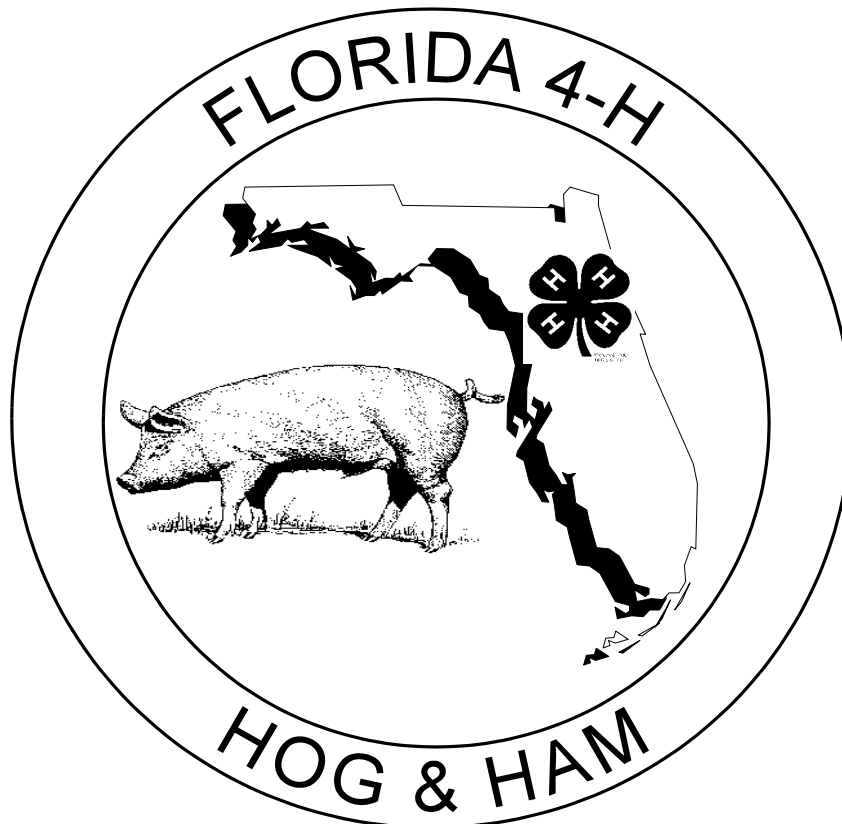


4-H HOG AND HAM PROJECT BOOK



NAME: _____ DATE OF BIRTH _____

ADDRESS: _____

GRADE in SCHOOL: _____ NAME of SCHOOL: _____

YEARS in 4-H: _____ This is my _____ year in the HOG & HAM PROJECT

NAME of LOCAL CLUB: _____

PARENT or GUARDIAN: _____

LOCAL 4-H LEADER: _____

SIGNATURE of COUNTY EXTENSION AGENT: _____

COUNTY: _____

About the Program . . .

The Florida 4-H Hog and Ham Program is a statewide 4-H program. A maximum of 50 4-H members with one hog each can be enrolled each year. Enrollment per county will be determined by the number of counties participating. The county Extension Agent (livestock) and the 4-H Coordinator select the 4-H members who will participate. With assistance from the county Extension Agents, the participants will select and acquire pigs for this project. Records are maintained by the 4-H members from the time of pig selection until the program is completed. The 4-H demonstration/illustrated talk and awards presentation complete the program.

The 4-H member keeps the following information on the project: live weight, age of pig, feed records, carcass weight, carcass information, processing information, and meat curing and smoking information. A registration fee is required to offset the costs associated with the program.

Adapted from 4-H Swine Record Book I (4H344) and Florida 4-H Hog & Ham Program (4H384) with contributions from University of Florida faculty:

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SELECTION

Either a gilt or barrow may be selected as a potential feeder pig for the Hog & Ham project. Try to select pigs that have the ability to grow rapidly, convert feed efficiently, and produce a desirable carcass at the end of the feed period. To accomplish this goal, look for a healthy, large framed, thick, meaty pig with good length and depth of body. The pig should be trim in the jowl and underline areas, have good spring of rib, and long smooth muscling in the shoulder and ham areas. Bulging hams that are deep from rump to hock are desirable. Purchase pigs from a reputable breeder with production records indicating the desired level of performance and good herd health.

Weight

The approximate weight of a pig to be selected or purchased for this project is determined by when the animal will be harvested. The first requirement is to count the number of days until the harvest date. Use the following table as a guide when purchasing an animal or selecting one from your herd.

-Pig's Weight, Lb.	-	50	60	70	80	90	100
-Approximate Days Required To 230 lbs.	-	100	94	87	81	75	68

For the most efficient gains, pigs should be harvested between 230 and 250 pounds.

Age

The approximate age of animals reaching their desired weight is usually between 4½ and 6 months old. Pigs that have the ability to make the desired weight at 5½ months or less are preferred.

FEED and MANAGEMENT

If you buy a pig or select one from your herd, have a concrete or slatted floor pen at least 15 square feet per pig available. Fifty square feet per pig works best when a pig is housed on dirt. Allow at least 8 square feet of shade and locate the pen downwind from your home on well drained soil or have a confined concrete area available. You may want to grow out two pigs as they usually perform better with a pen-mate. Answers to some general questions often asked by 4-H club members are as follows:

Q: How much does a project pig cost?

A: Price depends on supply and demand of feeder pigs. The following is a guide for the purchase of project pigs.

Pig Weight x Factor x No.1 Market Price

30 lb.	2.20
40 lb.	2.05
50 lb.	1.85
60 lb.	1.70
70 lb.	1.55
80 lb.	1.45
90 lb.	1.30

Example: 50 lb. x 1.85 x \$0.50/lb. for No.1 market hog = \$46.25 (Approximate feeder pig cost.)

Q: How much should I feed my pig? How much should it gain?

A: **Pig Weight** **Lb./Day*** **Rate of gain**

40-100 lb.	2.5-4.0	1.5 lb./day
100-160 lb.	4.0-6.0	1.75 lb./day
160-230 lb.	6.0-8.0	2.0 lb./day

*Start with smaller amount and increase as animal gets larger.

Q: What level of protein should I feed my pig?

A: **Pig Weight** **Protein** **Lysine (%)**

40-100 lb.	18%	1.10
100-160 lb.	16%	.85
160-230 lb.	14%	.70

Q: When should pigs be dewormed?

A: Within one week after arrival at your place and again at 120 lbs.

- Q:** What should I use to deworm pigs?
- A:** Ivomec upon arrival followed by Atgard at 120 lbs. for both internal and external parasites or Atgard and Tramisol in rotation for internal parasites only. Thiabendazole can be used for threadworms (strongyloides) if the Atgard and Tramisol rotation is used.
- Q:** What should I use for external parasite control (lice and mange mites)?
- A:** Ivomec injection recommended or a solution of Lindane which can be used up to 30 days prior to show or marketing, and/or Malathion which has no withdrawal requirement.

Components of the Project

Harvesting

Individuals will work with their county Extension Agents to arrange transportation to the meat laboratory on the designated slaughter date. Each 4-H member harvests his/her hog under close supervision of the meat laboratory staff.

The following information is recorded: live weight, carcass weight, inspection approval and other factors. Each 4-H member helps determine if the meat is safe and wholesome by observing the inspection procedure. Parasite information is recorded as to kind of parasites and part of animal infested.

The pork carcasses are evaluated by University meat scientists. All carcass information is provided for the 4-H member's record. 4-H members may observe and compare each carcass.

Processing and Curing

Each 4-H member cuts and processes the pork carcass into wholesale/retail cuts under close supervision. Pan sausage and link sausage for smoking are made by the 4-H members. Hams are deboned, pumped with a curing brine, placed in jet-nets, smoked and fully cooked at the University and returned to the exhibitor within one week. Bellies are pumped with brine and one is smoked at the University while the second goes home with the 4-H member.

Smoking

Samples of pork sausage (linked) and one belly are smoked in a 4-H One Hog Smokehouse. At least one smokehouse is built, operated, and maintained in each county, (see pages 5 & 6). Extension agents and 4-H coordinators may assist the 4-H members in smokehouse construction and operation. Samples of products smoked in the One Hog Smokehouse are returned to the University for evaluation.

Completion of Records

You should keep records in this project book. Keep all receipts and enter information as outlined in this book. Ask your leader or parents for help if needed. Completed production records and copies of hand written thank you notes to the sponsors should be given to your County Extension Agent before the due date. You should mail the original thank you notes after copies are made.

Demonstration/Illustrated Talk

A demonstration or illustrated talk will be required of each 4-H member and will be given at the termination of this project in Gainesville. It should involve some topic related to the Hog & Ham project and will be scored by a panel of judges.

Awards

After the 4-H demonstrations, ribbons and cash prizes are awarded. The final cash award is based on the complete record and accomplishment of the 4-H member beginning with pig selection and terminating with the 4-H demonstration. Scoring categories include carcass, smoked product, project book, and demonstration/illustrated talk.

Economics

This program was developed to teach youth and their families about pork production, processing, and utilization. By design it also teaches cooperation, responsibility, record keeping, and communication skills. As an added bonus, the hog carcass is used by the 4-H member's family as part of the family meat supply. The 4-H Hog & Ham Project is truly "*learning by doing.*"

A One-Hog Smokehouse

The smokehouse described here is suitable for smoking small quantities of meat safely and economically.

Materials

- (2) 55 gallon steel drums free of oil, grease and dirt
- (6) Joints of stove pipe and 1 elbow, 6" diameter; black iron or galvanized
- OR
- (6) Joints of clay tile 6" and 1 quarter bend joint (tile is preferred)
- (2) Steel rods ½" x 3'
- (1) Piece of sheet metal or metal roofing approximately 3' x 3' or use ends cut from steel drums
- (6) 1" x 6" boards 3' long for smokehouse cover (cypress preferred)

Directions for Making

Use an old metal drum or tub 14"-16" high or cut a section from the drum to make a firebox.

Set up the smokehouse as shown on the next page and be sure that the tile or stove pipe smokestack is covered with at least two inches of dirt. The bottom of the smokehouse drum should be packed with dirt around the outside.

It is desirable to clean the smokehouse drum free of rust and paint it with an Epoxy resin base paint which is resistant to acids, alkalis, fats, moisture and high temperatures. Drums properly painted with this type of paint will last longer, clean easier and furnish cleaner smoked meat.

Directions For Smoking

Build a fire in the firebox with non-resinous dry wood. After the wood has burned down to red coals, put on a few pieces of green hardwood or hardwood sawdust. If green wood is not available, use semi-dry wood or hardwood sawdust.

Hang pieces of meat in the drum, 6 to 8 inches apart. Put cover on firebox and place wood cover on top of drum and weight it down with a stone. Keep temperature in the drum below 140°-150°F. If there is not enough draft, raise the firebox cover at the back.

Smoke meat until it is a bright nut brown color. This may take as little as several hours or most of the day, depending on the heat of the firebox and the outside temperature.

After this process, the product should be smoked and not cooked. The internal temperature of a smoked meat product is in the 140° range. Smoked products are NOT fully cooked and ready to eat.

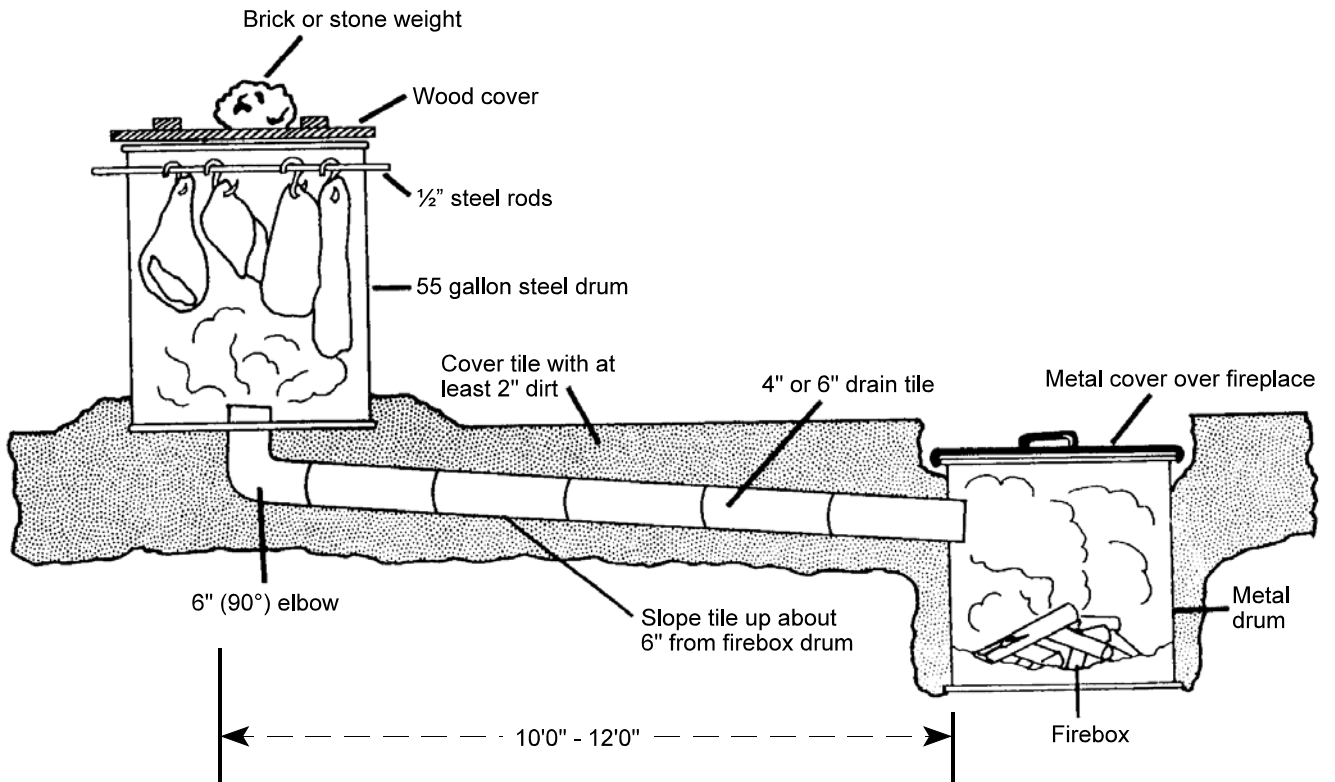
Precautions

1. Keep wood or sawdust smoldering instead of burning.
2. Use only non-resinous wood or sawdust.
3. Never smoke meat until after it has hung long enough to be dry on the outside. Wet meat does not smoke properly.
4. Never use kerosene, gasoline or oil to start a fire.

Smoke houses similar to this type have been recommended by the USDA.

Adapted from: Animal Science Fact Sheet, A One-Hog Smokehouse (AS-14)

Meat Smoking Drum



4-H Hog and Ham Project Processing Procedures

PRODUCTS:

- A. After the carcass is cut and parts weighed, both hams and bellies and all of the trimmings will be processed as outlined below:
- 2 Hams: Either one or both hams will be partially deboned (with aitch bone and shank removed) and pumped with a pickling brine. Afterwards, they will be held at the Meats Lab and smoked, fully cooked and available for pickup within 2 weeks. (Check with your County Extension Agent for this date.)
 - 2 Picnics: Deboned + ground for sausage. Remember to record the weight prior to deboning. You need this number for calculating retail value later.
 - 2 Bellies: Both bellies will be pumped. One will be taken home by the member to be smoked in one-hog smokehouse. The other belly will be processed at the Meats Lab and available for pick up along with the hams. (Check with your County Extension Agent for this date.)
- B. Link sausage for smoking and bulk fresh sausage will be taken when prepared. Members will smoke the link sausage in the one-hog smokehouse.
- C. Members will deliver one link of smoked sausage and 2" strip of bacon when they pick up their smoked ham and bacon.

Table 1. Rapid Curing Procedures - Hams

DESIRED IN FINAL PRODUCT, BASED ON 15% PUMP

Salt	-	1.5%
Sugar	-	.75%
Nitrite	-	156 ppm
Erythorbate	-	550 ppm
Phosphate	-	.25%

BRINE FORMULATION: Per 10 lb. of Brine (Need approximately 2.7 lb. per ham)

Salt	-	1.33 lb. (605.3g)
Sugar	-	0.50 lb. (227g)
Prague Powder	-	0.1664 lb. (75.5g)
Erythorbate	-	0.037 lb. (16.6g)
Phosphate	-	0.167 lb. (75.7g)
Liquid Smoke		
Aro Smoke P-50	-	0.08 lb. (36g)
Water/Ice	-	7.72 lb.

BRINE PREPARATION: This will be done by Meat Lab personnel.

- First - add 30-40% of the total weight of required water.
- Second - add phosphates where required and dissolve by mixing with stainless paddles or 3 blade propeller electric motor.
- Third - add remaining water or ice to bring pickle to a temperature below 50° F and add salt or brine.
- Fourth - add sweeteners (cane sugar or dextrose) and completely dissolve.
- Fifth - add premixed cure or individual amount of nitrite and erythorbate. Continue agitating pickle until all ingredients are completely dissolved.

PROCEDURE:

1. Pump hams and bellies to 20% level (Green weight x 1.2)
2. Hold overnight.
3. Smoke and cook
 - Hams: 155° F
 - Bellies: 144° F

SMOKED PRODUCT EVALUATION

1. After smoking in the one-hog smokehouse, a 6 inch sausage link and one 2 inch section of bacon should be returned to the University for quality evaluation. At this time, the smoked and cooked hams and bellies processed at the University can be picked up.
2. This should be done in just after processing. (Check with your County Extension Agent for this date.)
3. Each item will be evaluated on a 1-5 scale for general appearance, plumpness, smoked odor, external color and evenness of internal color.

RECORDS

A very important part of the project is keeping track of what you are doing: how much your pig is gaining, money you are spending, and how much you are earning. This booklet contains tables for you to keep the necessary records for the project. You will keep records on your feed & equipment inventory, money spent and earned, ration changes, weight gained, health care, and carcass evaluation data.

INVENTORY

This record tells what you start with and what you have at the end of the project. Record the prices paid (or the estimated value) for equipment and feed on hand at the beginning of the project. For the closing inventory, be sure to account for depreciation of your equipment (use a standard 10%). Last year's closing inventory is this year's opening inventory. This year's closing inventory will be the opening inventory for next year's project.

Inventory Description	Beginning			Closing			
	Number	Value Each	Total Value	Number	Value Each	Total Value	
Total Beginning Inventory				Total Closing Inventory			

Include equipment, feed, smokehouse, etc. on hand at the beginning and end (minus depreciation) of the project. (Enter your pig ONLY if you raised it. Purchased pigs are listed in the expense table.)

RATION RECORD

Make a new entry each time you increase feed per day and/or change feeds.
 (If using a self-feeder, estimate the amount of feed per day.)
 Ex. 50 lb. bag/5 days/2 pigs = 5 lb./day/pig

Dates	Feed Type	Ingredients	Protein	Lbs./day	Total Days	Total Feed
Was your pig fed individually? _____				Totals		

FEED EXPENSES: Only include expenses for feed bought.

Purchase Date	Description	\$\$/bag	Total pounds	Total \$\$

TOTAL FEED EXPENSES _____

HEALTH RECORD

Date	Product	Description and Treatment	By Whom

HEALTH EXPENSES:

Vet bills, medication, wormers, pest control, etc.

Description	Total

TOTAL HEALTH EXPENSES _____

OTHER PRODUCTION COSTS:

Pig, equipment, etc.

Description	Total

PROGRAM COSTS:

Entry fee, travel, photo processing, etc.

Description	Total

TOTAL PRODUCTION AND PROGRAM EXPENSES _____

WEIGHT RECORD

Beginning		End of Project				
Date	Weight	Date	Weight	Total Gain	Days on Feed	ADG

* ADG: Average Daily Gain - Divide total gain by days on feed.

RECEIPTS

(Example: Donations, sale of manure, etc.)

Date	Description	Total Value

TOTAL VALUE _____

MEAT VALUE

Hog # _____

CUT OUT	Weight	Retail Value*	Total Value
Hams			
Loins			
Boston Butts			
Picnics			
Bellies (bacon)			
Spareribs			
Neckbones			
Feet			
Trim			
Fat			

*Go to your grocery store and get retail prices from butcher (\$/lb.)

TOTAL MEAT VALUE _____

Where did you get your retail prices? _____

CARCASS INFORMATION			
Trait	Value	Trait	Value
Live Weight, lbs		Last Rib Fat, in.	
Hot Carcass Wt., lbs		Muscle Score, #	
Dressing Percent, %		USDA Grade, #	
Loin Eye Area, in ²		Percent Lean, % (fat free index)	
Tenth Rib Fat, in.			

Please show your work for the following questions.

1. What was the live animal value at the end of the project? (Live wt./100 x Live \$/cwt)

2. What is the total wholesale value of the carcass. (Carcass wt./100 x Carcass \$/cwt)

3. What is the retail value of the cut-up carcass? (Sum of cut-out)

4. What is the percent yield of the 4 lean cuts?

$$[(\text{Ham} + \text{Loin} + \text{Boston Butt} + \text{Picnic}) / \text{Hot carcass wt.}] \times 100 = \% \text{ yield}$$

PROJECT SUMMARY

Gain _____
(From weight record)

Total pounds fed _____
(From ration record)

Feed efficiency (feed per pound gain) _____
(Total feed ÷ gain)

Total feed costs _____
(From feed expenses)

Feed cost per pound gain _____
(Total feed cost ÷ gain)

EXPENSES

Beginning Inventory _____

Expenses _____
(feed, health, production & program)

Total Expenses _____

RECEIPTS

Closing Inventory _____

Meat value _____

Other receipts _____

Total Receipts _____

TOTAL PROFIT/LOSS _____
(Total receipts - total expenses)

SMOKEHOUSE INFORMATION

What time did you start smoking your project?

What type of wood did you use?

Did you build/make your own smokehouse? Use one previously built? Did others besides yourself use the same smokehouse?

Did you use a meat thermometer? If yes, what was the temperature of the meat when finished?

How hot was the smoker box when you put the meat in?

What time did you take the meat out?

Smokehouse Pictures:

PICTURES

(...with explanations. Please limit to these two pages only.)

PICTURES

Participant

Hog Number

**Hog - N - Ham
Project Book
Score Sheet**

Registration, Cost Analysis Sheet & Signature Page Complete	5	_____
Inventory	10	_____
Expenses (Feed, health, other)	5	_____
Production Records (Ration, Weight)	5	_____
Health Record	5	_____
Receipts (Meat value, other)	5	_____
Carcass Information/Questions	10	_____
Project Summary	10	_____
Smokehouse Information	5	_____
Pictures	10	_____
Story	15	_____
Thank You Letters	5	_____
Organization, neatness, overall appearance	10	_____
TOTAL	100	_____

Judge Initials



UNIVERSITY OF FLORIDA

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