OBJECT

The object of this project is to teach Club members how to raise hogs profitably. The experience gained in properly caring for a sow and litter until the pigs are ready to market will greatly assist in accomplishing this end.

REQUIREMENTS

1. Only members of 4-H Clubs are eligible.

2. Time of enrollment for winter and spring project, August 1 to January 1; for summer and fall project, January 1 to June 1.

3. Each member shall raise a litter of pigs to weaning age, or to marketable weight.

4. Each member shall feed and care for his sow and pigs, and shall do all the work necessary during the project. Help is permitted for weighing and handling the pigs.

5. Each member shall keep a complete record of all items of expense incurred in connection with the project, as indicated in this circular. These records shall be turned in to the County Agent or local leader at the close of the project. The weights of the pigs must be certified by two disinterested persons.

CIRCULAR NO. 84

(Revised)

Sow-and-Litter Project for 4-H Clubs

By GRADY SELLARDS

In this circular are presented briefly some suggestions that will aid the club member in selecting a good breeding sow, and in properly feeding and managing a sow and litter. Before starting the project, the club member should study this circular carefully, but should not stop with that. He should study other literature on hog raising. He should consult neighbors who have been successful at hog raising, observe their methods, the type of their hogs, and the equipment used. This will help the club member to avoid costly mistakes.

SELECTING THE BREEDING SOW

There is no best breed of hogs. Whatever the breed, animals of good conformation are more likely than animals of faulty conformation to be satisfactory as breeding animals. Hence, effort should be made to obtain breeding sows of good conformation. The sow should be selected from a large litter because size of litter is a trait that is inherited. A registered sow is a safer investment than a grade. But grade sows, when bred to purebred boars, may produce good pigs.

A breeding sow of the proper type:

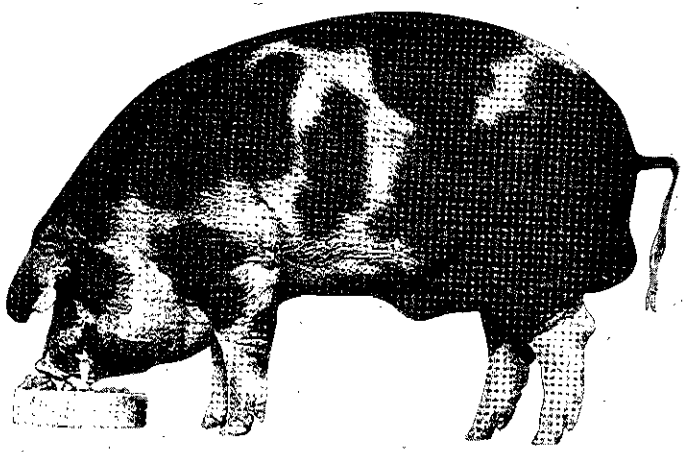
1. Is high and uniformly well arched in the back.
2. Stands squarely on straight legs of medium length, the pasterns almost straight, the bone big and strong.
3. Is long, deep and roomy of body.

4. Is smooth, symmetrical, feminine in appearance and of even width of back from front to rear.
5. Is well developed in the udder and has 12 or more teats.
6. Has a clear, wide-open eye.
7. Has the typical breed characteristics.

The short-legged, short-bodied, over fat, chunky type of sow usually farrows few pigs and gives too small a flow of milk for their proper development.

FEEDING THE SOW BEFORE BREEDING

At the time of breeding, the sow should be in a thrifty condition. For ten days before breeding time she should be fed a well-balanced ration, which should increase her weight at the rate of ¾ pound to a pound a day. This practice is known as "flushing."



"A Good Boar is Half the Herd."

Experiments show that flushing has, in some instances, almost doubled the number of pigs per litter. A ration of corn and ¼ to ½ pound of tankage or 6 to 8 pounds of skim-milk daily and the run of a good pasture, usually produce the desired result. During this period the sow, if thin, should receive each day 2 to 3 pounds of grain for each hundred pounds she weighs.

BREEDING THE SOW

It is essential to mate the sow to a boar of good type. Every effort should be made to find a boar that is strong in points where the sow is weak, so that the faults of neither will show in the offspring. It is desired, but not required, that the sow be purebred. It is required that the boar be purebred.

The gestation period is the time between breeding and farrowing. It is usually 112 days with gilts and 114 days with older sows, but ranges from 96 to 124 days have been known. Spring-pigs should be farrowed in March and Fall-pigs in September. If the sow is bred between November 9 and December 9, she usually will farrow in March. If she is bred between May 20 and June 10, she usually will farrow in September.

Usually March is the best month for pigs to be farrowed. Pigs farrowed on or after March 1 can be shown at the fairs in the "junior pig class," whereas those farrowed between September 1 and March 1 must be shown in the "senior pig class." Pigs farrowed in March or September may be made ready for market when prices are highest in the fall.

FEEDING THE SOW BEFORE FARROWING

After the sow has been bred, it is well to allow her the run of a good pasture. In this way she gets the exercise so essential for bred sows. A field where corn and soybeans have been hogged off is a satisfactory running place for bred sows in the fall. Some farmers gather the corn and hog off the soybeans. If this plan is followed the soybeans should be supplemented with corn or other grain. If the sow shows evidence of becoming too fat, she should be taken out of the soybean field and given a smaller allowance of grain. A common mistake is to feed the sow corn alone during the gestation period. Corn is low in protein and ash, two substances necessary in the production of bone and muscle. Sows fed a ration of corn alone usually produce weak, unthrifty pigs. The principal part of the sow's ration should be corn, but with it, feeds rich in muscle- and bone-building material should be fed.

The sow shonld be kept gaining in weight during the gestation period but not allowed to become too fat. The feed may be

reduced or increased somewhat according to her condition. The feeding of the sow during this period is very important, because it largely determines whether the pigs will be born strong or weak, and this, in turn, directly affects the number raised.

An allowance of 9 parts of corn to 1 part of tankage, by weight, or of corn, middlings and tankage, supplemented by a first-class pasture, such as alfalfa, rape or rye—in fact any pasture that is young and tender—gives good results. If the practice of feeding bred sows on corn alone, is followed, it should not be continued for more than two months after the sow has been bred; then tankage or skim-milk should be added to supply the elements in which corn is low.

The sow should be fed so she gains as much weight during the gestation period as she will lose during the farrowing and suckling periods. This is usually about 75 pounds for a mature sow and 90 pounds for a gilt. To produce this gain the sow should be fed daily about one percent of her live weight in grain. If the sow is unusually thin, it may be necessary to feed her two pounds of grain a day to each hundred pounds she weighs. When tankage is fed, it should be at the rate of 1 pound to each 9 pounds of grain, such as corn, wheat, or barley. Skim-milk may be used at the rate of 2½ parts to 1 part of corn, by weight. If the sow shows signs of becoming overfat, the feed allowance, especially the fat-producing elements, should be decreased as the feeder deems best.

Three or four days before farrowing time substitute wheat bran for one-half of the grain allowance. For example, if the sow has been receiving three pounds of grain a day, she should now receive 1½ pounds of wheat bran and 1½ pounds of grain. Wheat bran serves as a mild laxative and tends to keep down the feverish condition that corn often produces. One-fourth of a pound of linseed oil meal fed twice a day would serve the same purpose.

A week before the sow is due to farrow, she should be placed in the farrowing house so she will become thoroughly accustomed to her new surroundings. She should receive kind treatment and be visited frequently, since it may be necessary to render her assistance during farrowing. If the sow is afraid of her master she will not permit him to handle the pigs or assist the weak ones in

nursing for the first time. It is next to impossible to assist a wild, vicious sow. So do not disturb or attempt to assist the sow at farrowing time, if she appears to be nervous and afraid of you.

HOUSING

Before she is due to farrow, an individual house or quarters should be provided for the sow. If no hog house is available, a clean stall may be used.

The ideal hog house gives protection from bad weather, is properly ventilated, is warm, comfortable, free from disease germs and dust, and admits a liberal amount of direct sunshine. To be warm and comfortable the house should be dry. This necessitates its location on well-drained ground preferably covered with sod and away from the general running place of the herd. The general hog-run is apt to harbor disease germs and worm eggs. Young pigs contract disease easily, hence the importance of keeping them on clean premises. The house should be conveniently arranged inside, since it may be necessary for the caretaker to assist the sow at farrowing time.

A few days before farrowing time the house should be overhauled and thoroughly cleaned. Bedding or other material of the previous season should be burned or hauled out on some field on which no hogs are kept. The house should be repaired, when necessary, and thoroughly disinfected.

The house should be bedded with only a small amount of short oat straw, shredded corn stover, leaves, or other soft material, and provided with a strong guard rail 8 inches above the floor and 8 inches from the wall. Records show that the greatest mortality among young pigs is due to mashing by the sow. Soft bedding material and a guard rail greatly decrease this loss.

ROUND WORMS

Round worms occur commonly in pigs. These worms mature in the small intestines and, if present in large numbers, may seriously affect health, sometimes causing death. Usually, mortality is low, but often pigs become stunted when heavily infested with round worms.

The manure in old hog-lots usually contains millions of worm eggs. After periods of incubation under natural conditions the eggs become infective; that is, small worms develop inside the eggs. When the infective eggs have been swallowed by pigs, little worms—too small to be seen by the naked eye—hatch out in the small intestine and pass into the blood stream. The worms travel in the blood stream thru the liver, heart and lungs. From the lungs of the pig the worms are coughed up and re-swallowed. In the small intestine the worms complete their growth.

PROTECTION AGAINST WORMS

1. Wash the farrowing house thoroly with boiling water and lye (1 pound to 30 gallons water).

2. Wash the sow's sides and udder with soap and water before she is put into the clean farrowing quarters. Try to remove all mud and dirt. It usually contains worm eggs and germs.

3. When the pigs are a few days old, haul (do not drive) the sow and pigs to a clean pasture—a field which has been cultivated since last used by hogs, or one on which no hogs have run for 3 years.

4. Confine the pigs to this pasture until they are at least 4 months old, after which they can run in old hog lots without risk of serious injury from worm infestation.

5. Some men use portable houses that are kept on clean ground. The sows, when about ready to farrow, are placed in quarters on the clean territory, where the pigs are kept until marketed.

AT FARROWING TIME

Purebred sows usually farrow large litters, but only those that receive proper attention *raise* large litters. Most of the losses occur at the time of farrowing or soon thereafter. It is well, therefore, for the caretaker to be on hand at that time to give assistance when it is needed. Not long ago a breeder, when asked why he had a bed in his barn, answered, "That's where I spend my nights when my sows are farrowing, and during the two weeks following I keep a close watch on my pigs for the first two weeks, and then they can take care of themselves."

This man keeps seven sows from which he expects 70 pigs raised from each farrowing. The average raised in Kentucky is a fraction more than six pigs to the litter. Yet, this farmer pointed to a sow in his herd and said, "There's a sow that will go into the fattening pen. She raised only eight pigs in her last litter."

"A pretty high standard, don't you think for any sow?" asked the County Agent.

"Yes, but my sows must raise 10 pigs to the litter or I will not keep them."

This farmer spends the nights in his barn and watches the pigs closely for two weeks. He moves the pigs from the sows at feeding time and keeps them away until the sows have finished their feed and have had time partially to digest it. Immediately after eating, the sow is sluggish and may lie upon her pigs.

FEEDING AFTER FARROWING

On the day she farrows, unless very hungry, the sow should be allowed no feed but should have access to an abundant supply of pure drinking water. As nearly as possible the following plan of feeding should be used:

Ration for a 300-lb. sow after farrowing:

1st day—No feed. Plenty of water.
2nd day—3 pints of wheat middlings or shipstuff, as slop.
3rd day—6 pints of wheat middlings or shipstuff, as slop.
4th to 8th day—9 pints of wheat middlings or shipstuff, as slop.
8th day and on—Add to the slop 1/10 pound of tankage and give 2 ears of corn daily.

Do not feed corn until the eighth day. After the eighth day, gradually increase the amount of corn and tankage until, at the end of three weeks, the sow is getting about 2.7 pounds of grain daily for each hundred pounds of live weight. Skim-milk at the rate of 2 to 2½ pounds to each pound of grain may be substituted for tankage.

If the sow is capable of producing a large flow of milk, she will convert practically all her feed into milk. If she does not receive the necessary feed for milk production she takes the milk-forming

materials from her own body. When this happens, she soon becomes thin and weak and does not raise the pigs properly. She should have all the feed she will consume and it should be rich in milk-producing elements. A good mixture is 5 parts of corn, 4 parts of middlings and 1 part of tankage by weight. The proper amount of each of these feeds may be estimated with sufficient accuracy for practical purposes. Average corn shells about a half pound to the ear; middlings weighs about four-fifths of a pound to the quart, tankage about 1.55 pounds. The sow on full feed consumes in grain daily about 2.7 percent of her live weight. At this rate a 300-pound sow consumes daily 8 ears of corn, 4.5 quarts of middlings and 1 pint of tankage. Unless a creep is provided, the pigs will begin to eat of the mother's ration when they are about three weeks old. It will then be necessary to increase the grain allowance to make up for the feed consumed by the pigs. The middlings may be fed as a slop.

Other satisfactory grain mixtures are: (2) corn, 9 parts; tankage, 1 part; (3) corn, 1 part; skim-milk, 2½ parts; (4) ground barley 11 parts, tankage 1 part. Coarsely ground wheat is superior to the other common grains, for hogs. When the price per pound does not exceed that of corn, it is advisable to feed rather than sell wheat. It may be fed with tankage, skim-milk or other satisfactory protein supplement, in the same proportion as barley.

FEEDING THE PIGS

From the time the pigs have begun to eat, until weaning time, they may be fed the same ration as that fed to the sow. It is well to supply this in a small feeder or trough placed in a creep, or enclosure, where the pigs may eat unmolested by older hogs or chickens. A simple drop-door attached by leather hinges to an opening large enough for the pigs, but too small for the sow to enter is satisfactory. When chickens run at large over the premises the pig-creep should be covered with poultry wire. This and the swinging door make the creep poultry-proof.

Do not turn pigs on pasture until they are at least three weeks old. Previous to this, chilling, caused by allowing pigs to run in wet pasture, lowers their resistance and makes them liable to scours.

SCOURS

Scours is characterized by excessive looseness of the bowels, the discharge being whitish and having a very foul odor. It may result from several causes, such as overfeeding the sow, feeding sour slop, housing the sow and litter in damp, filthy quarters, or turning the pigs on grass at too early an age. If scours occurs, place the sow and pigs in dry, clean quarters. Decrease the feed; then give the sow a dose of raw linseed oil or castor oil in her feed. The proper dose for sows weighing 250 to 400 pounds is 2½ to 4 ounces. A tablespoon holds about half an ounce. If this does not check the disease within a few days, follow with a dose of 6 drops of tincture of opium, which can be given in the sow's feed. Another remedy is lime-water. It is made by slacking a piece of stone lime, the size of an egg, and mixing with a quart of water. Give one tablespoonful of lime-water to a pig, and 2 to 4 ounces to a sow, in the feed, twice daily.

The following suggestions constantly should be borne in mind in handling young pigs:

1. Do not turn pigs on pasture until 3 weeks old.
2. Keep trough clean.
3. Keep beds dry.
4. If scours appears, give sow a dose of 2½ to 4 ounces of linseed oil and reduce feed for a few days.

CASTRATE MALE PIGS WHILE THEY ARE YOUNG

Castration has little effect on the growth and development of the pig when the operation is performed in the first six weeks of its life. If, however, the operation is postponed until the pig reaches the age of 3 or 4 months, it causes a considerable "set-back." The older the pig the greater the loss of blood from castration and the greater the drain on vitality.

The operation can be performed by anyone with even little experience. In order that the pigs may be clean and free from mud, they should be placed in clean quarters away from mud wallows a day or so previous to castration. Instruments should

be placed in a vessel containing a 2½ percent solution of creolin or other good disinfectant, and should be removed only when the operator is ready to use them. Before beginning the operation the operator should wash his hands in the same solution. The pig is now placed in position by the helpers. The scrotum is disinfected by streaking with tincture of iodine in the path where the knife is to travel. The outer skin and then the covering of the testicle are split parallel to the division line. The testicle is removed simply by pulling out the cord in young pigs, or scraping it in two in older animals, where cutting it in two smoothly might cause heavy bleeding. The wound is now treated with tincture of iodine and the pig turned out in a clean field. Do not turn the pigs into a field where they have access to the common mud wallow. This may result in the wounds becoming infected and swelling. Sometimes pigs never recover from such infections, and if they do, considerable time is required for them to get back on feed. Watch the pigs closely for ten days following the operation.

WEANING

Pigs should be weaned at eight weeks of age if the sow is to be bred for a fall litter. A satisfactory method of weaning is to remove the sow from the pigs, since she can readily adapt herself to new surroundings. If the pigs are removed to a new location, they become more restless than if allowed to remain in their accustomed quarters; hence it is only reasonable to expect that the set-back from weaning would be less severe if the pigs are allowed to remain in their old quarters. Three or four days before removing the sow, put her on a much reduced allowance of corn alone; this rapidly reduces the milk flow since corn alone does not supply the elements necessary to produce a large flow of milk.

If the pigs have been allowed free access to a creep and good pasture previous to weaning time, they will be consuming a full feed of grain, and the absence of the mother's milk will not be so keenly felt.

FEEDING WEANED PIGS

Corn is the most widely used and, usually, the cheapest hog feed we have, but it does not supply all the elements necessary for

the growing pig. It is rich in the substances that produce heat, energy and fat, but contains only a small proportion of muscle- and bone-forming materials. These are supplied in such protein feeds as skim-milk and tankage. Pigs should be kept growing rapidly so they will be ready for early fall or early spring markets. Hogs sell for higher prices in the early spring and early fall than at any other time of the year.

To be made ready for the market, pigs must receive a full feed of grain and supplement. It is advisable to supply the feed in a self feeder since considerable labor may be saved in this way. If skim-milk is used as the supplement, the grain only will be fed in a self feeder, but when tankage or other supplementary feed is used, it should be fed in one compartment and the grain in another of the feeder. The following are good grain mixtures for pigs:

1. Corn, self-fed.
   A mixture of:
   Tankage, 50 pounds.
   Cottonseed meal or linseed oil meal, 25 pounds.*
   Alfalfa leaf meal, 25 pounds or hay in rack, self-fed.
   Salt, self-fed.
2. Corn, 5 pounds.
   Shorts or middlings, 4 pounds.
   Milk, 2 pounds.
   Salt, self-fed.

   Note. The corn and shorts may be self-fed, but the usual method is to self-feed the corn and feed the shorts and milk as a slop.
3. Corn, self-fed.
   Skim-milk (2 pounds to each pound of grain).
   Pasture.
   Salt, self-fed.
4. Corn, self-fed.
   Tankage, self-fed.
   Pasture.
   Salt, self-fed.

* Use whichever is cheaper.

An Ear-corn Self-feeder in Use.

MINERAL MIXTURES

Mineral mixtures, in addition to salt, are not necessary in the ration of pigs being fed for market, when skim-milk, tankage or fish meal is being fed with grain. Salt, however, should always be self-fed, care being exercised to increase gradually the amount given until the hogs are getting all they will eat. Sows carrying pigs or suckling pigs may be fed a simple mineral mixture which can be mixed cheaply on the farm and kept in a feeder before them, because the requirement of mineral elements is heavy during these periods. Minerals should be fed also when vegetable supplements such as soybeans, are used to balance the grain.

A simple mixture that has been widely used and found highly satisfactory may be made by thoroly mixing:

40 pounds of ground limestone.
40 pounds of bone meal.
20 pounds of salt.

The addition of 10 pounds of tankage to each hundred pounds of the mixture increases palatability. Pigs eat only a little of this mixture, or none at all if it is not needed. The pig's appetite for mineral may be taken as a safe guide.

RUNT PIGS

Often, individuals in a litter fail to grow as rapidly as the other pigs because of an insufficient supply of milk from the sow. Such

pigs should be fed cow's milk in addition. After receiving a few feeds of cow's milk, the pigs learn to come when called and may easily be separated from the other pigs in the litter. Runts handled in this way often overtake their litter-mates in growth. Certainly, worm infestation causes more pigs to become "runty" than all other causes combined. While "wormy" runts respond to milk feeding, they will not do so well as pigs free from worms.

LICE

A common and serious parasite infesting hogs is the hog louse. This louse lives on the body of the hog and lays its eggs or "nits" on the hair. It sucks the blood and causes great irritation of the skin, thus lowering the vitality of the hog. The irritation causes the hog to rub against trees and posts in an attempt to kill the lice. A burlap sack soaked in crude petroleum or other heavy oil may be wrapped securely around a post where the hogs are accustomed to rub. When the hogs rub against this, the oil gets on the lice and kills them. From time to time more oil must be poured between the sack and post. A contrivance of this kind is just about as effective as a commercial hog oiler which would cost from five to ten dollars. If only one hog is infested, however, it is cheaper to apply the oil with a brush or a rag wrung out of crude oil since by the other method much would be wasted.

CLOSING THE PROJECT

When the pigs are 8 to 10 weeks old, the project should be closed. That is, the local leader, or the County Agent, should be notified and the feeding and financial statement should be summarized. Later, if the litter is suitable, it may be fed as a ton litter, or the pigs may be fed in a breeding or fattening project.

RECORD OF THE PROJECT

Date project began.....Age of pigs at that time.....

Number of pigs.....Breed.....

Grade or purebred.....

If sow is registered give name.....

Registry number.....

Are you growing your pigs for breeding or to be fattened for meat?.....

Cost or value of sow and pigs when record began.....

Weight of pigs when record began.....

Date project closed.....Age of pigs.....

Weight of pigs..... Value.....

Number days fed.....

Total gain.....Average daily gain.....

Total cost of feed and pasture.....

Total value of sow and pigs.....

Did you exhibit your sow and pigs at any fairs or shows?.....

What premiums did you win?.....

Net income on project.....

FEED RECORD

Weigh a supply of kind of grain feed to be used, mix them together and keep in a tight box. Enter the date, and weight of each feed. When this supply has been used, mix another supply keeping careful record of kinds of feed and weights, filling the record as before. Continue in this manner until the close of the project. When your project closes, weigh all unused feed and substract from the total. Use prices given on page 20 in computing costs. Write the name of each feed at the top of a column and the weights and values below.

Date Feed Was Weighed	Kind, Amount and Value of Feed									
		Value		Value		Value		Value		Value
Totals										

Total value of feed consumed .....

FEED RECORD—Concluded

Date Feed Was Weighed	Kind, Amount and Value of Feed									
		Value		Value		Value		Value		Value
Totals										

Total value of feed consumed .....

MISCELLANEOUS FEEDS FED

Kitchen waste, vegetable parings, lawn cuttings and all green crops cut and fed, not entered elsewhere, should be recorded below. Write name of each feed at top of column and the quantity and value below. Ask your County Agent for value of these feeds.

Date Feed Was Weighed	Kind, Amount and Value of Feed									
		Value		Value		Value		Value		Value
Totals										

Total value of miscellaneous feeds fed.....

PASTURE RECORD

See page 20 for cost of pasture.

Kind of Pasture	Date Turned on Pasture	Date Removed	No. Days on Pasture	Cts. Dollars	

Total cost or value of pasture .....

PRICE LIST FOR COMPUTING COST OF FEEDS

Ask your County Agent to insert the price of each feed.

Corn meal	$.....per cwt.
Corn	.....per bushel
Oats	.....per bushel
Barley	.....per bushel
Rye	.....per bushel
Shipstuff (mixed wheat feed)	.....per cwt.
Shorts	.....per cwt.
Middlings	.....per cwt.
Tankage (meat meal 60%)	.....per cwt.
Linseed oil meal	.....per cwt.
Hominy meal	.....per cwt.
Buttermilk	.....(2½c per gallon)
Skim milk	.....(2½c per gallon)
Table slop	.....(2½c per gallon)
Whole milk	.....(14c per gallon)
Pasture, per sow per day	1 cent
Pasture, per weaned pig per day	½ cent

FINANCIAL RECORD

EXPENSES

1. Value of sow and pigs at beginning of project . . ..
2. Value or cost of grain feeds . . . .
3. Value or cost of milk fed . . . .
4. Value or cost of pasture . . . .
5. Value or cost of miscellaneous feeds . . . .
6. Other expenses (veterinary, registration, etc.) . . ..

Total expenses . . . .

RECEIPTS

1. Value of sow at close of project . . . .
2. Value of pigs at close of project . . . .
3. Value of prizes won . . . .

Total receipts . . . .

Total receipts .....

Total expenses .....

Net income .....

This is to certify that this project has been carried on to the best of our ability.

..... Club Member

..... Local Club Leader