PROFITABLE PORK PRODUCTION

W. J. KENNEDY

PROFITABLE PORK PRODUCTION

A BOOK FOR

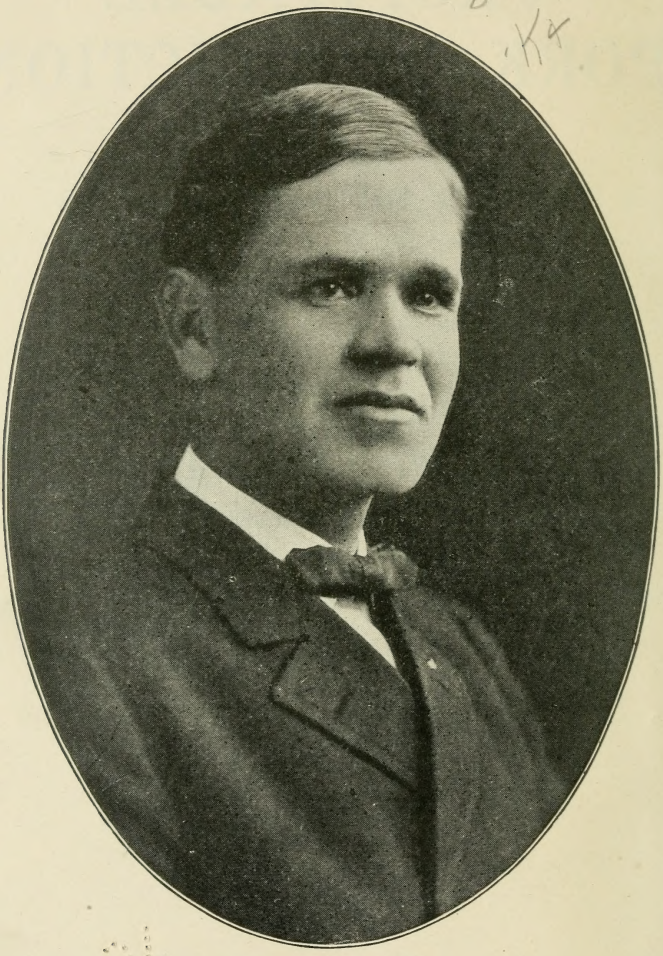
FARMERS AND SWINE GROWERS

By W. J. KENNEDY

Director of Agricultural Extension Department,
Iowa State College

Formerly Professor of Animal Husbandry Iowa State College and
Vice Director of Iowa Experiment Station, Ames, Iowa

Published By
Profitable Breeding and Farming Company
Nevada, Iowa



W. J. KENNEDY

PREFACE

This little book is published to meet the demands of the busy man on the farm. In the preparation of this work, special attention has been given to present day problems as they affect the corn belt farmer. It is presented in simple, plain language. The sole object of this book is to help the farmer and hog raiser in the growing and fattening of swine for market purposes. The statements herein contained are the results of practical tests in which over two thousand head of pigs were grown and fattened for the market. No theories or speculations are offered. My earnest hope and desire is that each man who reads this work will find some useful suggestions which he can apply profitably in his swine growing operations.

W. J. KENNEDY.

Table of Contents

CHAPTER I

The Profitable Type of Hog

CHAPTER II

Preparation of Corn and Other Feeding Stuffs

CHAPTER III

Feed, Care and Management of Brood Sow

CHAPTER IV

Forage Crops and Summer Feeding of Swine

CHAPTER V

Hogging Down Corn

CHAPTER VI

Fattening Hogs in Dry Lot

CHAPTER VII

Treatment of Worms, Lice and Prevention of Diseases

CHAPTER I

The Profitable Type of Hog

The first and most important point in pork production is to have the right type of hog. This hog must meet the demands of the consumer. He must also produce large and economical gains so as to insure a profit for the producer. In other words, he must be a utility animal. The question of individuality is of much more importance than breed. We have good hogs and also undesirable hogs in each and every one of our recognized breeds. Each individual hog raiser must settle the question of breed for himself. The ideal farmer's hog is the animal which never lies to the assessor. He is farrowed after the assessor arrives this year and is marketed at a weight of three hundred pounds or better before he comes back next year. Such hogs are not all confined to any one breed nor are they all red or black or white in color. This is the kind of a hog which can convert feed into dollars and cents at a profit to his feeder.

POINTS TO LOOK FOR IN SELECTING HOGS

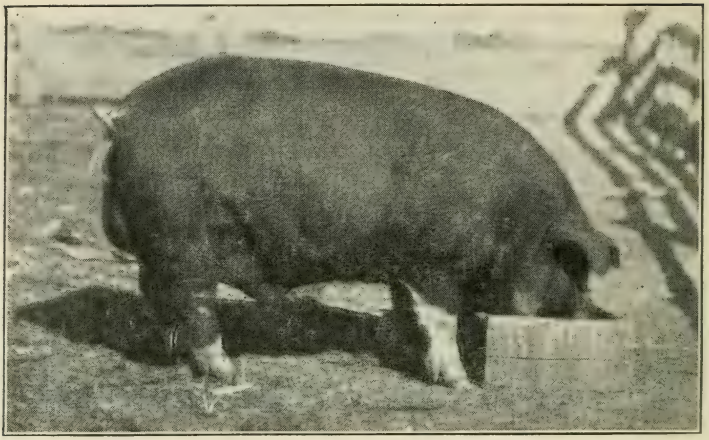
Constitution. In all classes of live stock we can never pay too much attention to the question of constitution. This is especially true of swine. The daily gains and health of the hog are largely determined by the question of constitution. The more vigorous the hog, the more he will eat and the more he eats the heavier and the more economical the daily gains. Thus vigor insures the two most important points to be observed in pork production, namely: **rapidity** of gains and **economy** of gains. Now what are some of the indications of constitution? (1) A large heart girth, as

indicated by depth of body behind the shoulders and width of floor of chest. (2) A broad head with good mouth and nostrils. Avoid a hog with a narrow tucked in chest or a pinched muzzle with small nostrils, as both of these defects are very serious.

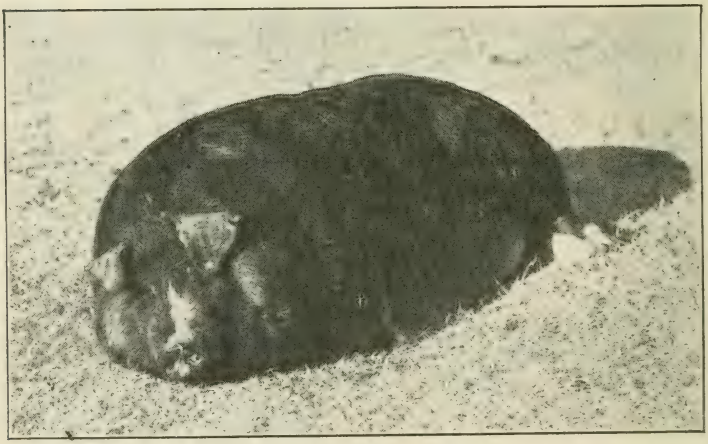
Body Capacity. The hog is simply a machine to convert food into meat. The greater his body capacity the greater his ability to make rapid and economical gains from the food furnished. Body capacity is obtained in three ways and all of these are to be found in real useful hogs, namely: length of body, width of body and depth of body. The two most serious defects in this connection are lack of length and lack of depth. Insist on having all these and especially the last two.

Feet and Legs. A large heavy bodied hog requires good strong feet and legs to take him to market. If he breaks down on the way he is sold as a cripple at a very much reduced price. The legs should be straight, strong and well supported below both the hocks and knees. The bone should be fairly large and of good quality. Avoid a meaty boned hog as it indicates coarseness and lack of strength. The ideal bone, below the knee and hock of the hog, is clean cut and gradually tapers to the pastern joint. The pasterns should be short and strong. The toes should be short and kept well together. Spreading toes are very undesirable. Avoid a hog with crooked hind legs or knock kneed in front as both are very objectionable.

Head. The head of the young pig is a fairly good index of his future development. If the head is broad, strong in the muzzle, with large nostrils and a large mouth, the pig should develop into a large well proportioned hog. Avoid a pig with a narrow head, small muzzle and small mouth as it is seldom that such an animal ever amounts to much. These



A USEFUL TYPE OF BOAR



THE TYPE OF HOG
WHICH CONVERTS CORN INTO DOLLARS AND CENTS

are the points which indicate utility or the lack of utility, thus should be observed.

Straightness of Body Lines. In all young animals it is advisable to insist on straight top, or slightly arched and straight bottom lines. These indicate strength and vi gor, also go to make up a well proportioned hog. We always look for an arch back in the pig, but with age the animal may show some deviation in this respect. A straight underline is always desirable. The width of back should be carried well down on the sides. Avoid a V-shaped body conformation.

Shoulders. The shoulders should be wide but smooth on top and on the sides. Every market discriminates against a coarse, rough shouldered hog as lacking in finish and quality.

Quality. While size should not be lost sight of for quality, still we must have quality. It is something which is demanded by all packing house men. They object very seriously to coarse, rough shoulders and wrinkles or creases on the sides, back or loin. A nice thick, straight coat of hair always helps the general appearance and attractiveness of a bunch of market hogs. Coarse, curly or wirey coats are always considered as external indications of wastefulness from a dressing standpoint and coarseness of grain of meat. Insist on a large smooth hog with plenty of finish. No attempt is made in this conection to describe the breed characteristics of the different breeds of swine. That is a subject in itself. The utility, or dollar and cent end of the pork proposition alone has received attention.

The hog for the corn belt farmer is the one which will make the largest number of pounds of good edible meat from a bushel of corn and the various kinds of supplemental feed fed in conjunction with the corn.

CHAPTER II

Preparation of Corn and Other Feeding Stuffs

In all swine feeding operations, we must ever keep two things in mind, namely: economy of gains and rapidity of gains. Any method of feeding or of preparing feed for hogs which insures more rapid and more economical gains should commend itself to the swine raiser. We must always be able to answer the all important question, "Does it pay?"

The most common methods of preparing feeding stuffs for swine are grinding, soaking, cooking or cutting, depending upon the nature of the feed used. Each and every one of these methods of preparation means additional cost. In the discussion which follows each feeding stuff will be considered separately. It is believed that this arrangement will prove more convenient to the reader.

Corn. In all of the corn belt states corn stands as the peer of all feeding stuffs from the point of economy of gains. It leads all others from the standpoint of total digestible matter. In carbohydrates, the fat forming compound, corn ranks high. While corn should always constitute from sixty to ninety per cent of all hog rations, still the addition of some other feeding stuff, rich in protein and ash matter, to the corn ration, always insures more rapid and generally more economical gains.

Very extensive experiments in regard to the preparation of corn for swine feeding have been conducted at the Iowa Experiment Station. These cover the feeding of ear corn, soaked shelled corn, dry corn meal, soaked corn meal, dry corn and cob meal and soaked corn and cob meal to some 312 head of all

ages and weights. The various costs of the different methods of preparation were as follows:

Shelling corn 1c per bushel.

Grinding shelled corn to meal 2c per bushel.

Grinding ear corn twice to fine corn and cob meal 6c per bushel.

Soaking corn or corn meal 1c per bushel.

Where soaking was practiced the water was added 12 hours before feeding time. The table, on page 12, giving the weights of hogs used, the average daily gains, the amount of feed per 100 pounds of gain and the cost per 100 pounds of gain with corn at 50c per bushel and the return per bushel of corn when pork sells at $6.00 per cwt. will be found useful and instructive.

Experiments reported on page 12 were extensive, thus should be reliable. The results obtained would seem to justify the following general conclusions in regard to the methods tested of preparing corn for hogs.

1. That pigs from weaning time up to 200 lbs. in weight made the most economical gains when fed on dry ear corn, although in some instances shelled corn soaked 12 hours made somewhat faster gains.

2. Hogs over 200 lbs. in weight made more economical gains on shelled corn soaked in water 12 hours than on dry ear corn or corn meal in any form and the gains made were almost as rapid. The amount of corn saved by shelling and soaking ranged from 4 to 7.5 per cent. in the different lots, being highest in those lots on pasture.

3. Shelled corn soaked 12 hours was more palatable and produced faster and more economical gains than shelled corn which had been soaked 24 hours. It proved useless to grind corn for hogs of any age

Lots	Kind of Corn	Total days fed	Ave. daily gain	Feed per 100 lb. gain	Cost per 100 lbs. gain-corn at 50c per bu.	Return from bu. of corn Pork--$6.
	Three months old pigs weighing from 45 to 50 lbs. each fed on grass.					
1	Dry ear corn.....	172	.95lb	439lb	$4.28	73c
2	Soaked shelled corn...	172	.94lb	450lb	4.43	71c
3	Dry corn meal.....	172	.85lb	498lb	5.02	62c
4	Soaked corn meal.....	172	.93lb	493lb	4.95	64c
5	Dry corn and cob meal	172	.51lb	700lb	6.36	60c
6	Soaked corn and cob meal	172	.56lb	670lb	6.12	62c
	Corn 10 parts—Meat Meal 1 part					
	Hogs weighing around 100 lb. at start, fed during spring and summer in dry yards.					
1	Dry ear corn.....	140	1.32lb	465lb	$4.56	69c
2	Soaked shelled corn...	140	1.30lb	442lb	4.41	72c
3	Dry corn meal.....	140	1.21lb	463lb	4.77	66c
4	Soaked corn meal.....	140	1.52lb	445lb	4.59	69c
	Corn 10 parts—Meat Meal 1 part.					
	Hogs weighing around 200 lb. at start, fed during spring and summer in dry yards.					
1	Dry ear corn.....	84	1.74lb	468lb	$4.65	68c
2	Soaked shelled corn...	84	1.92lb	449lb	4.53	70c
3	Dry corn meal.....	84	1.99lb	452lb	4.71	68c
4	Soaked corn meal.....	84	2.00lb	461lb	4.80	66c
	Corn Alone.					
	Hogs weighing around 200 lb. at start fed during summer on pasture.					
1	Dry ear corn.....	45	1.31lb	544lb	$5.03	60c
2	Soaked shelled corn...	45	1.42lb	504lb	4.74	64c
	Corn 12 parts—Meat Meal 1 part.					
	Thin sows weighing around 225 lb. at start and fed during fall in dry lot.					
1	Dry ear corn.....	56	2.04lb	427lb	$4.13	76c
2	Soaked shelled corn...	56	2.49lb	398lb	3.92	81c
3	Dry corn meal.....	56	2.40lb	401lb	4.08	79c
4	Soaked corn meal.....	56	2.44lb	405lb	4.13	78c

when the weather was warm enough to permit soaking.

4. Corn and cob meal is not a practical way to feed corn to swine. It is not conducive to either rapid or economical gains. This is due, no doubt, to the fact that it is too bulky to be utilized in sufficient quantities by the young pig or more mature hog because of the relatively small size of their stomachs.

5. In summary, it may be truthfully said that in the case of hogs under 200 pounds in weight that the scoop shovel is all that is needed to prepare the corn for feeding. With hogs over 200 lbs., in mild weather, soaked shelled corn will produce rapid and economical gains, thus should be used.

All of the experiments conducted to date, with the cooking of corn for swine, have shown that it required a smaller amount of the raw or uncooked corn than of the cooked corn to produce a hundred pounds of pork.

Barley. Barley stands next to corn as a feed for pork production. In many countries it heads the list. In this country it is usually too high in price as compared with corn. Large amounts of discolored barley are used for swine feeding. Barley, on account of its hard shell, should be ground and soaked in preparation for swine feeding. When prepared in this way the feed is much more palatable and produces more economical gains than when fed whole or in the dry ground meal form.

Shorts. Shorts should be fed in the form of a rather thick slop for best results.

Wheat. Damaged wheat, when fed with some other feeding stuffs not to exceed one-third or one-half of the ration, gives very good results. It may be fed whole in the dry form, soaked or perhaps the best results will be obtained when it is crushed and soaked some 12 hours before being fed.

Tankage or Meat Meal. These packinghouse products are now very generally used as a protein and ash supplement to the corn ration. They may be fed in the dry form but are most relished when mixed with water in the form of a thin slop. There is also less waste when fed in the slop form as dry tankage or meat meal is blown by the hogs, thus some of it wasted.

Rye. Rye should be ground and fed in the form of a thin slop. The best results are obtained when not more than one-half of the ration is composed of rye.

Oats. The method of preparing oats will depend upon the size and age of the pigs. In the case of young pigs the oats should be ground and the hulls sieved out. They may either be fed dry or in the form of a slop. The latter method is perhaps the best. For breeding stock, and shotes not being fattened, whole oats are very valuable feed and may be scattered on dry ground or on a feeding floor.

Oil Meal. This feed is often fed as a supplement to some carbonaceous feed such as corn. It is best to feed it in the form of a thin slop and not to exceed ten per cent. of the ration.

Cottonseed Meal. It is generally conceded that cottonseed as now prepared, is poisonous to swine. If fed at all it should be used in very small quantities and fed in the form of a thin slop.

Gluten Feed. This feed being a by-product of corn is not so well adapted to add to the corn ration as some of the other protein feeds, such as meat meal, tankage or oil meal. Gluten feed should be fed in the form of a slop as it is lacking from the standpoint of palatability if fed in the dry form.

Potatoes. All experiments to date clearly indicate that steamed or cooked potatoes are very much superior to raw potatoes for swine feeding purposes.

When fed in this way and mixed with corn, 400 lbs. of potatoes are the equivalent of 100 lbs. corn.

Pumpkins. Careful tests have been made with the feeding of raw and cooked pumpkins to swine. The results to date all seem to favor the feeding in the raw form for best results.

Skim Milk. The most economical way to feed skim milk or butter milk is to feed 3 lbs. of the milk to one pound of corn or other grain feed. When larger amounts of the milk are fed the gains are smaller and more expensive.

Alfalfa and Clover Hay. Both alfalfa and clover hay are very useful feeds for breeding swine. If the hay is cut early and properly cured so as to retain the leaves and have fine stems, it is surprising the amount of hay the hogs will eat.

It has been found that grinding these feeds has no advantage over cutting in short lengths and is very much more expensive. At the Iowa Experiment Station the whole hay proved a very good feed. Both the alfalfa and clover furnish some protein and ash matter and have a very favorable influence on the digestive system. These feeds are very useful for brood sows during the pregnancy period.

In summarizing the advantages and disadvantages of preparing feed for swine, the whole question resolves itself around three main points. Does the preparation increase the digestibility of the same? Does the preparation increase the palatability of the ration so as to insure heavier daily gains? Will these advantages be marked enough to warrant the additional expense involved in preparing the feed?

CHAPTER III

Feed, Care and Management of the Brood Sow

We must pay more and more attention to the feed, care and management of our brood sows. That the health of the sows, the strength, size and condition of pigs at birth and even the size of the litter, to some extent, are influenced and even governed very largely by the feeding of the sows previous to breeding time and during the pregnancy period is now an established fact. Good results, or good luck as is often claimed, follow intelligent methods of feeding and management of the brood sow. The cheapest ration from the standpoint of the cost of the feed consumed, is not always the most economical. The number of pigs raised and the condition of the same at weaning time, are important factors to be considered in this connection. A good healthy bunch of pigs at weaning time open up the brightest and most profitable market ever known to the corn belt farmer for his corn crop.

The feeding and management of the brood sow varies with the age and condition of the sow. This leads up to another question. Which is the better, young or mature sows for breeding purposes? All experimental work shows conclusively that larger litters, larger individual pigs and much stronger pigs at birth are always secured when mature sows are used. Where two litters per year are raised, mature sows are always the most profitable mothers. If but one litter per year is reared the younger sows have stronger claims. This is due to the fact that they are kept growing from birth until marketed. As soon as the litters are weaned the sows are put in the fattening lot and made ready for market.

A GOOD HEAD AND BACK

Young sows, such as the vast majority of our farmers keep for breeding purposes, should receive rations fairly rich in protein and ash as they are adapted to body growth and the general good health of the sow. Older sows, especially if they are thin in flesh, do not require as much protein in their rations. They should be gradually increased in flesh, not made fat however, so as to have them in good condition for the suckling period which is always a severe drain on the system. Both young and old sows should have ample opportunity for exercise as it is fundamental to both the health and strength of the mother and the unborn young.

The vast majority of our people do not furnish their brood sows, especially young sows, with a sufficient amount of protein and ash constituents in their rations. These compounds are absolutely necessary in the proper development of the unborn pig. Its body is composed almost solely of three compounds, water, protein and ash. These must be furnished the mother in sufficient quantities to insure the best results at farrowing time and during the suckling period as they are the chief source of the milk supply. A ration comopsed of corn alone is lacking in both protein and ash matter.

EARLY OR LATE LITTERS

There is much diversity of opinion in regard to the most desirable time to have the sows farrow. There are many who advocate having the sows farrow during March or the early part of April. Others, and they are by no means in the minority, claim that May is the ideal time for the young pigs to arrive. There are many good arguments on both sides of this question. It must be settled by each individual as the question of suitable quarters and cold weather accommodations are of vital importance.

The man who has warm pens and suitable feed can handle early pigs to good advantage. He must be prepared to keep the little fellows warm even in zero or below zero weather. When pigs reach two or three weeks of age, they are able to withstand considerable cold but very young pigs are very delicate, thus perish very soon in cold quarters. These early pigs, when given a good start, have considerable advantage over May pigs in that they may be marketed during the late fall or early winter months. They are also better able to utilize early forage crops such as alfalfa or clover. If fall litters are desired, the sows may be re-bred in time to secure early September pigs. The chief disadvantages to March pigs are the additional labor required at farrowing time, heavy loss of pigs during cold weather unless housing conditions are very favorable, the difficulty in furnishing the sows with proper rations to insure a liberal flow of milk and the prevalence of thumps and other troubles which are apt to attack the young pigs, due to lack of fresh air and exercise.

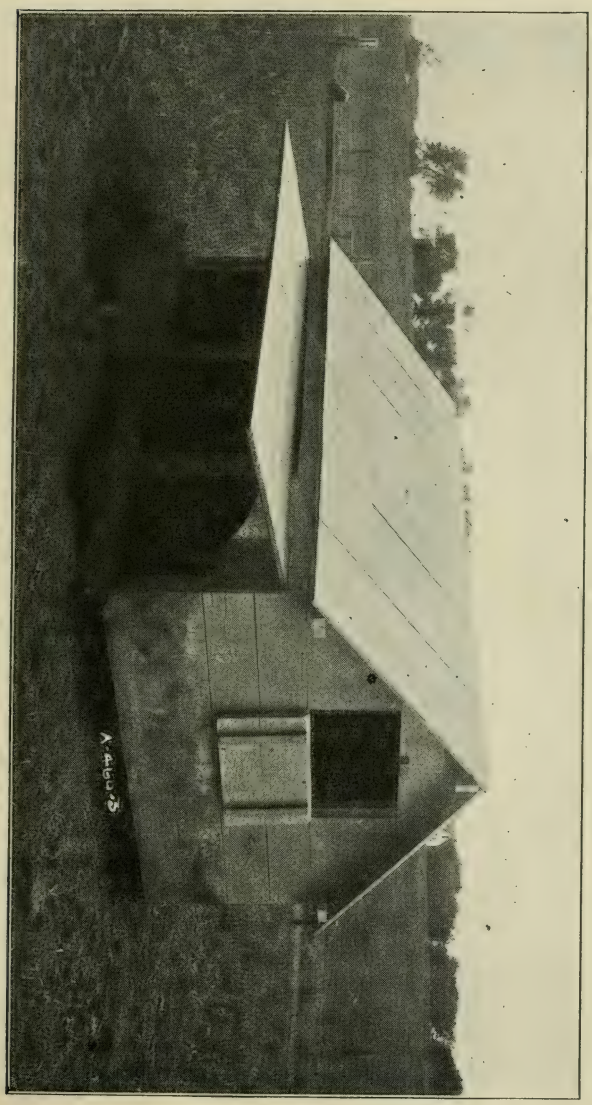
Pigs farrowed during the month of May seldom cause the owners much worry or trouble. The sows can be out of doors, thus secure sufficient pasture to cool the system and stimulate a good flow of milk. Except in the case of real wet weather, when some of the litter may be drowned, there is not much liklihood of any heavy losses at farrowing time. Artificial conditions are largely replaced by the more natural conditions and nature generally takes good care of her own.

The chief disadvantages to these late litters are that the pigs must be carried through the major portion of the winter season, else be sold below the average market weights for good fat hogs and these young pigs are not ready to handle early forage crops to good advantage.

FEEDING SOWS PREVIOUS TO AND DURING BREEDING SEASON

That it pays to feed the sows on the right kind of rations previous to and during the breeding season can not be disputed. The gilt or sow that is in a good healthy, vigorous condition at breeding time is much more likely to settle to the first service than the sow that is over fat or receiving insufficient nourishment. There is also no doubt but that the general vigor and health of both the sire and the dam at mating time has much to do with the size of the litter. Good hog men, the world over, have long since recognized the truth of the above statements. These conditions can be brought about only by proper feeding and furnishing a liberal amount of exercise. It pays to start right in any line of business and especially in the hog business.

In the case of gilts, they should be in good growing condition. They should be building up the body frame work. This requires a bone and muscle producing ration. Corn alone is not sufficient. It is too much of a fat former and does not contain enough of the protein and ash compounds. Corn, on account of its relative cheapness in the corn belt states, should constitute the major part of the ration. Some form of supplement, fairly rich in both protein and ash constituents, should be added in sufficient quantities to properly balance the ration. When skim milk and butter milk are available, they both make excellent adjuncts to the corn ration. Wheat shorts, to the extent of one-third of the ration, will also give good results. At the Iowa Station the most satisfactory rations used, both from the standpoint of economy and general influence on the sows, were corn 8 parts and meat meal 1 part; corn 8 parts, short 3 parts and either tankage or meat meal 1 part.



A CONVENIENT FORM OF MOVABLE HOUSE

While both clover hay and alfalfa have been relished by the sows, we have never been able in the case of gilts, to get them to eat enough of these feeds to properly balance the corn ration. The main object should be to feed the sows or gilts in such a way as to insure good health and a well developed body frame work.

FEEDING DURING PREGNANCY PERIOD

It has long since been a well established fact that a pig which has been stunted during the suckling period seldom, if ever, makes profitable gains during the fattening period. Recent investigations have shown that this stunting process may occur even before the pig is born. The manner in which the brood sow is handled during the period of pregnancy determines, in a large measure, the vigor, size and condition of the young at birth. Thus we see the importance of the right kind of treatment of the mother during pregnancy to insure good results.

While good breeding is indispensible in the proper development of swine, still good feeding is fully as important. Obesrvation and experience teaches us that good feeding and good breeding are inseparable essentials in the securing of ideal development. The best bred animals are more likely to fail in the hands of the careless feeder than the more common bred animals in the hands of the good caretaker.

Recent investigations at the Iowa Experiment Station have shown clearly that the rations fed the pregnant sows effect, in a large degree, the size, vigor, condition and general thrift of the offsrping. Practical hog men have long since learned that there is a right and wrong way to feed and care for the pregnant sow. It is now generally recognized that corn alone is not an efficient ration for the production of strong, healthy, well developed pigs. The

problem is to find a suitable supplement to corn as it is our cheapest source of digestible nutrients.

Mature sows should be fed in such a way as to insure a good healthy condition and to avoid any tendency to being over fat. A fat sow is seldom if ever a profitable mother. In the case of gilts they should be fed on rations conducive to good body growth. Here again fatness is very objectionable. The properly nourished gilt should gain at least one-half pound daily during the pregnancy period. She should show good body growth. Her coat of hair should present a healthy appearance. If she is discontented it is a sure indication that there is something lacking in the ration furnished.

Some recent investigations conducted at the Iowa Experiment Station in the feeding of gilts are of interest to the corn belt farmer. A bunch of gilts of uniform breeding size and condition were divided into some five lots to test the efficiency of five different rations. Lot I was fed on ear corn alone. Lot II was fed ear corn 29 parts and meat meal 1 part. Lot III was fed ear corn 7½ parts and meat meal 1 part. Lot IV was fed ear corn and clover hay in racks. Lot V was fed ear corn and alfalfa hay in racks.

Lot	Ration	Av. Initial wt. per gilt	Shelled corn eaten daily	Supplement Daily	Av. daily gain
I	Ear Corn	209 lb.	3.65 lb.	None	.354 lb.
II	Ear Corn 29 parts Meat meal 1 part	210 lb.	3.21 lb.	Meat meal .127 lb	.582 lb.
III	Ear corn 7½ part Meat meal 1 part	200 lb.	2.75 lb.	Meat meal .432 lb	.635 lb.
IV	Ear corn and Whole Clover	200 lb.	3.67 lb.	Clover .302 lb	.528 lb.
V	Ear corn and Whole Alfalfa	211 lb.	3.74 lb.	Alfalfa 1.106 lb	.627 lb.

The foregoing table, which gives the initial weights of each lot, the average amount of corn eat-

en per day per sow (ear corn being reduced to shelled corn basis), the average amount of each supplement eaten per sow per day and the average daily gain per sow and during the pregnancy period should be both interesting and helpful.

It will be noted that the gilts getting the ear corn alone made the lightest daily gains while those getting ear corn 7½ parts and meat meal 1 part made the heaviest daily gains. It was very noticeable all through the test that the gilts in Lot I on ear corn alone, were very restless. They were always rooting and apparently looking for something to satisfy their appetites. Those in the other lots, and more especially Lot III fed on ear corn 7½ parts and meat meal 1 part, presented a thrifty, sleek-coated appearance and were always quiet and restful in behavior, indicating that their body wants were satisfied.

What were the results at farrowing time? The following table giving the number of pigs farrowed, the average weight of the litters, the average weight per pig and the number of pigs saved per sow at weaning time is of interest. Especial attention should be given to the average size of pig at birth and the number saved at weaning time.

Lot	Ration	No. in Ave. Litter	Wt. of Ave. Litter	Ave. wt. per pig in lot Lbs.	Ave. No. of pigs saved per sow at weaningtime
I	Ear Corn	7.6	13.20	1.74	5.2
II	Ear Corn 29 parts Meat Meal 1 part.....	7.4	14.89	2.01	6.2
III	Ear Corn 7½ parts Meat Meal 1 part.....	8.8	19.62	2.23	7.0
IV	Ear Corn and Whole Clover	6.4	14.17	2.21	5.6
V	Ear Corn and Whole Alfalfa	7.6	17.41	2.29	6.4

The above table shows that in average size of litter at birth that Lot I fed on ear corn was above

the average but in average weight per pig and in number of pigs saved at weaning time it was much below the general average. Lot III fed on ear cron 7½ parts and meat meal 1 part, is again in the lead. Here we find the largest litter at birth, the second highest average weight of pigs at birth and clearly the largest number of pigs saved at weaning time. Lot V fed on ear corn and alfalfa again ranks a close second. While the average number of pigs farrowed in the alfalfa lot and the ear corn lot was the same, there is a marked contrast in the average weight of the pigs and the number reared at weaning time in favor of the lot fed on alfalfa and corn. The clover and corn lot also made a very good showing.

The condition and vigor of the pigs at birth is an interesting study. The following table gives the percentages of strong, medium, weak and dead pigs at birth in each of the lots fed on the various rations.

Lot	Ration	Strong	Med.	Weak	Dead
		%	%	%	%
I	Ear Corn	68.42	15.79	15.79	None
II	Ear Corn 29 parts....				None
	Meat Meal 1 part....	91.89	5.41	2.70	None
III	Ear Corn 7½ parts				None
	Meat Meal 1 part....	93.18	4.55	2.27	None
IV	Ear Corn and				None
	Whole Clover	93.75	None	6.25	None
V	Ear Corn and				None
	Whole Alfalfa	89.47	7.89	None	2.63

The above table shows clearly that the ration fed the mother has a marked influene upon the vitality of the new born pigs. The pigs from the sows in Lot I, fed on ear corn alone, had the least vitality. The pigs classed as weak were really very largely runts. Lot III fed on ear corn 7½ parts and meat meal 1 part, is again in the lead. It is not necessary to argue the importance of having strong pigs at birth.

Every man, who has raised hogs, appreciates this point.

In the above test meat meal, a packing house by-product, has given excellent results. The writer has every reason to believe that a good grade of tankage would give equally as good results. They are both packing house by-products and for all practical feeding purposes there appears to be but little, if any difference in their relative feeding values for brood sows or fattening hogs, when fed with corn. That we should always feed some form of protein and ash supplement to the corn ration for brood sows has been thoroughly demonstrated. The younger the sow the more necessary that we have a good supply of both protein and ash compounds. The rations given in this connection are very satisfactory. They may or may not be the best under all conditions. Some other feeding stuffs may furnish both protein and ash compounds cheaper and perhaps with better results. Oil meal has been used by many hog men. It must be fed very carefully and not to exceed ten per cent. of the ration, else abortion may follow its use. When fed in moderate amounts, it gives very good results. It keeps the digestive system in good condition and seems to insure good health of the sow. Wheat shorts are a very good feed when not too high in price. Corn, however, in the corn belt states, should constitute the major portion of the ration because it is the cheapest and most highly digestible feed available. All swine men must provide some good supplemental feed rich in both protein and ash matter, to add to the corn ration to insure the best results at farrowing time.

FEEDING AT FARROWING TIME

Sows receiving well balanced rations during the pregnancy period, do not, as a rule, require a great

deal of additional attention at farrowing time. Keep the sow's digestive organs in good natural condition. Three or four days previous to farrowing, it is a good idea to reduce the grain allowance and feed a rather thin slop. Some wheat shorts or wheat bran are very good to mix with the water, as they both exert a favorable influence on the digestive organs. Every precaution should be taken to prevent a feverish condition of the sow at this time. Any tendency towards constipation is liable to cause a heated condition of the body. Some very successful swine raisers feed from 3 to 5 ozs. of Epsom salts about two days before farrowing. This is done to cool out the system. Sows that are feverish are much more likely to be vicious than those in good condition. Where some oil meal, bran, roots or the leaves of either alfalfa or clover hay are fed, there is seldom any trouble due to an over heated condition of the body system. It is not a good idea to increase the rations until at least four or five days after farrowing. This gives the sow a chance to recover before the milk flow arrives.

Farrowing time needs but little attention when the sows are out of doors in a grass lot. The mother usually makes her own bed and all is well. With early pigs in the hog house it is different. The pen should be warm as little pigs can not withstand much cold weather. Either chaff or cut straw should be furnished as bedding. Long straw tangles the little fellows up, thus oftentimes causes the mother to lie on top of them. A fender about six inches wide should be placed around the wall about six or eight inches from the floor. This will prevent the sow from crushing the little ones against the wall. In real cold weather it is a good idea to keep the little pigs in a nice warm basket with artificial heat and covered up to protect them from the cold, except at in-

tervals of every three or four hours during the day, when they are allowed to nurse. This additional care need only be given for four or five days.

FEEDING DURING SUCKLING PERIOD

As soon as the sow has recovered from her farrowing troubles, which usually takes from three to five days, the ration should be gradually increased. The more milk the sow gives, the faster will her pigs grow, providing they have sufficient exercise to prevent thumps. This requires liberal feeding on rations of a highly concentrated nature. Where skim milk is available it will be found very useful at this time. The following rations have given very good results. Corn meal 7 parts and meat meal or tankage 1 part in the form of a slop; corn meal 2 parts, wheat shorts 1 part and skim milk enough to make a rather thin slop; corn meal 6 parts, wheat shorts 3 parts and oil meal 1 part, fed in the form of a slop; corn meal 1 part, ground barley 1 part and ground oats 1 part, fed in the form of a slop composed of either skim milk or water; corn meal 1 part and ground oats 1 part fed in a skim milk slop; ground barley 3 parts and wheat shorts 2 parts fed in a slop; ground barley and skim milk fed in a slop; ground barley 4 parts, ground oats 3 parts and either meat meal or tankage 1 part fed in the form of a slop. Many other rations might be mentioned but the above list ought to be sufficient. Feed each sow what she will eat up clean at least three times daily during the first five weeks of the suckling period. By the time the young pigs are two and a half or three weeks old they ought to be encouraged to eat some grain feed. Where skim milk is available, a mixture of shorts and skim milk, ground barley and skim milk or sieved oats and skim milk is very appetizing. Soon a little soaked shelled corn scattered

on the feeding floor will appeal to the little fellows. Encourage them to eat and have them ready to wean by the time they are seven or eight weeks old.

It is very important that well fed young pigs be given a liberal amount of exercise. If not provided with exercise they are liable to become too fat and may die from thumps, or other troubles. Where it is impossible to give plenty of exercise it is then necessary to cut down the sow's ration so as to decrease the milk flow.

Too much attention cannot be given the sow and her young during this stage of the little pig's life. A pig that is well born and well fed during the suckling period usually pays good dividends to his owner.

CHAPTER IV

Forage Crops and Summer Feeding of Swine

Every swine raiser must utilize more and more some of the various forms of forage crops in the growing and developing of his pig crop. This has been clearly proven by extensive investigations at the Iowa Experiment Station, covering a period of five years during which time almost two thousand head of pigs were grown and fattened for market. Corn, in the ear form was fed in conjunction with each form of forage crop. These experiments brought out very clearly the following points:

1. That the forage feeding system of growing and fattening young hogs offers great inducements to hog raisers. An acre of good corn belt land when devoted to forage crops, with corn at 50 ecnts per bushel and hogs at $5.00 per cwt., should return

from $30.00 to $60.00 profit when grazed with spring pigs. Alfalfa; rape; clover; oats, clover and rape; oats, peas and rape and sweet clover all give very good results.

2. That the amount of pork produced by an acre of forage crops varies in accordance with the kind of the crop, the amount of grain fed and the age of the hogs used. With spring pigs it ranges from about 350 pounds on blue grass and timothy to over 1400 pounds in the case of rape. The other forms of forage crops previously mentioned all range high. Where fairly mature hogs are used, averaging over 200 pounds in weight, the pork returns are very much lower ranging from 50 to a trifle over 300 pounds per acre.

3. That the cost of a hundred pounds of gain, all expenses included with corn at 50 cents per bushel, on young pigs with best forages such as alfalfa, rape and the clovers, runs from $2.88 to $3.96 per cwt. In the case of older and heavier hogs the cost of gains ranged from $4.23 to $5.31 per cwt.

4. That the dry lot system of feeding young pigs is very slow and expensive as compared with the forage crop plan.

5. That heavy old hogs, well grown and weighing 200 pounds or more, make as rapid and economical gains in dry lots as on forage crops.

6. That blue grass and timothy is not an efficient hog pasture. Both of these grasses are deficient in both protein and ash matter for best results, especially with young pigs.

7. That alfalfa is our greatest permanent hog forage. The cheapest pork produced was made on alfalfa pasture at a cost of $2.88 per cwt., corn costing 50 cents per bushel.

8. That rape is a superior emergency crop. It may be sown practically any time during the grow-

ing season up until August. The largest total gains and the largest acre profits were made upon rape. Red clover is about the equal of rape as a swine forage crop. Clover does not last as well as the rape during the fall months.

9. That oats, rape and clover, and oats, peas and rape are both very useful forage crops.

10. That sweet clover in its first year of growth is equal to red clover, but during the second year the plant becomes too woody for best results.

11. That green rye is very useful as an early spring and late fall pasture. Ripe rye should not be used as a pasture crop for hogs.

12. That an ideal forage crop for hogs should possess the following points:

(1). Adaptability to local soil and climatic conditions.

(2). Palatability, that is it must be relished by the hogs.

(3). A heavy yielder, it must be rich in protein and ash matter to balance up the corn ration.

(4). It must be succulent and last throughout the entire grazing season. Some crops are good only during the spring and early summer months, thus furnish no fall pasture.

(5). Permanency is very desirable as in the case of alfalfa.

(6). Be capable of furnishing quick pasture at any time during the growing season. These essentials are not all found in any one crop but alfalfa, the clovers and rape furnish the most of them.

In discussing the various kinds of forage crops each will be considered separately.

ALFALFA

Where alfalfa can be grown, and it can be grown successfully in most sections, it is one of the most

valuable forage crops known to the swine grower. It is rich in both protein and ash matter, thus affords an excellent supplement to the corn ration. From the standpoint of palatability it is second to no other crop. In permanency it leads the list. From the standpoint of furnishing a pasture throughout the entire season it is exceptionally good. When sown during the month of August it affords an early forage crops for the next spring. It must be grown on well drained land, not subject to overflow, as either ice or water will kill out the crop. While it does very well on fairly light soil, still the best results are always obtained from rich land.

The cheapest gains ever made at the Iowa Experiment Station with young pigs, were with alfalfa pasture and ear corn. These gains cost $2.88 per cwt. when all expenses were considered, corn valued at 50 cents per bushel.

From May 19th until November 15th a period of 180 days, the alfalfa pasture carried about 17 pigs to the acre. These pigs averaged 18.75 pounds each at the beginning and a trifle over 168 pounds each at the conclusion of the work. These pigs were fed an average daily grain ration of 4.05 pounds per hundred pounds live weight, in addition to the alfalfa pasture. They made an average daily gain of 1.048 pounds each during the entire period at a cost of $2.88 per cwt. The amount of pork accredited to an acre of alfalfa was 865.5 pounds. In addition to this 3837 pounds of alfalfa hay, valued at $15.00 per ton, $28.75 was harvested from the ground. Valuing the pork at $5.00 per cwt. and the hay at $15.00 per ton the net returns from the acre of alfalfa were $72.02. With pork at $6.00 per cwt. and hay at $15.00 per ton the returns from an acre of alfalfa would be $80.68.

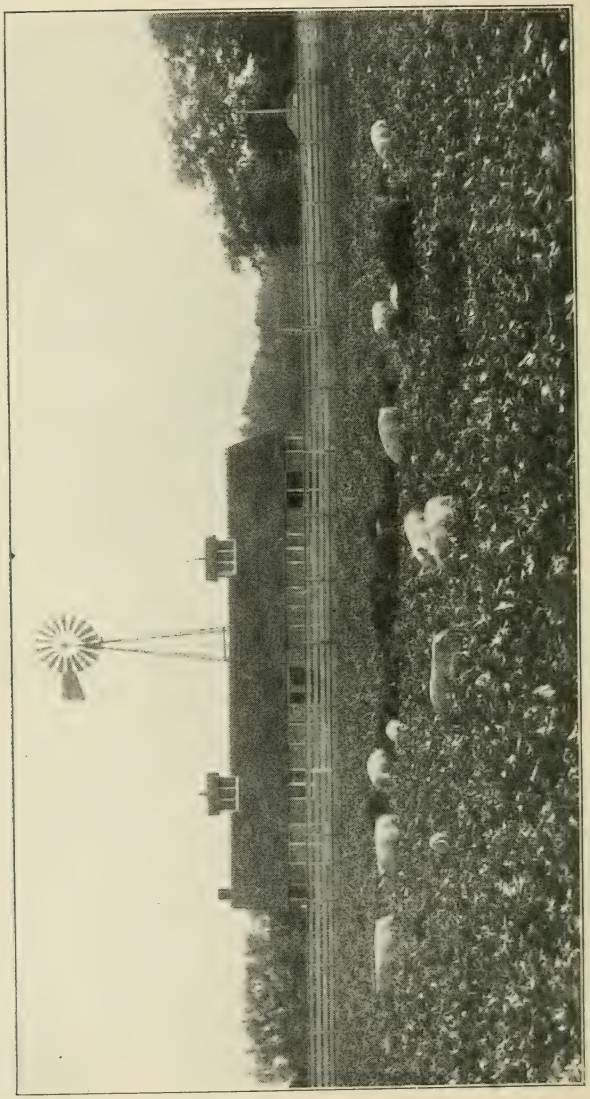
RAPE

As a forage crop for swine Dwarf Essex rape is coming into quite general use. All of the experiments at the Iowa Experiment Station clearly demonstrate the value of this crop. There are two kinds of rape, one known as the summer or bird seed rape and the other as the winter annual or biennial rape. Dwarf Essex is a variety of the winter annual and should always be used as it gives excellent results. The bird seed or summer rape should never be used in this section of the country as it is useless for grazing purposes.

The advantages of rape are many. Pasture may be furnished at any time during the growing season as rape seed may be sown from early spring until late summer. Rape is especially helpful in tiding over the dry months of July and August when blue grass pastures are hard and unpalatable. When the rape seed is sown early in April the pasture will be available about the first week in June. Ordinarily rape pasture will be ready from six to eight weeks after sowing. The pasture usually lasts from the first of June until early in November as it will keep growing until the heavy fall frosts come.

The expense of seeding is light as from four to six pounds of seed per acre are used. When drilled in four pounds is enough but when sown broadcast six pounds should be used. The seed costs from six to eight cents per pound. Most soils produce very good crops when sown to this forage. Land which is well suited to corn production makes very excellent soil for rape. Sandy soil has the objection of drying out too quickly thus a light crop during the hot dry months when most needed.

Rape may be sown either by the broadcast or drilled method. Drilling the rape in rows about



CONVERTING RAPE INTO PORK

eight inches apart is a very commendable way to seed. Some sow it broadcast with very good resulting crop yields but drilling will give a much more uniform stand and a better subsequent growth. Planting in rows from twenty-four to thirty inches apart and cultivating two or three times during the season is practiced by some successful farmers. This method is advisable on weedy foul land. It also helps to conserve the moisture on light soil.

How should rape be pastured? The hogs should not be turned on until the plants are from ten to fourteen inches high. Heavy stocking early in the season should be avoided. The rape should never be eaten so closely as to leave the bare stalks remaining. When it is pastured down to four or five leaves to the stalk the hogs should be taken out to give the plants a chance to recuperate. The best plan to follow is to have just enough pigs so as to allow the growth of rape to keep ahead of the pigs rather than to have it eaten too closely. About the middle of October the rape lots should be heavily stocked so as to have the entire crop eaten down before the severe November frosts wilt the same.

During the season of 1911, which was a very dry one, Dwarf Essex rape drilled in rows eight inches apart gave the following results at the Iowa Experiment Station. The rape was sown on April 18th and the pigs were turned onto the same on June 13th. From June 13th until September 11th, a period of ninety days, one acre of rape carried 27 pigs averaging 25 pounds each at the beginning and 79.8 pounds at the end. On account of the large amount of forage on the ground the number of hogs was increased on September 11th to 54 head, weighing 81.3 lb. each, per acre. This number was continued until November 20th, a period of seventy days, at the end of which time the hogs weighed 177.7 pounds

each. These pigs were fed in addition 4.286 pounds of a grain mixture for each one hundred pounds live weight. The grain mixture was composed of ear corn 19 parts and meat meal 1 part. They made an average daily gain of 1.076 pounds each for the entire period at a cost of $3.91 per cwt. with corn at 50 cents per bushel and meat meal at $50.00 per ton. The amount of pork accredited to an acre of rape was 1438 pounds at $5.00 per cwt, would be worth $71.90. Thus we can readily see the importance of rape as a forage crop for young and growing pigs. These returns are very high. No difficulty should be experienced in securing from 600 to 900 pounds of pork from an acre of rape.

CLOVER—MEDIUM RED

Medium red clover is the chief leguminous pasture and hay crop of the middle west. This clover is called medium red to distinguish it from the larger, more rank growing mammoth clover. It is a biennial, but sometimes lasts three or four years by reseeding itself from the second crop. Clover furnishes a nitrogenous pasture. It is fairly rich in both protein and ash matter ,thus is very valuable in balancing up the corn ration. It is much superior to either blue grass or timothy as a hog pasture and is almost the equal of alfalfa.

The chief disadvantage of clover is the uncertainty of securing a good stand. It cannot withstand drought like alfalfa, rape or sweet clover. This is especially true of the second crop.

Early pasturing is oftentimes the cause of its being killed out. It is not a wise plan to turn hogs on medium red clover until it has made a good growth, which is generally about the last week in May or the first week in June. Ripe clover is not relished by the hogs. Clipping sometimes helps by freshening up

the growth. This is especially true if moisture conditions are favorable. When clover is in full bloom it is most relished by hogs. At this time it is often noticed that the hogs will eat somewhat less corn because of their preference for the clover blossoms.

Tests at the Iowa Experiment Station have shown clover to be a very valuable forage crop for swine. Pigs fed on clover pasture and an average daily grain ration of ear corn of 3.64 pounds per hundred pounds live weight gave the following results: From June 4th until November 16th, a period of 165 days, an acre of medium red clover pasture carried 14 pigs. These pigs averaged 33.4 pounds each at the beginning and 218.6 pounds each at the conclusion of the test. They made an average daily gain of 1.075 pounds each at an average cost of $3.69 per cwt. when corn was worth 50 cents per bushel. The amount of pork accredited to an acre of clover was 765 pounds at $5.00 per cwt. would be worth $38.25. This is a very good return when we consider the small amount of labor involved in the care and preparation of the land.

OATS, MEDIUM RED CLOVER AND RAPE

The combination of certain crops offers some advantages in the growing of a forage for swine. A variety of plants in a forage crop for hogs is desirable because if the crops are rightly chosen a large yield is possible and in addition the mixture is more palatable than a single crop. At the Iowa Experiment Station a mixture of common field oats, medium red clover and Dwarf Essex rape has proven to be a very valuable forage. The oats and rape in this forage take the lead in growth and furnish an early feed. The oats head, some of the grains ripen, and later fall to the ground to produce a fall growth. The rape, if not too heavily pastured, persists

throughout the year. The clover usually comes on toward the latter part of favorable seasons, and if the rape is eaten down, grows well and furnishes considerable pasture. If the season is very dry the clover will not amount to much. Barley may be used in place of the oats with very good results. Late varieties of either the oats or the barley should be used. Sow from one to one and one-fourth bushels of oats, eight pounds of clover seed and three pounds of rape seed per acre.

The above crop mixture has given very food results at the Iowa Station. Pigs fed on a forage crop consisting of oats, rape and medium red clover with an average daily grain allowance of 4 pounds per hundred pounds live weight gave the following results. From June 23rd until Nov. 17, a period of 147 days, an acre of the above mixture carried 16 pigs. The pigs averaged 25.8 pounds each at the beginning and 160.2 pounds each at the conclusion of the test. They made an average daily gain of .914 pounds for the entire period at a cost of $3.56 per cwt. when corn was worth 50 cents per bushel. The amount of pork accredited to an acre was 795 pounds at $5.00 per cwt. would be worth $39.75. This is an excellent emergency crop. In several instances we have secured a very good stand of clover the following year, where such a combination was used.

OATS, CANADIAN FIELD PEAS AND RAPE

The three common crops, oats, Canadian field peas and Dwarf Essex rape, when sown together make a very useful forage crop for hogs. This crop is especially well adapted to the middle and northern states as the Canadian field pea does not do well in the south. Early seeding is preferable to late seeding. Some recommend sowing the peas first and the oats and rape about ten days later. When handled

in this way the peas may be either drilled or plowed in to the depth of some three or four inches and the other crops put in about two inches deep in a week or ten days time. Sowing the entire mixture of oats, peas and rape at one drilling has been practiced very successfully at the Iowa Station. The rate of seeding varies, but a combination of one bushel of peas, one bushel of oats and three pounds of the Dwarf Essex rape seed, drilled in has given good results and the writer feels safe in recommending the same to hog men.

At the Iowa Station an acre of oats, Canadian field peas and rape, in conjunction with an average daily grain ration of 3.92 pounds per hundred pounds live weight carried 16 pigs for 147 days. The pigs averaged 25.8 pounds each at the beginning of the work on June 23rd and weighed 152 pounds each at the conclusion of the test on November 17th. The pigs made an average daily gain of .86 pounds at a cost of $3.91 per cwt. with corn at 50 cents per bushel. The amount of pork accredited to an acre of the forage crops was 657 pounds at $5.00 per cwt. would be worth $32.85. This crop was very palatable and could be used to good advantage when more permanent forms of forage are not available.

SWEET CLOVER

Sweet clover is a legume, belonging to the same family of plants as medium red clover, alfalfa, soy beans, cow peas and other useful corn belt nitrogen gatherers. In common with other legumes, sweet clover does best upon soils which are rich in lime. The plant itself is rich in lime, thus an excellent hog feed in that it furnishes one of the main constituents of bone.

The better corn lands are exceptionally well adapted to sweet clover culture. This plant will

make remarkable growth upon clayey and stony hillsides. It will grow and do very well on a soil that is ordinarily too wet for alfalfa. Along the roadsides where the soil is hard it grows in abundance.

A seeding of sweet clover will last only two years unless the clover is allowed to reseed in the second year of its growth. Being a short biennial, the pasture furnished the second season will not ordinarily be as good as that furnished the first year. To insure new growth in the pasture every year it is advisable to make an extra seeding in the early spring following the first year's planting. Little difficulty will be found in eradicating sweet clover, as it will naturally die out if not allowed to produce seed.

Different people advocate different methods of sowing sweet clover. Some say sow it in the fall, others recommend the early spring months, others say in April or May with nurse crops. At the Iowa Station the sweet clover plots were seeded in the spring, alone, at the rate of 18 pounds of hulled seed per acre. The growth came on well and no difficulty was encountered in securing a good stand.

A bitter principle called cumarin is present in sweet clover. Animals when eating the forage crop for the first time are inclined not to relish it because of the bitter taste, but if confined so that they can eat no other green feed, soon find the clover palatable. The hogs prefer the green leaves and the tender portions of the stems. Sweet clover should be pastured fairly close. If allowed to grow high it becomes woody and unpalatable. If the hogs do not keep it down, it should be clipped as it is the new growth which appeals to the appetite of the hog. The crop furnishes a very good pasture the first year but is inclined to become hard and woody during the second season.

At the Iowa Station an acre of sweet clover seed-

ed on April 4th in conjunction with an average daily grain ration of 3.96 pounds per hundred pounds live weight carried 22 pigs for 141 days. The pigs averaged about 38 pounds each at the beginning of the test on June 22nd and weighed 182 pounds each at the conclusion of the same on November 10th. The pigs made an average daily gain of 1.022 pounds at a cost of $3.70 per cwt. when corn was worth 50 cents per bushel. The amount of pork accredited to an acre of sweet clover was 854 pounds at $5.00 per cwt. would be worth $42.70. The writer does not, at this time, recommend the growing of sweet clover for swine forage purposes upon those soils which are well adapted to the growing of alfalfa. The sweet clover stands close pasturing better than alfalfa and will grow on harder soils and under more adverse conditions.

BLUE GRASS AND TIMOTHY

Kentucky blue grass is the permanent pasture grass of Iowa and many other corn belt states. This grass is more firmly entrenched on clay lands than where the soil is inclined to be sandy. The great advantage of this grass is that it is an extremely hardy and permanent perennial. It furnishes an early as well as a late pasture.

The chief disadvantage of this grass is the dry sparse pasturage furnished during the hot summer months of July and August. This is the "resting stage" of the blue grass, thus some additional form of forage crop should be supplied to tide the hogs through this period.

Timothy, outside of the legumes, is the standard hay grass of the corn belt section. It is used to a considerable extent in the earlier stages of establishing a stand of blue grass. Like the blue grass it is lacking in both protein and ash matter from the

standpoint of an ideal forage crop for swine. Where such pasture is used a liberal allowance of protein and ash matter should be supplied in the grain ration.

At the Iowa Station an acre of blue grass and timothy in the relative approximate proportions of 75 per cent blue grass and 25 per cent timothy was used for swine grazing purposes. In conjunction with the same was fed an average daily grain allowance of 3.68 pounds per hundred pounds live weight of the pigs. This combination carried 14 pigs for 165 days. The pigs averaged 33.5 pounds each at the beginning of the test on June 4th and weighed 161 pounds each at the conclusion of the work on November 16th. The pigs made an average daily gain of .723 pounds at a cost of $4.09 per cwt. when corn was worth 50 cents per bushel. The amount of pork accredited to an acre of blue grass and timothy was 378 pounds at $5.00 per cwt. would be worth $18.90. The combination of blue grass and timothy should be used only when other forms of forage crops are not available. When used the grain ration should be fairly rich in both protein and ash matter to insure good daily gains.

RYE

Rye furnishes a very good late fall and early spring pasture. The laxative nature of green rye is quite pronounced. We have had considerable difficulty with scouring when the green rye was pastured with shotes or newly weaned pigs. To counteract the loosening tendency of this ration the addition of a tablespoonful of blood meal in the case of shotes and a teaspoonful in the case of smaller pigs, is of much value.

Tests made at the Iowa Station have shown that the practice of "hogging down" ripe rye is very

wasteful. The hogs made very light gains and the net returns in pork per bushel of rye were not more than one-third of the market value of the rye.

All of the tests at the Iowa Station have shown conclusively that the cheapest way to grow and fatten pigs, ranging from 20 to 175 pounds each in weight ,was through the use of forage crops and a moderate grain allowance. The cost of the gains varied with the different crops used and the weight of the pigs.

In all cases of hogs weighing 175 pounds and upwards, the use of forage crops has not shown such favorable results. In many instances the 200-pound hogs have made heavier daily gains and relatively cheaper gains when fed on suitable grain rations in the dry lot. This would indicate that while the young and growing pig is well adapted to utilize forage crops for the greater part of its ration, the older and more mature hog gives its greatest and most economical returns when fed on highly concentrated feeding stuffs like corn, when properly supplemented with feeding stuffs rich in protein and mineral matter.

CHAPTER V

Hogging Down Corn

The labor problem is an important one on every farm. Any method of farming which will lessen the amount of labor required and at the same time insure economical results, must commend itself to the busy man. One of the most economical and useful labor saving devices in the harvesting of the corn

crop is the hog. The practice of "hogging down" corn is not a new idea. It was practiced by many successful men twenty-five and thirty years ago. It lost favor for a while because some people ridiculed the practice as being wasteful. It was then considered shiftless and something which represented the lazy man and not the successful, up-to-date farmer.

Things have changed in recent years. Every labor-saving machine within the reach of the average man is now used. Experiment stations have tested the efficiency of the hog as a means of harvesting the corn crop. The results of these tests have not shown that "hogging down" corn is wasteful and a part of shiftless farming operations. Quite the opposite is true. Experiments at both the Iowa and Minnesota Experiment Stations have clearly proven the hog to be the most economical corn harvester yet invented. It has been found that the hog will husk the corn and distribute the manure on the ground and in addition return as large, and oftentimes a larger number of pounds of pork per bushel of corn, than where man husks the corn and feeds it to the hog. Thus there is an immediate saving of from 5 to 8 cents per bushel to say nothing of having the manure evenly distributed on the land. Station tests and reports from farmers in different sections of the country show returns from $30.00 to $65.00 per acre of corn when hogs sell for $6.00 per cwt. The man who once adopts this method of harvesting the corn crop nearly always makes it an annual practice on his farm.

KINDS OF CORN AND SUPPLEMENTS TO USE

While the pigs make heavier daily gains and, as a rule, larger net returns per acre when fed just the corn alone as compared with dry lot feeding, still

the best results are always obtained when some additional feed, rich in protein and ash matter, is added to the ration. In many instances the net returns per acre have been increased from 25 to 30 per cent by the addition of a small allowance of meat meal. Various kinds of forage crops have also been used to good advantage.

The variety of corn to use depends very largely upon the locality. It must yield a good crop and mature in good season. In some instances a small amount of sweet corn is grown for early feeding. This is a good thing to do where soiling crops or other summer forage is lacking. Where either a clover or an alfalfa patch adjoins the corn field, the hogs should be allowed the run of the same in addition to the corn lot. The clover and alfalfa both furnish protein and ash matter to balance up the corn ration. Pigs handled in this way always make rapid and economical gains.

Rape sown between the corn rows at the time of the last cultivation, has in many instances proven an excellent crop in connection with the corn. In some instances as high as 800 to 900 pounds of pork per acre have been secured from fields handled in this way. About four pounds of rape seed per acre should be sown. If the weather is real dry the stand will be light, but with favorable weather conditions very heavy yields have been secured.

Soy beans have been grown in the corn fields at the Iowa Station, with fairly good success for "hogging down" purposes. They should be drilled in the corn rows at the time of planting. The best results have been secured where one-half bushel per acre of the beans were sown. These beans are very rich in protein, thus furnish a sufficient amount of the same to balance the corn ration.

Rye sown at the time of the last cultivation furnishes an excellent supplement where no clover or alfalfa pastures are convenient. The best results ever obtained at the Iowa Station were where rye was sown and the hogs were fed from one-third to one-half pound per day each of meat meal in addition to the corn and rye. With pork at 6 cents per pounds these hogs returned 87 cents per bushel for the corn after deducting the cost of the rye and the meat meal at $50.00 per ton. Ground handled in this way may be seeded to clover and timothy the following spring with but little labor. After the rye crop is harvested such ground furnishes good fall pasture.

Except where soy beans, or some other forage crops rich in protein and ash matter are grown, some form of protein supplemental feed should be fed. This point has been very clearly proven by the Iowa Station. Hogs fed from one-third to one-half pound per head per day of meat meal or tankage make very much heavier daily gains and very much more economical gains than those fed on corn alone. The meat meal or tankage may be fed in the form of a thin slop in the water troughs. Pigs weighing 68 pounds each at the beginning, fed for 58 days on meat meal and what corn they "hogged down" have made average daily gains of 1.3 pounds at a cost of 3.5 cents per pound, where corn was worth 50 cents per bushel and meat meal cost $50.00 per ton. This method insures both rapid and economical gains.

SIZE OF HOGS TO USE

It is impossible to have pigs of a certain definite size at the time the corn is ready for "hogging down." All experiments indicate that pigs ranging from 70 to 150 pounds in weight do well in this work. In other words the spring pig crop are just the kind to use in utilizing the corn crop during the

months of September and October. Those that have been grown on pasture or other forage crops, having a good development of bone and muscular frame work are just right for "hogging down" purposes. Fat hogs should not be used. Hogs intended for cattle feeding lots should not be used in this connection as they nearly always suffer a backset when put into the cattle feed lots, unless they are fed considerable additional feed. The "hogging down" period causes the hogs to become fat, thus they should be forced along and marketed as soon as possible to prevent any backsets. Gilts, or sows intended for breeding purposes, should not be used in the "hogging down" work because they will become too fat for best results in the breeding herd.

Old brood sows, intended for market, that are thin in flesh fatten up very quickly when turned into a corn field. If many of these are to be made ready for market an acre or two of sweet corn should be planted as it will furnish good feed from the middle of August until the regular corn crop is ready. When handled in this way they may be made fat and ready for market much earlier than would be possible where the common method of feeding is followed.

TIME TO TURN HOGS IN CORN FIELD

Some men recommend the turning of the hogs in the corn field at any time. Where this is done before the corn is fairly well dented or glazed there is never so much feed as where it is delayed until the corn is fairly well matured. In central Iowa the corn crop is generally far enough along about the middle of September. In southern Iowa about ten days earlier would perhaps give the best results. While immature corn does not hurt the hogs, still the best results are obtained when the corn is well dented or glazed. If the weather conditions are very wet and

the fields muddy it would be better to delay the turning of the hogs in for ten days or two weeks or a sufficient length of time to dry the ground. In muddy weather the hogs should not be given a large area of the corn field and should be provided with a grass lot.

WATERING THE HOGS

Water is indispensible for hogs. There should always be plenty of pure water supplied. All experiments clearly indicate that hogs make their heaviest and most economical gains when they drink large quantities of water. Have abundant trough room and keep them filled at all times. Hogs on a corn field, especially during warm weather, drink large quantities of water, thus it should never be denied them.

SIZE OF FIELD

The size of the field will depend upon several things: the number of hogs, the kind of weather (dry weather large areas and during wet, muddy weather smaller fields), the character of the soil, as on a sandy soil there is always less waste during wet weather than in the case of a black sticky soil. When given ample time, it is seldom that hogs ever waste any corn. At the Iowa Station the hogs have generally been turned into the corn lots about September 15th and left there until the latter part of October and in some instances the 10th or 12th of November.

The following table figured out by the Minnesota Experiment Station will be found helpful in figuring the number of hogs an acre of corn will carry when the yields range from 30 to 70 bushels per acre.

Table Showing Approximately the Number of Days Required to Hog Down an Acre of Corn by a Given Number of Pigs Weighing 125 Pounds.

	Av. wt of Pigs	With Corn Shrunk to Jan. 1 and Yielding								
		30 bu. per A	35 bu. per A	40 bu. per A	45 bu. per A	50 bu. per A	55 bu. per A	60 bu per A	65 bu. per A	70 bu per A
	Lbs.	Days	Days	Days	Days	Days	Days	Days	Days	Days
Will keep 10 hogs	125	22.5	26.2	30.0	33.7	37.5	41.2	45.0	48.7	52.5
Will keep 20 hogs	125	11.2	13.1	15.0	16.8	18.7	20.6	22.5	24.3	26.2
Will keep 30 hogs	125	7.5	8.7	10.0	11.2	12.5	13.7	15.0	16.2	17.5
Will keep 40 hogs	125	5.6	6.5	7.5	8.4	9.3	10.3	11.2	13.2	14.1
Will keep 50 hogs	125	4.5	5.2	6.0	6.7	7.5	8.2	9.0	9.7	10.5
Will keep 60 hogs	125	3.7	4.4	5.0	5.6	6.2	6.8	7.5	8.1	8.7
Will keep 70 hogs	125	3.2	3.7	4.3	4.8	5.3	5.8	6.4	6.9	7.5
Will keep 80 hogs	125	2.8	3.3	3.7	4.2	4.6	5.1	5.6	6.1	6.5

Some very successful followers of the "hogging down" method use a few stock hogs to follow up the fattening hogs. In this way they claim to be able to push the fattening bunch faster and at the same time clean up all the corn, leaving no waste whatever on the ground.

CHAPTER VI

Fattening Hogs in the Dry Lot

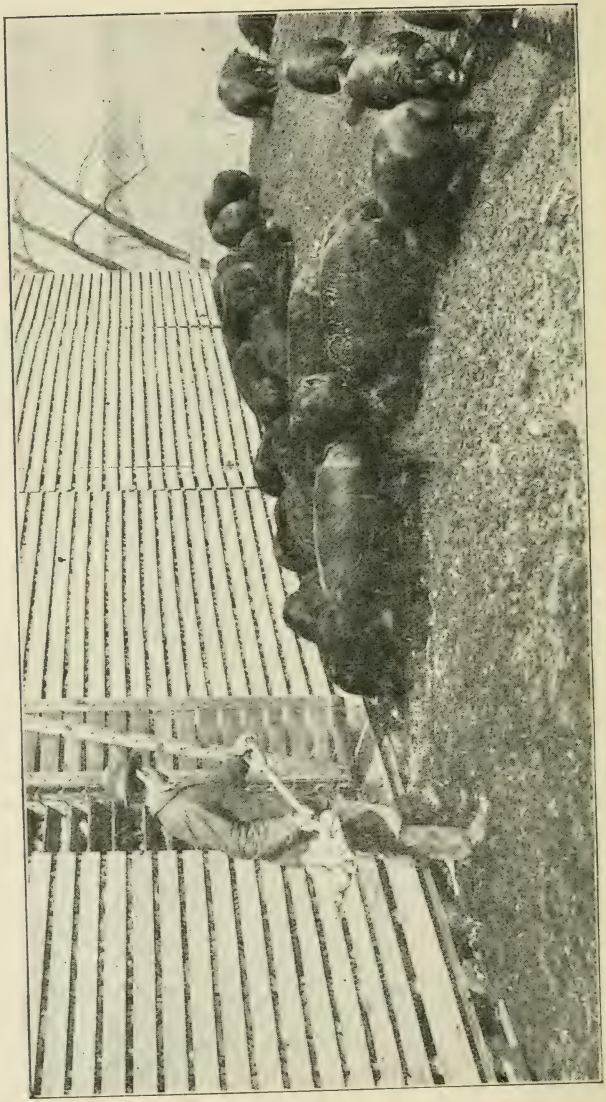
In all farming operations a considerable number of hogs must of necessity be fattened in dry lots. This is true of those hogs finished during the late fall, winter and early spring months. It has also been clearly demonstrated that hogs weighing 150 pounds and upwards make more rapid gains and more economical gains when finished in dry lots than when fed corn in conjunction with pasture or soiling crops. This is no doubt due to the fact that the hog's stomach is too small to utilize large quantities of green forage crops and in addition a sufficient amount of grain to produce real heavy gains. While forage crops are good for young and growing pigs or breeding swine, they do not give the best results when heavier hogs are being forced for market.

In fattening hogs for market, rapid gains are always desirable. The shorter the feeding period, the less the risk from disease. The heavier the daily gains the more economical they are as a rule. Thus we can readily see the importance of adopting those methods which will give the quickest returns. The man who feeds his hogs in such a way as to produce rapid daily gains generally makes the most money out of his hog business. Hogs weighing in the neighborhood of 200 lbs. should make an average daily gain of 2 lbs. per head per day. In hog feeding work at the Iowa Station, hogs weighing around 200 lbs. each at the beginning of an experiment conducted during the latter part of April and the month of May in dry lot feeding made average daily gains ranging from 2.23 lbs. to 2.57 lbs. each for a period of 49 days. These hogs were in fair flesh at the start.

They were good thrifty animals, however. When on full feed they ate about 10 lbs. of grain per head per day.

There are three things necessary for heavy gains in hog feeding: 1st, a good healthy vigorous hog; 2nd, a grain ration which is palatable so that the hogs will eat large quantities of it; 3rd, a grain ration which contains a sufficient amount of protein and ash matter to insure best results.

While corn should always constitute a large part of every hog ration, especially for fattening hogs, in the corn belt states, still it should not be fed alone. It is a very good fattening ration but is lacking in both protein and ash matter. Protein is absolutely necessary in the ration if heavy gains are to be secured. Feeding stuffs rich in protein seem to exert also a favorable influence on the digestive system. In experimnts covering a period of some ten years at the Iowa Station in which over 1000 head of hogs were fed on various rations of corn alone and corn in combination with other feeding stuffs, some interesting and useful results were obtained. It was found that hogs weighing from 150 to 200 lbs. each, fed on corn 9 parts and either meat meal or tankage 1 part made from 15 to 40 per cent heavier daily gains and from 10 to 30 per cent cheaper gains, than hogs of similar weights and breeding fed on corn alone. These results clearly prove the necessity for furnishing some form of protein supplement to the corn ration. Hogs thus fed had better appetites, sleeker coats, and showed much better general health than those fed on corn alone. There are many different ways of balancing up the corn ration. The packing house by-products such as meat meal, tankage and beef scraps, have given real good results in this connection. Skim milk and butter milk are both useful as are oil meal, gluten feed, wheat shorts,



THE BEST METHOD OF PREPARING CORN FOR HOGS UNDER 200 POUNDS

peas and soy beans. Any feed, which is rich in protein and reasonable in price may be used to balance the corn ration. Meat meal and tankage have furnished the cheapest sources of protein available in recent years.

In dry lot feeding the ration must be prepared to suit the needs of the animal. Young pigs weighing from 50 to 75 lbs. require more protein and ash matter than do older and heavier animals. The following rations have been worked out to meet the needs of the various ages and weights of swine. Corn is used as the basis of the ration and other feeding stuffs are added in proper amounts to give good results.

Pigs From 50 to 75 Pounds

1. Ear corn 7 parts and meat meal or tankage 1 part. Feed meat meal or tankage in the drinking water. Pigs of this size should eat from 2.5 to 5 lbs. each per day.

2. Ear corn 2 parts, and a mixture composed of equal parts ground barley and wheat shorts, 3 parts. Feed ground feed in form of a slop.

3. Ear corn 1 part and skim milk or butter milk 3 parts.

4. Ear corn 7 parts, wheat shorts 3 parts and oil meal 1 part. Feed wheat shorts and oil meal in form of a rather thin slop.

5. Ear corn 2 parts, wheat shorts or gluten feed 1 part and skim milk 3 parts.

6. Ground barley 1 part and skim milk or butter milk 3 parts. Feed in form of a slop.

Hogs 100 to 150 Pounds

1. Ear corn 8 parts and meat meal or tankage 1 part. Feed meat meal or tankage in form of slop in drinking water.

2. Ear corn 4 parts, ground barley 3 parts and meat meal or tankage 1 part. Feed barley and meat meal or tankage in form of a slop.

3. Ear corn 2 parts and skim milk or butter milk 5 parts.

4. Ear corn 5 parts, wheat shorts 3 parts and oil meal 1 part. Feed wheat shorts and oil meal in the form of a slop.

Hogs 175 Pounds and Upwards

1. Soaked shelled corn or soaked corn meal 9 parts and meat meal or tankage 1 part. If soaked shelled corn is used feed meat meal or tankage in the drinking water; if soaked corn meal is fed mix the meat meal or tankage with it and feed in the form of a thick slop.

2. Soaked shelled corn or soaked corn meal 5 parts, ground barley 4 parts and meat meal or tankage 1 part. Feed as in case of ration No. 1. While skim milk or butter milk are both useful in the case of any kind of swine, they are more beneficial for young light weight animals than in the case of the heavier hogs. The best and cheapest gains are usually made on heavy hogs where the ration is very largely corn. A small amount of either meat meal or tankage is helpful and will tend to produce considerably heavier daily gains.

Where ear corn is fed, the yards should be kept clean. Feeding floors are very useful in this connection. Good comfortable sleeping quarters should always be provided. Hogs never thrive and fatten well when confined in cold, damp sleeping quarters. It is the man who gives attention to all the little details who wins out in the hog business.

FATTENING HOGS BEHIND CATTLE

On all cattle feeding farms a considerable number of hogs are fattened each year in the cattle feed lots. These hogs are used to utilize the corn which passes through the cattle in an undigested form. When the cattle are fed heavily on shelled corn or ear corn, the hog gains sometimes rangs range from 10 to 15 cents per bushel for each bushel of corn fed to the steers. Light weight hogs, from 75 to 125 lbs. each, give the best results behind cattle. Some successful cattle feeders do not allow their hogs additional feed other than that picked up from the droppings of the cattle in the feed lot. Where plenty of hogs are used, it pays to feed extra feed. In this connection both the Iowa and Ohio Stations have found that the feeding of from one-third to one-half lb. of meat meal or tankage per hog per day increased the daily gains on the hogs from 50 to 80 per cent over the gains made on the hogs in the other lots not fed in this way. Hogs following cattle fed on oil meal, clover hay or alfalfa hay always make more rapid gains than hogs following steers fed on corn and either timothy or mixed hay. When hogs reach 200 or 250 pounds they should be taken out of the cattle lots and finished for market.

In all hog feeding operations too much attention cannot be given to the details. Plenty of pure drinking water should always be supplied. The more water hogs drink during the fall and winter months the heavier the daily gains. Plenty of dry bedding should always be furnished. The feeding should be done twice a day and just what they will eat up clean in from half to three-quarters of an hour should be fed.

CHAPTER VII

Treatment for Worms, Lice and Prevention of Disease

Success in pork production depends largely upon the health of the herd, which should be maintained by preventative rather than by curative methods. This requires the most rigid adherence to sanitary conditions of pens, yards and general surroundings. Filthy yards and pens, poorly drained feeding lots and dusty, dark sleeping quarters should be avoided. Most hog diseases start from little neglects or causes. The careful hog man readily detects the presence of lice, worms or disease outbreaks in his hogs. When taken early all of these troubles can be handled with but little loss to the owner. It is the careless man who lets such troubles eat up hog profits.

PARASITES

It can be truthfully said that parasites such as lice, mange and the various kinds of worms which live in the digestive tract, cause the farmers of the corn belt states a greater annual loss than does all forms of hog diseases combined. This is because these parasites are more or less present in all herds of swine. In the great majority of instances the farmer does not know of their presence and wonders why his pigs do not respond more readily to the food supplied. These parasites are indirectly consuming the corn and other grain fed the hogs. They simply sap the life out of the hog. No hog can do well unless it is free from all forms of parasites. If your hogs are not doing well, look up the reason. It may be lice. It may be intestinal worms or some other trouble. Be sure and locate the trouble, then set about to get rid of the same.

Lice. Lice are a very common source of loss to the hog business. While they are more or less troublesome to all ages and sizes of swine, they are most harmful and injurious to young pigs. Lice, when present, may be found on almost any part of the pig but are most commonly found around the ears, in the folds of the skin about the jowl, sides and flanks, and especially on the inside of the fore legs in the arm pits. It is not difficult to see the lice if a careful examination is made.

There are several different remedies and methods of applying them for the treatment of lice in swine. When a herd is once infested it takes time to thoroughly free it from lice. The lice multiply very rapidly, thus no time should be lost in applying some reliable form of treatment. Many people use the stock dips, which belong to the list of coal tar disinfectants, for this purpose. When used at least a 2 per cent solution should be applied. It may be used in the dipping tank or it may be sprayed on the hogs. The best and most effective cure for lice, used at the Iowa Experiment Station, is crude oil. One application of crude oil usually does the business. It kills the nits as well as the lice. It may be applied with a brush or with a spray. The best way to use crude oil, when you have a dipping tank, is to fill the tank about two-thirds full of water, then put in a layer of some three or four inches of crude oil. The oil being lighter than the water will float on top. Then put the pigs through the tank in the usual way. This will always do the business and but little labor is expended in the operation.

Mange. Mange and other skin troubles are usually caused by some form of parasite. Hogs are not very often troubled with mange or other skin diseases. When an outbreak does occur, it should receive immediate attention. Use a 2 per cent solution

of some good standard dip in a warm water solution. Dip the animals twice, allowing about five days between the dippings and the trouble will generally disappear.

Worms. Worms are a very common source of trouble in the hog business. This is especially true during the fall and winter months when more or less constipating feeds are used. There are several forms of worms such as the lung worm, the common round worm, the thorn headed worm, whip and pin worms and the kidney worm. Of the various forms, the common round worm is the most common and also the most troublesome, unless it be the thorn headed worm.

The general health and vigor of the hog has much to do with its ability to ward off worm troubles and the various forms of disease. Age is also a factor as the greatest losses are always found in the younger animals. The sanitariy conditions of the buildings, yards and pastures, are very important in this connection. If the conditions are such as to enable the eggs or larvae to live for a long time, these troubles are always numerous. Wet years, muddy yards, undrained pastures and pounds are favorable for the development of all forms of parasitic troubles. Where permanent hog lots are used, espeically if the drinking troughs are dirty, the feeding floors filthy or where the yards have not been cleaned each year, heavy losses from parasitic troubles may be expected.

The Round Worm. The most common of the intestinal parasites is the round worm. It is usually found in the small intestine, is from six to ten inches long, tapering toward the ends and is yellowish white in color. If they are present in large numbers they irritate the intestine and set up an inflamma-

tion. The symptoms are much the same as chronic indigestion.

Thorn Headed Worm. The worm is so named because of the thorn headed appearance of the same. It attaches itself to the walls of the intestines by means of this thorn head. This starts an irritation and if present in considerable numbers the hogs soon show an unthrifty appearance. This worm is white or bluish white in color. The females range from 5 to 20 inches in length while the males are from 3 to 5 inches long.

The same form of treatment answers for all kinds of intestinal worms. The pigs should always be starved for a day or so before giving any form of worm medicine. The following worm remedy has been used successfully at the Iowa Experiment Station.

FORMULA FOR HOGS INFECTED WITH WORMS

Santonin 2½ grains.

Areca nut 1 dram (may be omitted).

Calomel ½ grain.

Sodium Bicarbonate ½ dram.

The above amounts constitute a dose for a 100 lb. pig. For larger or smaller pigs use proportionate amounts. All feed should be withheld for at least 18 hours before giving the above mixture. Ground feed slightly moistened should be placed in the troughs and the mixture sprinkled over the same. It may also be fed in the form of a slop. Repeat the dose in eight or ten days to make sure all worms are expelled.

FORMULA TO BE USED AS A PREVENTATIVE OF WORMS

Glauber Salts, 3 parts.
Salsoda, 3 parts.
Copperas, 3 parts.
Common salt, 1 part.
Sulphur, 1 part.

This is to be kept before the hogs at all times but must be kept under cover to prevent waste.

Sulphate of iron (copperas) is also a very good remedy. This should be ground into a fine powder. For a 100 pound pig, use 1 dram, and 2 drams for a 300 pound hog. The sulphate of iron should be dissolved in warm water and mixed with a slop. It should be fed every morning for a week or in real bad cases every other morning for two weeks. It is always best to keep the pigs or hogs in dry lots while treating for worms so that when the treatment is over the litter containing the segments of the worms and the eggs may be gathered up and burned to prevent further infection.

MINOR DISEASES AND TROUBLES

There are several diseases and troubles, common to swine, which are not as a rule fatal. These lesser troubles will be considered in this connection.

Canker or Sore Mouth. This trouble is common in young pigs. It is caused by a germ which is found everywhere, especially in manure piles and filthy pens or sleeping quarters. If taken in time it is not hard to control, but if the disease is well advanced the ulcers or sore places should be scraped before applying treatment. Treat the pig by thrusting its head into a 2 per cent solution of some good standard dip or wash out the mouth with a solution made by using a teaspoonful of permanganate of potash in a gallon of warm water. The pigs should

be treated every day until the parts are thoroughly healed. Keep the pigs in a clean place free from dust and disinfect the udder of the sow each day with the same preparation used on the pigs.

Thumps. This trouble affects young pigs from two to eight weeks old. The symptoms are difficulty in breathing and the flanks have a jumping or beating action. This is caused by an accumulation of fat about the heart and lungs, which interferes with the action of these organs. It oftentimes proves fatal. The only thing to do is to use preventative measures. Give the little fellows plenty of exercise and cut down the rations. This trouble usually attacks early spring pigs which are liberally nourished and confined to very small quarters.

Sun Scald. This trouble usually affects thin haired pigs that are allowed to run in any rank wet growth of green fodder such as rape and sometimes clover and alfalfa, and then exposed to the hot sun. The skin cracks and sore places appear about the ears and on the sides. Remove the cause and treat the affected hogs with a mixture composed of one ounce of lard and two ounces of flowers of sulphur.

Coughs. Coughs in pigs usually indicate either dusty sleeping quarters or else worm troubles. If the pens are dirty and dusty, clean the same or put the pigs in a clean pasture lot. If worms are the cause, use the worm remedy recommended.

Black Teeth. Pigs at birth generally have little tushes or teeth that stick out on both sides of the upper and lower jaw, four in number. These teeth are usually yellow or brown in color and very sharp pointed. These teeth often cause much trouble, due to the little fellows fighting each other or in cutting the mother's teats. Examine the little fellows soon after birth and use a pair of small pliers to break the teeth.

Sore Tails. When little pigs are kept in damp quarters or if they are troubled with scours, this sets up inflammation and oftentimes results in the loss of the tail. If the trouble appears, use boric acid to cleanse the sores and keep the little fellows in well lighted, dry sleeping quarters.

Paralysis. This trouble appears in the hind quarters, especially in sows that are weakened from nursing large litters. If the pigs are still nursing, wean them at once. Give the sow from 3 to 6 ounces of Epsom Salts in a thin slop. Feed lightly on a ration of a highly nitrogenous nature. Paralysis is sometimes caused by injury to the spinal cord. It is sometimes due to improper feeding. In all cases feed light rations of a nitrogenous nature, keep the digestive organs in good condition, keep the animals quiet and away from the rest of the herd. Animals thus affected require several weeks to fully recover.

HAZARDOUS DISEASES

There are several diseases, more or less common to swine, which are very destructive and difficult to combat. In all such cases too much attention cannot be given to preventative measures. When disease once affects a hog it is very difficult to do much in the way of curative treatment.

Tuberculosis. This trouble is quite common in many sections of the country. It seems to be most prevalent in dairy sections where the skim milk is fed to the hogs. It has been clearly proven at the Iowa Experiment Station that this disease can be readily transmitted to swine through the feeding of infected milk.

It has also been demonstrated that hogs following cattle, which are infected with tuberculosis, readily contract the disease. This being true, hogs should not be fed skim milk, butter milk or whey

which has not been thoroughly pasteurized. Neither should hogs be allowed to eat the droppings of cattle which are known to have tuberculosis.

Hog Cholera. Hog cholera or swine plague is a serious menace to the hog business. This disease is highly destructive and very contagious in its nature. It is easily transmitted from one hog to another, it may be carried by man, dogs, birds or by an overflowing stream. Every precaution should be taken to avoid having hog pastures near overflowing streams. When new hogs are shipped in they should be quarantined for four weeks to insure the safety of the herd. Too much attention cannot be given to these things. In case cholera breaks out in your herd be sure and burn up all of the carcasses of the dead hogs. If every farmer would do this the loss from cholera would be very materially lessened.

Symptoms. The early signs of hog cholera are fever, shivering, unwillingnuess to move around, loss of appetite. The animals appear laggy, hide in the bedding and act stupid. At the beginning the bowels may be normal or constipated but later on there is a liquid and fetid diarrhoea. The eyes at first appear congested and watery but the secretions soon thicken, become yellowish in color and oftentimes smears the eye lids together. The breathing becomes rapid and a cough is usually noticeable, especially when the animals are driven from their beds. The skin is often congested and varies from a pinkish red to purple in color. There are other external symptoms but those given are most commonly seen. When cut open red spots caused by hemorrhages are often found. The spleen is abnormal in size, soft and full of blood. The contents of the intestines are oftentimes covered with blood. When these symptoms are present in your hogs, lose no time in securing a competent veterinarian to treat the herd.

Treatment. Withhold most of the feed. Use light slops. Keep the digestive organs in good shape. Divide the hogs into several lots. Have them innoculated at once with good reliable hog cholera serum. This can usually be secured through the state veterinarian. Good serum is almost a sure preventative for this most dreaded of all diseases. Keep the pens and yards thoroughly disinfected through the use of standard dips.

DRENCHING HOGS

The following method recommended in Dawson's Hog Book is especially good. "To drench mature hogs, a rope with a ring in the end is secured around the hog's upper jaw, and the other end is hitched to a post at such a height as to elevate the hog's head. A 2-inch round stick from two to three feet long is held cross-wise in its mouth between the grinder teeth. Drenching can be done with perfect safety with a long-necked bottle. Care should be taken not to force the dose down too fast, else the hog may be strangled, especially if the hog is struggling or squealing. If the hog refuses to swallow, the throat should be gently kneaded. In drenching pigs they should be held by front legs in a sitting position between the holder's knees, with their backs to him, while another man operates the drenching bottle, keeping their mouths open with a stick meanwhile."

Too much attention cannot be given to the little things in the hog business. Little troubles are usually the sources of large losses. Keep the pens clean, well bedded and have plenty of light. Rake the yards and burn up all refuse after an attack of worms or a disease outbreak. Use plenty of disinfectants at all times. Whitewash your hog pens. Feed a well balanced ration and supply plenty of pure drinking water. These are all important factors in profitable pork production.