervisors about any ethical problems you or your family may have seen.
3. You and your family agree to display good sportsmanship and abide by that authority’s decision.

What Do You Need to Do and Have?

You should start preparing for the roundup at least a month in advance. Be sure your entries



are submitted well before the entry deadline. If required, schedule a veterinarian to draw blood samples within 30 days of the show. Arrange trucking to get your pig to the roundup.

You will have to buy some equipment in order to fit and show your pig. Maybe you could borrow it from your parent or leader. You will need:

- Health papers
- Proof of entry
- Project book completed to date
- Water and a hose
- Feed pan
- Bucket
- Bedding (if not provided at the roundup)
- Feed
- Pitchfork
- Clean rags
- Stiff-bristled brush
- Liquid dish soap
- Show cane or whip
- Small show brush
- Small electric hair trimmers
- Extension cord
- Rubbing alcohol
- Powder or light oil for white or colored pigs as necessary

- Show clothes (check show rules for what to wear)

Loading and Unloading Pigs

Well before the date of the roundup, arrange to have someone truck your pig to the roundup site. The vehicle (truck or trailer) used to transport pigs should be well constructed, well ventilated, and properly bedded to keep pigs comfortable. Check that the flooring is not slippery when it gets wet. Give some thought to how you will load the pigs. Do you have a ramp that the pigs can use to walk onto the vehicle? Do you have adequate gates or panels to close off escape holes?

Loading works best if taken at a slow pace so that pigs have time to look around and decide that the truck or trailer isn't such a bad place to be. Pigs should never be carried or dragged by the ears and/or tail when loading. Use solid hurdles and gates to confine pigs to a small area. Give them no choice but to go onto the vehicle. If pigs refuse to walk on to the transport vehicle, they sometimes can be lured on with feed. If all else fails, put a bucket over the pig's head and back it onto the vehicle. Remember, the calmer you and the pigs are during the whole loading process, the easier it will go.

When you arrive at the roundup, there should be a ramp or other means to get pigs unloaded. Pigs don't like to go down hill, so they can sometimes be as difficult to get off the vehicle as they were to get on. Use a hurdle to move pigs to the vehicle exit. Again, pigs should never be carried or dragged by the ears and/or tail.

After unloading, your pig will most likely be weighed and tagged. Your leader or extension agent may check your project record book, so be sure it is up to date. Roundup officials will divide the classes based on pig breed and/or weight and post the classes before the show begins.

Pen your pig in its assigned pen, and feed and water it as soon as possible after unloading. Pigs that were penned separately before the show should be penned separately at the show to prevent fighting. If the weather is hot, pour cool water behind the ears to help your pig cool off, and be sure the pig has access to clean drinking water. You are now ready to begin the final preparations for the show.

Fitting Your Pig

Fitting begins at home, well before the show. After your pig has gained your trust, begin training the hair by brushing at a 45-degree angle from shoulder to hock with a stiff-bristled brush. Avoid making a part down the top of the pig's back. The hair should lay naturally.

If you have a well-drained pen with rough concrete flooring, consider washing your pig at home before taking it to the roundup. Don't be surprised when the pig squeals loudly during baths. It will take a couple of times before your pig will get used to the hose and brush. Wet your pig with a garden hose and wash it using a bucket of soapy water (liquid dish soap works well) and your stiff-bristled brush. Wash the entire pig, including the sides, the underside, between the hams, the face, and feet. Thoroughly rinse the pig to avoid dandruff caused by dried soap. Be careful not to get water in the pig's ears. While this won't hurt your pig, it will make it walk with a tilted head. After rinsing, brush the hair down at the

proper angle and allow to dry.

Pig clipping has undergone major changes in recent years. Where previously only the ears, tail, underline, and long hairs around the face were clipped, now many pigs are body clipped for a show. Make sure your show allows body clipping before you attempt this fitting technique. Lean pigs, especially, may look better if left unclipped.

Body clipping involves removing some (or all) of the hair from the entire pig. Some fitters even completely shave their pig's entire body! Clipping serves to make the pig's hair coat appear fresher and the pig appear leaner. Some judges, however, may discriminate against shaved or closely clipped pigs. Ideally, the pig can be clipped yet retain a "natural" look. Using clippers with a measured guard that leaves approximately 1/2 inch of hair on the pig's body should accomplish the goal. Some exhibitors body clip the pig about one month before the show. This allows some regrowth, which keeps the pig looking natural and lean.

Clipping also should be done at home, within a couple days of the roundup. You can use small, inexpensive electric hair trimmers such as those found in a barbershop. Make sure that other pigs in the pen don't bite the extension cord. If your pig is extremely tame, it may allow you to clip it while it's asleep. Otherwise, you may have to restrain your pig with a hog snare or heavy twine. Ask your leader to show you how. Pigs do not like being confined like this and yours will probably squeal. Be careful and handle your pig gently. Consider wearing hearing protection when working around restrained pigs. If your pig still has all or some of its body hair, you may want to remove more hair from the ears, tail, underline, and face.

If you don't body clip your pig, consider at least these more traditional clipping techniques:

Clip the tail first. If your pig has a full tail, clip the entire tail except for a switch of hair at the end of the tail. Leave the hair on the last four inches of the tail bone. If your pig's tail has been docked, remove all the hair from the tail. Clip right up to the base of the tail, but not onto the rump. Clip-

ping the tail makes the pig's rump look wider and more heavily muscled.

Clip all long hair on both sides of the ear down to the base. Blend in the clipped portion of the ear with the long hairs between the ear and the eye. Clip off the long hairs around the snout, face and eyes. Clipping around the ears, face, snout and eyes makes the pig look leaner and cleaner through its jowl.

Some fitters clip the underlines of their pigs. If you decide to do this, be careful not to clip too high onto the sides. It is best to confine underline clipping to the portion of the belly between the rows of nipples. Even if you don't clip the entire belly, long hairs around the sheath should be removed from barrows. Underline clipping will make your pig look trimmer through its lower body.

In some counties, especially those with highly competitive fitting contests, fitters may shave tail, ears, and bellies to remove clipper stubble. You can use disposable razors and shaving creme to do this, but check with your leader to see if shaving is necessary for your show.

Once your pig arrives at the roundup, you'll probably need to wash it again, preferably within 24 hours of the actual show. Newly-washed pigs appear fresher and have brighter haircoats. After washing, brush and return your pig to a clean, well-bedded pen for drying.

If your fitting contest is highly competitive, clean the inside of your pig's ears with a rag damp with rubbing alcohol. The alcohol will help loosen any accumulated dirt.

Now you need to decide what, if any, substances you're going to apply to the coat of the pig to make it look brighter or cleaner. Light mineral oil is sometimes used on black or red pigs to make their skin and haircoat appear brighter. Only consider using oil on cool days, because it can cause pigs to overheat. Oil can be applied any time within several hours of the show. Water can be substituted for oil, and should be used on warm days. Water helps cool the pig, but evaporates rapidly and must be applied immediately before your pig is shown. Whether you use water or oil, be sure to apply it to the entire pig, including ears, tail, side, ham seam, legs, and underline.



White powder (talcum, cornstarch) often is applied to white pigs to make them look fresher and to cover up any stains or scratches. Powder is difficult to apply correctly and should be used with caution. Again, it should cover the entire pig, not just spots that are easy to reach. Powder should be brushed into the hair and be so thin that a pat on the pig's back does not result in a white puff. If you decide to use powder, experiment with this technique at home: Wet your pig and apply a thick coat of powder while the pig is still damp. Allow the pig and powder to dry overnight and brush the pig well the next morning. Much of the dried powder will flake off, but enough will remain to lightly coat the pig. Often, a really clean, stain-free white pig will look almost as good as one that is properly powdered and much better than one that is powdered incorrectly.

Spotted or multicolored pigs are best left without any added water, powder, or oil. Make sure pigs with nonsolid color patterns are as clean as possible.

Immediately before your class is called, get your pig up, apply water if necessary, and brush the hair down. Take care to remove any bedding that may be attached to the pig. Use your small pocket brush to remove any dirt the pig picks up on the way to the show ring or during the class.

Showing Your Pig

Showing a pig is fairly easy. The best way to learn how to show a pig is by watching someone else do it. Work with an experienced show person, like another 4-H'er in your club. He or she could practice with you and show you how to move your pig the way you will need to.

At the show, you and your pig will be let loose in the show ring with other show persons and their pigs. The pig will walk around. Your job is to guide and direct the pig with your show cane or whip.

What will the judge be looking for in you and your pig? There may be three things:

- Type or conformation—how similar the pig is to the ideal animal for its purpose. For example, a class of market hogs would be judged on their leanness, structure, and meatiness.
- Showing—how well the show person controls and presents the animal.
- Fitting—how well the animal is cleaned and groomed.

As the roundup approaches, introduce your showing utensil—either cane or whip. Practice guiding your pig around the pen using both body position and your cane or whip. Don't just follow the pig around the pen, but practice taking the pig to specific places in the pen. Tap your pig on the top, side or shoulder to get it to move. Tap the pig on the side of the face to get it to turn the opposite direction. Never tap the pig on the hock or ham. This causes the pig to pull its hind legs under its body, which makes the pig look short and steep-rumped. Also, never put your hand on the pig's back. If you have enough space and help to get your pig back in its pen, consider having practice sessions outside in the yard.

During the show, your job is to present the pig to the judge at a slow walk. You'll need to be able to keep the pig between you and the judge at all times. You also need to be able to watch the pig and the judge at the same time. Keep your knees bent and walk to the rear of the pig, about even with the ham. Move closer to the front of the pig if you want the pig to turn. Ask a parent, sister or brother to act as a judge, and practice showing the pig to them. If this is your first pig, ask an experienced show person or your leader to demonstrate good showmanship and give you pointers.

On show day, make sure your pig is calm, well-rested, fed, and watered. You should be calm and well-rested, too. When you enter your pig in a show, you are also entering yourself. Keep yourself clean and neat, too. Wear clean clothes, clean boots or shoes, and brush your hair. Some shows have dress codes that must be followed. You should not wear a hat. Keep a small brush in your pocket to clean your pig off if it gets dirty during



the class. Have your pig up, brushed, and ready when your class is called. Be prompt! Have someone help you get your pig to the show ring and back to its pen after the class. When your pig gets to the show ring, it may go dashing around for a short period. Remain calm and walk (don't run) to catch up with your pig. Once the class begins and your pig settles down, keep your pig moving at a slow walk.

Sometimes pigs will fight with one another. A hurdle or panel is used to break up fights between pigs. Don't try to break up a fight yourself.

Work to keep your pig on a side view profile, about 15 feet away and in front of the judge. Keep your pig away from groups of other pigs and out of corners. Always be courteous to other show persons in the class. Be courteous and make eye contact with the judge at every opportunity. Immediately follow any instructions the judge may give. If the judge asks you to pen your pig (if pens are available in the show ring), work your pig to the assigned pen. Helpers may assist you in penning your pig unless the judge asks you to do it yourself. Once in a pen, keep the pig from lying down and keep its rear facing the show ring in case the judge wants to look at your pig in the

pen. Stand on the opposite side of the pig and continue watching the judge.

Judges may sometimes ask you questions about your pig. Be prepared by knowing what your pig weighs, how fast it grew, its breed and sex, and how much fat and loin eye area it will have when slaughtered.

Being a Good Sport

Although everyone may deserve a blue ribbon, only one person can place first in a class. If you win a blue ribbon, be proud but don't show off. Accept congratulations with thanks and congratulate your fellow show persons. Even if you don't win a blue ribbon, be proud of what you did accomplish. Most important, have fun and think about all the things you learned about yourself and about pigs while taking this project. Try again for a blue ribbon next year!

Questions from the Public

You may be asked questions about your project by interested visitors to the show. If you are, be courteous, honest, and direct with your answers. Sometimes animal rights advocates attend livestock shows with the intent of creating a con-

troverly worthy of news coverage. If you are approached by someone who accuses you of being cruel to your pig, be polite, remain calm, answer what questions you can, and end the conversation as quickly as possible. Report the person to your parent or leader.

The Sale

After the roundup, many counties hold a junior livestock sale where project pigs are sold. Often, pigs sold at junior livestock sales bring more than the current market price. Buyers may purchase pigs for many reasons—as advertisement for a business, as a “thank you” for doing business with them, as a source of freezer meat, or simply as a way to help young people. If you participate in the sale, you—not your parents, leaders, or county agents—need to do some work ahead of time to ensure that your pig will receive the best possible price.

First, find out the rules for your sale. How many pigs can you sell? What, if any, commissions are charged? Is there trucking available for buyers to send pigs to local custom butchers? Do buyers have to keep the pig, or can they resell it? Many sales offer a buy-back program where, if a buyer does not want to keep the pig, he or she pays only the difference between the actual bid and the current market value. Generally, a local packer or livestock market has agreed to pay the current market value for pigs bought, but not kept. Regardless of who takes your pig home, you receive the final bid price. Therefore it pays to contact as many potential buyers as possible about attending the sale and bidding on your pig. The more bidders who are at the sale specifically to bid on your pig, the more your pig may sell for.



Begin by making a list of businesses in your area that may be potential buyers. Don't limit yourself to agricultural businesses. Restaurants, grocery stores, insurance companies, banks, lumber companies, trucking companies, and others support junior livestock sales in many areas. Next, compile a list of contact people for each of the businesses. Ask your parents, leaders, or neighbors if they know anyone who is employed by each of the businesses—preferably in a management position.

Next, prepare a packet of information to give to each potential buyer. Provide details on yourself and your project, how you plan to use your sale proceeds, what career plans you have, and any awards you have won for your projects. Make sure to include written details of the sale date, time, and place, as well as where to park at the sale facility and where to obtain a bidder

number on sale day. If your county provides a presale meal for buyers, be sure to relay that information, or at least tell buyers where they can get a meal before or during the sale. Much of this information can be supplied in a bullet-point format so that potential buyers can quickly and easily view the information. You may even want to include a picture of

you with your project animal. Be sure to include information about any buy-back programs or local butcher shops that can process animals for the freezer.

Finally, make plans to contact each of the people on your list. Many 4-H'ers send written correspondence asking for support at a junior livestock sale. Personal visits are better. Call the business and ask for a meeting with your contact person. At the meeting, deliver your information

packet. Be prepared to explain why you are asking for their support, how buying at a junior livestock sale may benefit their business, and, if your county has a buy-back program, how it works. If your county has a buy-back program, make sure buyers realize they do not have to take the pig home with them. Be sure to note that any money they spend over and above the current market price is tax deductible. You may even have to explain how an auction works, so make sure you know!

Initial buyer contact should be made a month or so before the roundup. You should follow up with a phone call within a week of the sale to remind the buyers of the date, place, and time. Expect some people you contact to decline to participate. That's okay, at least you asked! Also, tell prospective buyers that most of all you want them to come and support the junior livestock sale. Second, you would like them to bid on your pig.

On sale day, dress professionally; try to look up your buyers before the sale starts and thank them for coming. Immediately after the auctioneer pronounces your pig "sold," listen carefully to who the buyer was. Put your pig back in its pen then ask your leader or a sale clerk to point the buyer out in the crowd. Go find the buyer and personally thank him or her.

Within a week after the sale, send a thank-you note to the buyer and ask that they consider supporting the sale next year.

Words You Should Know

Fitting: Cleaning, clipping, and preparing your animal for exhibition.

Showing: Exhibiting your animal in a show ring.

Ethics: Doing what is right.

Sportsmanship: Winning and losing gracefully.

Suggested Activities

- Visit a swine show to see how others show swine.
- Attend a fitting and showing clinic.
- Train and fit a pig for show.
- Show your pig at a swine show.

- Give a presentation or talk on how to fit and show a pig.
- Discuss fitting and showing with an experienced show person.
- Make a poster to advertise your 4-H show or auction.
- Invite a person who is interested in 4-H to attend your 4-H show or auction.
- Write a thank-you note to the person who buys your hog at a 4-H auction.
- Keep a list of your buyers' names and addresses each year in the space provided.

Ideas for Presentations and Talks

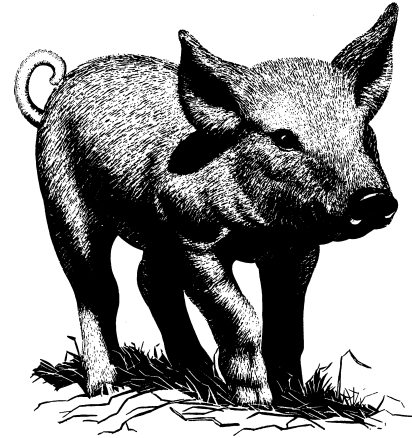
- How to prepare a hog for show day
- Equipment needed to show a pig
- How to fit a pig
- Your experiences showing a pig
- Contacting buyers for a sale

Things to Talk About

- What steps must you take if you want to show your pig?
- How do you show a pig in a ring?
- What equipment do you need to fit and show pigs?
- How does a good sport behave at a pig show?

11

Keeping 4-H Records



When you write down something that you did or that happened, you are keeping a record. Records help you remember important information.

Records can prove what was done, who did it, and how much money it cost to do it. When you grow up, you will need records so you can pay taxes, borrow money, buy a house, or apply for a job. Keeping good 4-H records may help you to win an award or college scholarship.

Objectives

After studying the materials and completing the suggested activities for this section of your project, you should be able to:

1. Explain why people keep records.
2. List the kinds of records 4-H members with swine projects should keep.
3. Set up a record-keeping system for your swine project.
4. Complete your 4-H project record book.

Why Keep Records?

Records are used to prove what was done and to help make decisions. Good records can tell you if your pigs are costing or earning you money. They can be used to tell you if your swine are growing as fast as they are supposed to. They can be used to identify health or nutritional problems. Records are an important part of all 4-H swine projects.

Kinds of Records

Several kinds of records should be kept by 4-H members who raise market hogs. These are:

- financial records
- animal performance records
- animal production records
- records of management practices used
- records of participation in training, activities, and events

Financial Records

Financial records tell you about the value of what you own and how much money you spent and received. Your records should include these kinds of financial information:

1. Inventories of animals and equipment. These are lists of how many animals or pieces of equipment you owned and what they were worth when your project started and ended.

If you are required to turn in your 4-H record before you have sold some of your animals, you will need to estimate what they are worth on the day your record ends. You may get a high price when you sell animals at a 4-H auction, but it's a good idea to use real-world prices to estimate what your animals are worth. Look in farm newspapers and magazines to find out prices of animals at nearby markets.

2. Expenses. These are amounts of money spent to buy animals and the things used to care for them. Include costs of feed, supplies, equipment, animals, and veterinary care. Feed costs should in-

clude costs of all feed eaten, not just the feed you buy. Homegrown pastures and feeds cost money to grow and could have been sold to someone else. They are not “free” when your animals eat them. Your parents and leaders can help you estimate what they are worth.

3. *Income.* This is money received from selling animals, animal products, and other things related to your project. It should also include premiums won at shows. If your income is more than your expenses, you have made a profit. If your expenses are more than your income, you have a loss.

Animal Performance Records

Animal performance records track how individual animals grow and use their feed. In order to keep performance records, animals need to be identified with ear notches or ear tags. Write down the identification number, date of birth, and sire and dam of each pig, if these are known. Some examples of performance records are weights, average daily gain, amounts of feed eaten, and efficiency of feed conversion.

Weights can be measured using a scale or can be estimated using a weigh tape. Some counties have a day when they weigh and identify pigs at the start of a 4-H project. Good times to weigh pigs are when you buy them and sell them, or when you will be doing other things to your pigs, such as weaning, deworming, or vaccinating them. You should know how much your pigs weigh to calculate the dosage for some dewormers or medicines. Record the weight of your pig at each weighing.

Average daily gain can be calculated if you weigh your animals more than once. Subtract the first weight from the second to calculate pounds gained. Calculate average daily gain by dividing pounds gained by the number of days between the first and second weighing. You should do this every month or so to see if your pig is gaining as fast as it should.

Feed intake can be calculated if you keep track of what kind of feed and how much feed you give to each animal or group of animals. When

you buy or mix feed, write down the date, cost, weight, and kind of feed bought. If you mix feed at home, write down the amount of each ingredient mixed.

Efficiency of feed conversion can be calculated if you know how many pounds of feed your animals ate between weighings. You can calculate the efficiency of feed conversion by dividing pounds of feed eaten by pounds of weight gained.

Some average market hog performance traits appear on page 54. Compare the performance of your pigs with the averages.

These guidelines are not based on any particular resource. They are simply a summary of the performance of “average” pigs. Your pig’s performance will vary depending on genetics, your management ability, and your facilities. Most pigs should fall within the ranges indicated.

Animal Production Records

Animal production records show how many pigs or other products are produced by an animal. They include dates when a sow farrows and her litter is weaned. They also may include the performance of her pigs. Production records kept for animals other than pigs include amounts of milk, wool, or eggs produced. Since market hogs don’t produce any products other than their carcasses at slaughter, you won’t need to keep any production records for market hogs.

Below are some examples of animal production records associated with breeding swine.



<i>Live pigs born per litter</i>	<i>Average</i>	<i>Range</i>
Gilts	8.5	4–14
Sows	10.0	4–20
Stillborn pigs per litter	0.5	
Pigs weaned per sow	8.5	

Management Practice Records

Write down the things that you do to care for your animals. Also write down when, how, and why you do them, and which animals were involved. Keep records of dates when you buy and sell pigs, or when a pig dies. Other dates to write down are dates when pigs are sick, dewormed, vaccinated, or blood-tested. If you treat an animal with a medicine or vaccine, write down the name of the product, how much was given, which pig(s) you treated, and why you treated the animal. These records are important for Pork Quality Assurance.

Your 4-H Accomplishment Records

In addition to the records you will keep about what you do with your swine, there are some other kinds of records you should keep when you are in 4-H. These include:

- Activities in which you participated, such as camps, contests, and achievement programs
- Special skills and knowledge you learned
- 4-H accomplishments, such as projects completed and things you made
- Offices and other leadership roles you held
- Awards you or your pigs received

Words You Should Know

Financial: Related to money.

Income: Money someone else pays to you.

Expenses: Money you spend for products or services.

Profit: Money you keep when your income is more than your expenses.

Loss: Money you lose when your expenses are more than your income.

Suggested Activities

- Discuss records you should keep and how to keep them with your parent or club leader.
- Keep a diary or barn chart to record things you do with your animals. Be sure to include who was involved, what happened, and when, where, why, and how it happened.
- Complete a 4-H Animal Project Record for Beginners or 4-H Livestock Record for Intermediate and Advanced Projects.

Extra Activities to Try

- Weigh a project animal more than once. Calculate how much it gained and its average daily gain. Compare with the listed averages.
- Discuss how to use your records to make decisions about management of your project. Do this with your leaders and members of your club.
- Calculate the efficiency of feed conversion of your pigs. Compare with the listed averages.

Ideas for Presentations or Talks

- Kinds of records to keep on your pigs
- How to fill out a swine project record
- How to calculate profit and loss
- Why records are important
- How to use a weigh tape to estimate an animal's weight

Things to Talk About

- Why do people keep records?
- What kinds of records should 4-H members keep?
- What kind of information belongs in your 4-H swine record?
- How can you use your 4-H swine records to make decisions about how to manage your animals?

MARKET HOG PERFORMANCE TRAITS

<i>Feed consumed per day (pounds)</i>	<i>Average</i>	<i>Range</i>
40-pound pig	2.5	2.1–2.9
150-pound pig	5.0	4.2–5.8
240-pound pig	6.0	5.1–6.9
Feed eaten per pound of weight gain	3.0 pounds	2.6–3.4 pounds
Total feed required from 40–240 pounds	600 pounds	520–680 pounds
Average daily gain 40–240 pounds	1.7 pounds/day	1.2–2.4 pounds/day

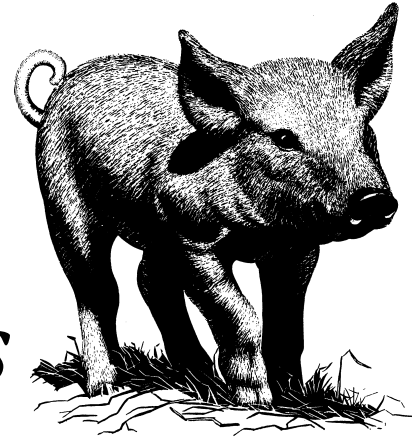
<i>Carcass Traits: 245-pound pig</i>	<i>Average</i>	<i>Range</i>
Slaughter weight	245 pounds	210–280 pounds
Length (first rib to aitch bone)	30.5 inches	27.5–34.5 inches
Average backfat (first, last rib, and last lumbar)	1.0 inch	0.6–1.6 inches
Tenth rib backfat	0.9 inches	0.3–1.5 inches
Loineye area (10th rib)	5.5 square inches	4.0–9.0 square inches
Yield (dressing percent)	74.5 percent	67.0–80.0 percent

Some performance traits of breeding swine are listed below. While they don't deal specifically with your project, you need to know some of these numbers.

<i>Breeding Swine Performance Traits</i>	<i>Average</i>	<i>Range</i>
Gestation length	114 days	111–117 days
Length of estrus cycle	21 days	18–24 days
Age at first estrus	6 months	4–8 months
Weight at first estrus	240 pounds	200–300 pounds
Length of estrus (heat)		
Gilts	36 hours	8–60 hours
Sows	48 hours	24–72 hours
Weaning age	21 days	10–35 days
Time from weaning until first estrus	5 days	3–21 days
Pre-weaning mortality	15 percent	5–50 percent

12

Pork and By-Products



Swine provide people with valuable meat and many useful by-products. Hams, chops, roasts, sausages, and hot dogs are just some of the delicious meat products that come from swine. Swine also provide leather, insulin, and other useful products. Most of us can find some of those products in our own homes.

Objectives

After studying the materials and completing the suggested activities for this section of your project, you should be able to:

1. Explain what pork is.
2. Tell what a nutrient is.
3. Name some of the nutrients people get from eating pork and a use for each in the human body.
4. List examples of meat products made from pork.
5. Name some of the by-products of swine.

Pork

Meat is the flesh of an animal after it has been killed. Meat from swine is called pork. Meat is mostly muscle, but also contains bone and fat. People prefer to cook and eat the muscle, which is the lean part of meat. The bone and fat can be removed and discarded before or after cooking.

People eat pork because it tastes good and it provides their bodies with nutrients. Nutrients are the necessary chemicals in foods that humans and animals use to help support life. Meats provide nutrients, such as water, protein, fat, vitamins,

and minerals. Water helps move other nutrients through the body. Protein can be used to make and repair muscles. Fat provides energy. Vitamins and minerals are important to bone formation and help make the body work right. Pork is a very good source of protein, energy, and some vitamins and minerals. Thiamin, niacin, and riboflavin are important vitamins in pork. Pork doesn't provide all the nutrients people need, so we need to eat other kinds of food, too.

Meats from different parts of an animal's body have different names. After swine are slaughtered, their carcasses are chilled and cut into large pieces called wholesale or primal cuts. These are specially packaged, kept refrigerated, and shipped to supermarkets. In supermarkets, they are cut into smaller pieces of meat that are ready to sell to customers. Thin pieces of pork loin are called chops. Large, thick pieces, often from the shoulder, are called roasts. Hams and bacons are often cured and smoked. Pork also can be ground or made into sausages.

Other Products from Swine

Leather from the hide is an important swine by-product. The leather is used to make products like shoes, footballs, and soccer balls, as well as many other items. Bristles for paintbrushes can be made from the hair that comes off the swine carcass in the processing plant. Other by-products are health care products and lard or fat.

Swine have helped to keep some people alive

and healthy by providing fluids that are taken from some of their glands. These fluids are used by people whose own bodies can't make what they need. For example, swine used to provide much of the insulin used by diabetic patients. A diabetic person's body is unable to make the proper amount of insulin needed to be healthy. Diabetic people used insulin from swine to make up for the low amount their bodies produced so that they could lead normal lives. Now, less expensive insulin can be made using biotechnology. Fat that comes from the swine carcass during processing is used for a number of different products. The most common use is for making soaps.

Words to Learn

Processing: The act of cutting carcasses and making them into products that can be sold.

Nutrients: Chemicals in foods that humans and animals use to help support life.

Protein: A complex nutrient the body uses to



make muscle and bone.

Vitamins: Nutrients needed in very small amounts to help the body work properly.

Suggested Activities

- Name four or more of the nutrients people get from eating pork. List a use for each in the human body.
- Make a list of by-products that come from swine. Prepare a poster showing pictures of many of those products.
- Make a list of the benefits people get from eating pork products. Prepare a poster, display, or advertisement to share this information with your club or a market hog buyer.
- Act out a skit or pretend you are making a radio or television commercial to tell people about pork. For fun, have your parent or leader tape record or videotape your commercial.
- Write a letter to a person you want to buy your market hog. Tell why he or she should buy and eat pork.

Extra Activities to Try

- Visit a grocery store or look through the cabinets and refrigerator in your home to find products that come from swine. Make a list and share it with your parent or leader. Don't forget to include products made with swine by-products.
- Prepare a favorite recipe that includes pork and serve it to your friends or family.
- Have a tasting party or picnic with your club. Bring foods made from different pork products.

Ideas for Presentations and Talks

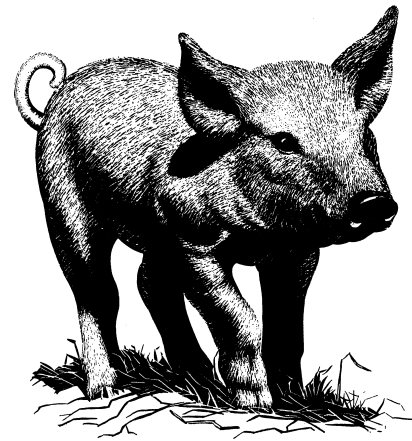
- Identifying wholesale or primal cuts of pork
- Products people get from pigs
- How to prepare your favorite pork recipe

Things to Talk About

- What is pork?
- What are some of the nutrients in pork and how are they used by humans?
- Why do people eat pork?

13

Market Hog Management Schedule

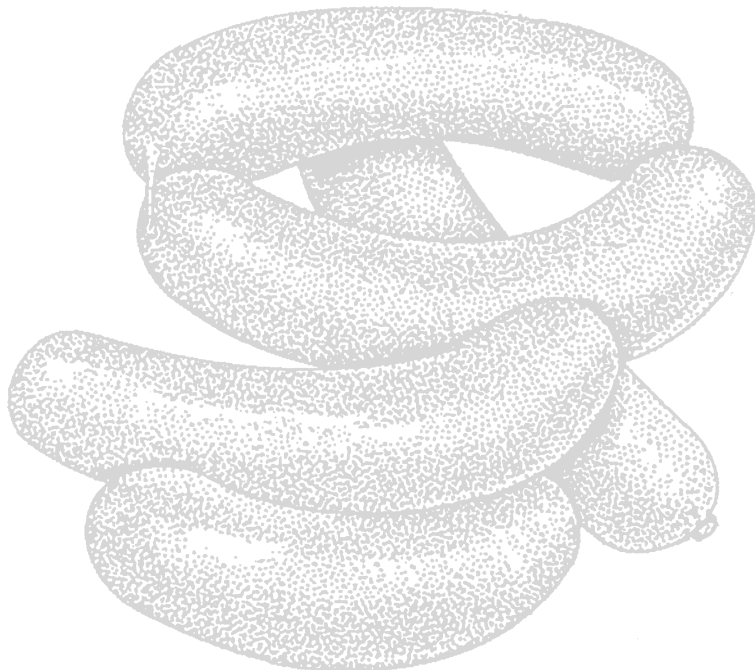


Plan

Buy 8- to 10-week-old feeder pigs weighing 40 to 55 pounds. Market them when they are five-and-a-half months old and weigh 240 to 250 pounds. Dates will change depending on the dates of your show.

Assumptions

Pigs will eat an average about 5 pounds of feed each day from a self-feeder and gain an average of 1.6 to 1.8 pounds each day.



<i>Pig weight</i>	<i>Things to do</i>	<i>Sample dates (will show Aug 15)</i>	<i>Dates for your project</i>
Less than 40 pounds	<ul style="list-style-type: none"> • Plan project. • Arrange project financing. • Get barn and pens ready for pigs. • Make sure feeders and waterers are ready to use. • Arrange to buy feed. 	March–April	
40 pounds	<ul style="list-style-type: none"> • Buy pigs. • Keep new pigs away from other pigs. • Deworm pigs, if not done before purchase. Ear tag, if appropriate. • Check pigs for lice and mange. Treat if needed. • Self-feed grower ration with at least 16 percent protein. • Write pig weights and prices in your record book. 	April 28	
Under 70 pounds	<ul style="list-style-type: none"> • Weigh pigs at county weigh-in, if required. Send in entries by due date. 	May	
125 pounds	<ul style="list-style-type: none"> • If desired, change to finisher feed with at least 14 percent protein. • Weigh pigs and calculate average daily gain. • Deworm pigs. 	July 1	
175 pounds	<ul style="list-style-type: none"> • Start training and fitting pigs for show. • Have veterinarian blood-test pigs for pseudorabies and send for health papers. • Order new show equipment, if needed. • Start process of recruiting buyers 	July 15 (up to three weeks before show)	
240 to 250 pounds	<ul style="list-style-type: none"> • Show and sell pigs. • Write down weights and prices in 4-H record. • Send thank-you notes to buyers. 	August 15	

Authors

Prepared by Robert E. Mikesell, senior extension associate. Committee members during finalization of the document were Keith Bryan, Kenneth Kephart, Norma Lash, Ruth Burns, Sherri Abruzzi, Chester Hughes, Nancy Kadwill, Donna Zang, Missy Whetzel, Patricia Comerford, Marianne Fivek, Bob Lewis, Dale Olver, Bill Weaver, Christy Kohler, Cindy Searight, Mary Sue Shick, Linda Spahr, and Dustin Heeter.

Acknowledgments

The authors appreciate suggestions provided by extension agents, 4-H leaders, and members who pilot-tested this reference guide. Thanks to Steve Mapes, Mapes Photography, for photographs of the breeds of swine, and to Keith Bryan for his drawing of the external parts of swine. Thanks also to Melanie Barkley, Bedford County extension educator, for contributing the cover photo, and to all extension educators and leaders who submitted photos for use in this guide.



4-H Club Motto

“To make the best better”

4-H Club Pledge

I pledge
my head to clearer thinking,
my heart to greater loyalty,
my hands to larger service, and
my health to better living, for
my club,
my community,
my country, and
my world.

4-H Club Colors

Green and White

Visit Penn State’s College of Agricultural Sciences on the Web: www.cas.psu.edu

Penn State College of Agricultural Sciences research, extension, and resident education programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

This publication is available from the Publications Distribution Center, The Pennsylvania State University, 112 Agricultural Administration Building, University Park, PA 16802. For information telephone 814-865-6713.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Cooperative Extension is implied.

This publication is available in alternative media on request.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901, Tel 814-865-4700/V, 814-863-1150/TTY.

Produced by Information and Communication Technologies in the College of Agricultural Sciences

© The Pennsylvania State University 2005

AO845B Rev2M2/06mpc4275