Bulletin 273-A April, 1928

PRINCIPLES OF PORK PRODUCTION

B. W. FAIRBANKS AND A. C. ALLEN

COLORADO AGRICULTURAL COLLEGE
EXTENSION SERVICE
FORT COLLINS

CO-OPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS, COLORADO AGRICULTURAL COLLEGE
AND U. S. DEPARTMENT OF AGRICULTURE CO-OPERATING
DISTRIBUTED IN FURTHERANCE OF ACTS OF CONGRESS
OF MAY 8 AND JUNE 30, 1914

PRINCIPLES OF PORK PRODUCTION

B. W. FAIRBANKS AND A. C. ALLEN

"Swine raising is logically an integral part of a diversified agricuture. A few pigs on most farms would increase the net returns. With few exceptions there is enough feed wasted on every farm to supply the pork consumed on that farm. Pork production may be carried on profitably with a small amount of capital invested in foundation stock, labor and equipment."*

Establishing the Herd

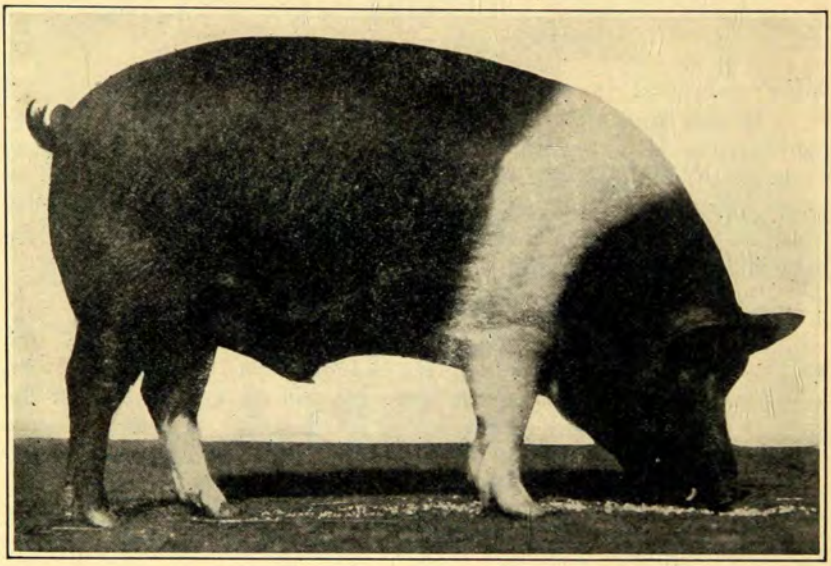
Starting in the Business.—Should one "grow in" or "buy in"? To "grow in" means the purchasing of a few head of sows, and increasing the size of the herd by adding to it the most desirable gilts produced each year. To "buy in" means the purchasing of as many sows as the farm will accommodate under the system of farming practiced. The first method may be called conservative, while the latter may be somewhat speculative. Which method to employ is an individual problem, for each individual prospective producer of pork.

There are advantages and disadvantages to both methods of establishing the herd. After observing the experiences of many it is believed that the Colorado farmer who has decided to establish himself permanently in the pork-production business, there are greater chances for success if he will start with a small herd and grow into the business. With an initial purchase of three to five sows, a farmer can quickly build up his herd to any desired size, and he has obtained his experience with a small investment and with a small herd. Mistakes will be made, and mistakes made with a small herd are less costly than those made with a larger one.

Where to Buy Sows.—Scattered thruout Colorado are numerous commercial swine herds and breeding herds of unexcelled quality. Good foundation sows can be purchased locally, making it unnecessary for one to go long distances to make purchases. After the herd is established, new blood will be required from time to time, and it also can be obtained locally. Frequently breeders offer breeding stock on a share basis, whereby a beginner may start with purebred stock with no cash outlay.

Kind of Sows to Buy.—The first question frequently asked is "What breed should I buy?" The breed is of least importance, and he who seeks to determine the best breed of hogs is like the sheep herder who tried to find the longest side of a square blanket. There is no best breed. Get the breed which meets

*California Circular 15, "Pork Production in California."



The Ideal Butcher Hog
Grand Champion Barrow, National Western Stock Show, 1928

the personal preference and the one which is most popular in the community. Personal preferences should come first.

The sows should be uniform in breed, conformation, and quality, well grown and thrifty, of strong constitutions, and of the desired fat-hog type. The selection of hogs is discussed more in detail in bulletins on the judging of livestock. These bulletins can be obtained thru the office of the local county agent or by writing to the Extension Service of the Colorado Agricultural College.

Kind of Gilts to Keep.—Gilts will be kept to increase the size of the herd or to replace sows that have been discarded. Just as much care is necessary in selecting the gilts to be kept as in selecting the original sows purchased when the herd was established. These gilts can be selected with a greater understanding than when the original sows were purchased, as the producer has intimate knowledge of their sires and dams. These gilts should be of the approval fat-hog type, of early maturity, and from sows that are good mothers and of high fertility.

Selecting the Boar.—In the commercial herd the sows used are generally grades. For this reason it is imperative that a purebred boar be used to head the herd. A purebred boar with his known ancestry takes the gamble out of the business. The

boar should be selected with great care, and for greatest improvement and progress he should be better than the best sow in the herd. The judging of swine is discussed in many bulletins on the judging of livestock, and these publications should be studied. **Ask your county agent.**

Breeding Season

Condition of the sows for Breeding.—A sow is said to be in good condition for breeding when she is rather thin in flesh and gaining slightly in weight. A sow that has just weaned her pigs, or one that has been running on pasture all summer with just a little grain fed in addition, is generally in good breeding condition. Sows in such condition come in heat regularly, and give the foetus a good start. A larger pig crop is apt to result if the sows are bred when in good breeding condition.

Feed and Care for Good Breeding Condition.—About two weeks before the mating season begins, the conditioning of the sows is started. The type of feeding at this time is called "flushing" and it is similar to the system first employed by English shepherds in preparing their ewes for mating. The feed is increased so that the sows will be gaining from ½ to ¾ pounds per head per day. The grain should be palatable, and consist in part of some nitrogenous concentrate such as skimmilk, buttermilk or tankage. A good legume pasture is ideal, as it is palatable and furnishes protein and mineral matter.

Age to Breed Gilts.—In commercial herds, spring gilts are bred in the fall for a litter the following spring. The fall-farrowed gilts are bred the following spring for a fall litter. Generally, all sows are bred for two litters a year. While such practices may be recommended for commercial herds, they are not advisable for purebred herds in which animals are being produced for show or for sale.

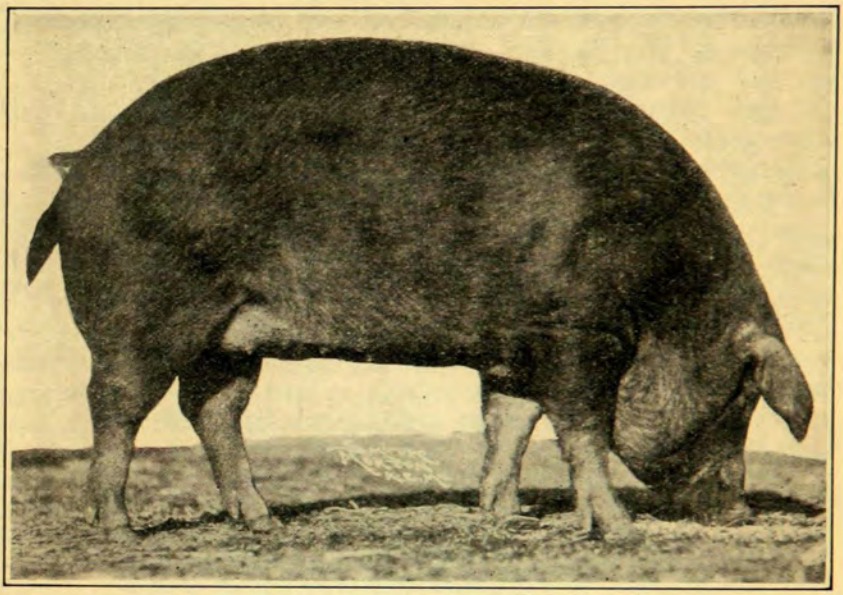
Mating.—Some producers turn the boar in with the sows to breed them as they come in heat, while others mate by hand-mating. The former method is satisfactory when the sow herd is small and when early litters are not desired. If the sow herd is large and if one desires early litters, hand-mating will be the best method of mating. By hand-mating the energies of the boar are conserved, and an accurate record of farrowing dates can be obtained. A vigorous, mature boar can serve from 20 to 30 sows by hand-mating if ordinary care is taken.

Gestation Table

Breeding date	Farrowing date	Breeding date	Farrowing date	Breeding date	Farrowing date
Jan. 1	Apr. 24	May 6	Aug. 27	Sept. 8	Dec. 30
Jan. 6	Apr. 29	May 11	Sept. 1	Sept. 13	Jan. 4
Jan 11	May 4	May 16	Sept. 6	Sept. 18	Jan. 9
Jan. 16	May 9	May 21	Sept. 11	Sept. 23	Jan. 14
Jan. 21	May 14	May 26	Sept. 16	Sept. 28	Jan. 19
Jan. 26	May 19	May 31	Sept. 21	Oct. 3	Jan. 24
Jan. 31	May 24	June 5	Sept. 26	Oct. 8	Jan. 29
Feb. 5	May 29	June 10	Oct. 1	Oct. 13	Feb. 3
Feb. 10	June 3	June 15	Oct. 6	Oct. 18	Feb. 8
Feb. 15	June 8	June 20	Oct. 11	Oct. 23	Feb. 13
Feb. 20	June 13	June 25	Oct. 16	Oct. 28	Feb. 18
Feb. 25	June 18	June 30	Oct. 21	Nov. 2	Feb. 23
Mar. 2	June 23	July 5	Oct. 26	Nov. 7	Feb. 28
Mar. 7	June 28	July 10	Oct. 31	Nov. 12	Mar. 5
Mar. 12	July 3	July 15	Nov. 5	Nov. 17	Mar. 10
Mar. 17	July 8	July 20	Nov. 10	Nov. 22	Mar. 15
Mar. 22	July 13	July 25	Nov. 15	Nov. 27	Mar. 20
Mar. 27	July 18	July 30	Nov. 20	Dec. 2	Mar. 25
Apr. 1	July 23	Aug. 4	Nov. 25	Dec. 7	Mar. 30
Apr. 6	July 28	Aug 9	Nov. 30	Dec. 12	Apr. 4
Apr. 11	Aug. 2	Aug. 14	Dec. 5	Dec. 17	Apr. 9
Apr. 16	Aug. 7	Aug. 19	Dec. 10	Dec. 22	Apr. 14
Apr. 21	Aug. 12	Aug. 24	Dec. 15	Dec. 27	Apr. 19
Apr. 26	Aug. 17	Aug. 29	Dec. 20	.....	.....
May 1	Aug. 22	Sept. 3	Dec. 25	.....	.....

Care and Management of the Boar.—The care and management of the boar does not differ materially from that of the sows. During the summer months they do best upon good pasture, supplemented with one pound of grain for each 100 pounds of live weight. In winter, the boar should have some place to run adjacent to his pen. During the winter mature boars are fed just enough to maintain their weight. Young boars, of course, need more grain and a higher protein content so that they will make good growth.

A boar in medium flesh and gaining slightly in weight is considered to be in good breeding condition. Two weeks before the season begins, the grain allowance is increased in order that he will be on the increase in weight. During the breeding season the amount of grain fed depends upon the amount of service he is giving. A considerable portion of protein feeds, such as middlings, linseed meal, tankage or chopped alfalfa hay should be fed along with a carbonaceous grain.



A Good Type of Brood Sow
Walt's Queen of All, Reserve Grand Champion Sow, National Western Stock Show, 1927

Care and Management of Sows During Pregnancy

Fundamentals.—Henry and Morrison consider the following points as essential fundamentals in the feeding of brood sows.

"(1) Well-balanced rations, which will furnish plenty of protein, and moreover, protein that is well balanced in composition; also, the rations must supply ample mineral matter and sufficient vitamins; (2) rations which are laxative, instead of constipating; (3) the right amount of feed—not too much or the sows will get too fat; (4) plenty of exercise; (5) comfortable quarters—dry, roomy, well ventilated, and well lighted; (6) freedom from worms and lice."

Grains.—Most any of the carbonaceous grains will do, but no grain must be fed without a nitrogenous supplement. Many dissappointments at farrowing time may be attributed to a ration composed of grain alone while the sow was pregnant. Without a nitrogenous supplement, large and thrifty litters will not result.

The ration for the brood sow need not be complicated or expensive. At the Wisconsin Station excellent results have been

obtained on ear corn, 4.5 pounds (reduced to shelled-corn basis), tankage 0.3 pounds, and alfalfa 0.4 pounds. The alfalfa hay was fed in racks.

Corn is the standard grain for a brood sow, and possibly no other grain equals it in feeding value. Nevertheless, all other carbonaceous grains can be fed if properly balanced. Iowa has found ground barley to have 95 percent the feeding value of corn. Oats may be fed, but possibly best results are obtained when they compose a part rather than all the carbonaceous grain portion of the ration. All of the grain sorghums give good results when properly balanced.

Grain Supplements.—The ideal supplements to carbonaceous grains, when the sows are not on pasture, are protein supplements from animal origin and legume hay. Skimmilk, buttermilk and tankage are protein supplements from animal origin. Such nitrogenous supplements as wheat middlings, bran and linseed meal are not the best supplements for the grains. They can be used, however, if the legume hay is fed, or if the sows have access to pasture.

Once the recommendation was made that tankage should be fed to the extent of 10 percent of the ration for gilts and from 6 percent to 7 percent for matured sows. Recent investigations show that this ration can be improved by the addition of legume hay.

The best possible ration for a brood sow is grain, skimmilk or buttermilk, and legume hay. The skimmilk or buttermilk is fed in amounts of 4 to 6 pounds per head per day.

Legume hay is an important supplement to the grain ration for brood sows, and its feeding value is being appreciated more and more as feeding investigations are continued. It has been found that sows receiving alfalfa hay to the amount of 10 percent of the grain ration during their period of pregnancy, farrowed pigs that averaged to weigh at birth one-half pound more than did pigs from sows not receiving alfalfa hay. If the hay is of excellent quality, no nitrogenous concentrate is needed in the winter ration of a mature brood sow. With gilts that have not attained their full growth and development, a nitrogenous concentrate is necessary to balance their winter ration of grain and legume hay.

Rations for Brood Sows

Ration No. 1

Ground corn	50 pounds
Ground oats	25 pounds
Bran	5 pounds
Tankage	10 pounds
Ground alfalfa	10 pounds

Ration No. 2

Ground corn	40 pounds
Ground oats	40 pounds
Linseed meal	5 pounds
Tankage	10 pounds
Bran	5 pounds

How Much Grain to Feed.—A sow should gain from 75 to 85 pounds during her gestation period. The greater part of this gain should occur during the last 4 to 6 weeks. Assuming that a sow has plenty of legume hay, 0.8 to 1.0 pound of grain per 100 pounds of live weight is sufficient during the first 10 to 12 weeks, when the amount is increased to 1.2 to 1.3 pounds per 100 pounds live weight during the last 4 to 6 weeks. Yearlings should receive 1.4 to 1.6 pounds per 100 pounds of live weight, and gilts should receive 1.6 to 1.7 pounds.

Time of Farrowing

Preparation for Farrowing.—The sows should be provided with individual farrowing pens. These pens should be thoroly cleaned and disinfected before the farrowing season begins. From three days to one week before the sow is due to farrow, she should be placed in the farrowing pen. If the producer has kept breeding records, they will now be of great help, as one knows exactly when each sow is due to farrow. If breeding records have not been kept, the sows must be closely watched. Signs of approaching parturition are the filling of the teats and udder with milk, and the sow makes a nest. Usually a sow will farrow in about 12 hours after she makes her nest. While the sow is in the farrowing pen, opportunity for exercise is necessary.

Farrowing Pens.—A satisfactory farrowing pen is not necessarily expensive. A warm farrowing pen is essential, to prevent using large quantities of straw or bedding. The best bedding to use is cut straw or hay, and it should be reasonably free from dust. To protect the pigs, fenders must be provided. These consist of 2 by 8-inch planks, placed about 8 to 10 inches from the floor and 10 to 12 inches from the wall.

Care Just Before Farrowing.—When the sow is placed in her farrowing pen, the ration is reduced in quantity and to it is added a laxative feed. Reduce the grain ration one-half, and feed wheat bran to one-third of the grain ration fed, is common practice. Linseed meal can be used in place of wheat bran, but of course not so much will be needed for the same laxative results. Constipation is the thing which the herdsman tries constantly to prevent at this time. Many producers feed the ration as a thin warm slop so that the sow will be receiving a sufficient amount of water.

At Farrowing Time.—A sow that has been well fed and managed up to the time of farrowing generally has no trouble at farrowing time. The sow should be closely watched, but do not disturb her, unless it is absolutely necessary. If the sows are heavy and clumsy, and they become very restless, take the pigs from the pen as soon as they are farrowed. They can be returned to her, after she has quieted down. Occasionally, one has trouble with chilled pigs. These may be revived by immersing them in warm water, as warm as the bare elbow of a man can stand. Immerse the pig up to the head.

After Farrowing.—No feed is fed the sow until 24 hours after she has farrowed. As she will be somewhat feverish all of the lukewarm water that she desires may be given. After the first day a light feed of bran and shorts may be fed. Bran, ground grain and a little tankage also make a satisfactory ration after the first 24 hours. The amount of grain is increased in accordance with the increase in milk flow. By the tenth to the fourteenth day the sow is generally on a full feed again.

Care of Pigs to Weaning Time

Growth is Important.—From the time the pigs are farrowed, they are fed for rapid and continuous growth. The cheapest gains are made at this time, for young pigs make the most economical use of their feed.

Methods of Feeding.—There are two methods of feeding young pigs. The first method is to feed them indirectly thru the sow. If the sows are well fed the pigs receive an excellent start in life. The second method of feeding is that of feeding directly to the pig. Use both methods for the best results.

Feeding the Sow.—The feed requirement of the nursing sows is not unlike that of a dairy cow in milk. The ration should consist of a liberal supply of grain, properly supplemented with protein-bearing feeds. Feeds high in mineral matter, particularly calcium and phosphorous, will be especially beneficial.

The base of the ration may be the usual farm-grown grains. These grains must be adequately supplemented with protein concentrates. There are two kinds of protein supplements, namely, those of animal origin, and those of vegetable origin. Skimmilk, buttermilk and tankage are those of animal origin, while wheat middlings, linseed oil meal and wheat bran are of vegetable origin. If the protein supplement is of vegetable origin, it is very necessary that legume hay be added to the ration, if the sows are not on pasture. If the protein supplements used are of animal origin, the legume hay to sows not on pasture is not so essential, but excellent results are obtained when a legume hay to the ex-

tent of five percent by weight of the ration is included. If the hay is not mixed with the grain, it may be made available to the sows by feeding it from racks.

Satisfactory Rations.—The following rations are copied from Henry and Morrison, Feeds and Feeding, page 698:

Ration 1

Corn, barley or grain sorghums	70 pounds
Standard middlings	15 pounds
Tankage	10 pounds
Chopped alfalfa	5 pounds

Ration 2

Ground corn, barley or grain sorghum	50 pounds
Ground oats or middlings	50 pounds

1.5 to 2.0 pounds of skimmilk for each pound of mixture fed.

Ration 3

Corn, barley, or grain sorghums, with 2 pounds of skimmilk or buttermilk to each pound of grain.

Ration 4

Corn, barley, or grain sorghums	50 pounds
Middlings	35 pounds
Linseed meal	10 pounds
Tankage	5 pounds

General Care of the Pigs.—Exercise is very important for young suckling pigs. A lack of exercise, especially when they are fed liberally, may cause thumps. Exercise is not a problem when the sows and litters have access to pasture. The quarters must be kept clean and dry, and the troughs sanitary, to prevent scours.

Clipping Teeth.—Occasionally, little pigs fight badly, thereby lacerating each other's gums and lips, or injuring the teats and udders of the sows. When this occurs, the sharp "needle" teeth, four on each side, should be clipped off, using side-cutting nippers made for this purpose. Some breeders clip these teeth on all the pigs as soon as they are farrowed. Care should be taken not to cut the gums or infection might set in.

The Pig Creep.—When it is noticed that the young pigs have an inclination to eat, a creep should be built at one corner of the pen or pasture, where the little pigs can eat by themselves, without being disturbed by the older hogs. Troughs are provided for the pig creeps, from which grain is fed as a supplement to their mother's milk. To prevent digestive disorders, the troughs are kept absolutely clean and sanitary. The entrances to the creeps are large enough to admit the pigs, but small enough to prevent the older hogs from entering. It is important that the creep be built so the pigs can go thru the entrance without injuring their backs.

Feeding the Pigs.—Young pigs will start to nibble grain when they are about two to three weeks old. Shelled corn is the best feed to give at the start. Later they may be fed a suitable mixture composed of farm grains supplemented with skimmilk, buttermilk, tankage, middlings or linseed meal. By far the best grain supplement is skimmilk or buttermilk. If these two valuable dairy products are available no other protein supplement will be required.

A Pig-Creep Ration.—The following ration is recommended by Henry and Morrison, Feeds and Feeding, page 699:

Corn, barley, or grain sorghums	50 pounds
Standard or flour middlings	40 pounds
Tankage	10 pounds

The above ration is to be used only when dairy products are not available.

Orphan Pigs.—Frequently the hog producer is confronted with the problem of orphan pigs. Two methods of procedure are available. If there are sows that have farrowed small litters, place a few of the orphans with each one of them. This is best done when her own litter is nursing. Usually the sows will adopt the orphans. The second method employed is hand feeding—a satisfactory method but it requires a great amount of patience. During the first three or four weeks sweet whole cow's milk is given three times a day. More frequent feedings during the first three or four days will be decidedly beneficial. A milk feed for the first few days should be heated to 100° F. before feeding. One quart of milk per head per day is sufficient provided that the pigs are given grain as soon as they will take it. The milk is fed from nursing bottles until the pigs have learned to drink from troughs.

Weaning the Pigs.

When to Wean.—The time of weaning depends upon the number of litters the sow produces in a year. If only one litter is raised by a sow, the pigs are left with their dam until they are 10 to 12 weeks of age. Frequently, they are left until the sows wean the pigs themselves. In commercial herds, as has been previously stated, the sows raise two litters a year. In this event, the pigs should be weaned at eights weeks of age.

Procedure.—When the time of weaning arrives remove the sows from the pigs, rather than remove the pigs from the sows. Before weaning the sows and their litters are placed where the pigs are going to be kept after they are weaned. The sows may

be returned two or three times and left long enough for their udders to be emptied.

Feed after Weaning.—Up to the time of weaning, the pigs have been receiving milk, a protein feed. After weaning it is necessary to feed a substitute for this milk. The protein-rich feeds of the ration are increased. If skimmilk or buttermilk is available the problem of after-weaning feeding is a simple one. If such feeds are not to be had, tankage, linseed meal, wheat middlings, etc., are fed. A legume pasture is especially valuable at this time.

Fattening

A Fundamental.—It should be remembered that fattening swine are fed largely upon concentrated feeds. They consume but very little roughage except when they are upon pasture. An understanding of this fundamental will be very valuable in analyzing feeding problems, and in the formulating of satisfactory fattening rations.

Protein Requirements.—Fattening swine develop very rapidly, while they are on feed, and again let it be stated that they are fed largely upon cereal grains. For these reasons protein must be supplied in sufficient amounts and of the right quality. Skimmilk, buttermilk and tankage are excellent supplements for the cereal grains. Legume pasture such as alfalfa and clover has been used successfully as a source of protein. Legume hays can also be used to a limited extent.

Mineral Requirements.—Very frequently swine suffer from a lack of minerals in their rations. This is due to their rapid growth, that they are fed largely upon cereal grains, and further that they are raised in confinement. Salt should always be supplied. Calcium may be lacking in some rations, but phosphorous is rarely or never lacking, if the ration is well balanced.

The following excellent discussion is taken from Henry and Morrison, Feeds and Feeding, page 603:

"If pigs are fed well-balanced rations on such pastures as alfalfa, clover, or rape, good results will be secured without the addition of any mineral supplements except common salt. Indeed, if plenty of skimmilk, buttermilk, takage or fish meal is fed to balance the ration, there is no definite proof that there is any advantage whatsoever in adding a mineral supplement to furnish additional calcium or phosphorous where swine are on good pasture. Likewise, if brood sows are fed well-balanced rations in winter, including legume hay and also a protein-rich feed of animal origin, such as skimmilk or tankage, there is no conclusive evidence that there is any benefit from adding supplements to furnish more calcium or phosphorous."

If pigs are being fed rations which are not perfectly in balance, or if a producer is fearful of insufficient mineral in the ration a mixture of 40 parts of ground limestone, 40 parts of steam bone meal, and 20 parts of salt, can be supplied. This may be mixed with a little tankage to increase the palatability of the mineral mixture, and fed separately.

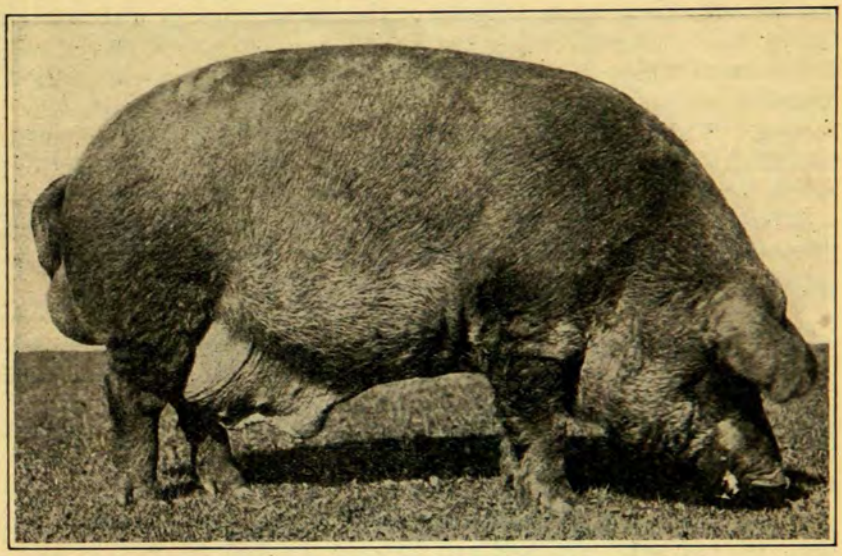
Condimental Stock Powders.—Condimental stock powders are of doubtful value. Experiments indicate that no value is added to a feed by feeding such powders. A well-balanced ration and a simple mineral mixture will give just as good results as high-priced mineral mixtures and stock foods.

Vitamin Requirements.—Extensive investigations have been been conducted upon the subject of the vitamin requirements of swine. Space does not permit a detailed discussion. The evidence, however, is very clear that legume pastures in summer and choice leafy, legume hay in winter will supply all the vitamins which may be lacking in the ration. Any kind of a pasture grass is high in the fat-soluble vitamin. Yellow corn and possibly millet seeds can be relied upon to furnish sufficient Vitamin A.

Amount of Grain to Feed.—The amount of grain which shoul be fed to fattening hogs is an important economic question. A full feed of grain will bring hogs to market weight sooner than a limited grain ration, whether the hogs are being fattened in drylot or upon the pasture. This is common knowledge to the pork producer, but how the full feed influences the resulting profits, is the disturbing question.

While only general statements are made here, they are all based upon extensive experimental studies. When fed under drylot conditions, hogs should receive a full feed of grain. The only exception made to this rule is when hogs are being held back for a later market. Under the dryland conditions of Colorado, and when pigs are fed on pastures, the greatest returns will be obtained from a full feed of grain. Under irrigated conditions, where alfalfa pasture is available in abundance, more economical gains may frequently be obtained when the grain ration is limited slightly. As a rule, early hog markets offer stronger prices than the later hog markets. Producers, therefore, desire to have their pigs at marketable weight and condition for the early markets.

Grinding, Shelling and Soaking Grains.—There is no advantage in grinding, shelling or soaking corn for young pigs weighing less than 150 pounds. For heavier pigs it has been found that soaking or grinding corn results in more rapid gains



Select a Sire Like This One
Long's Sensation, International Grand Champion, 1925

and less feed requirements for 100 pounds of gain. The saving, however, is slight, averaging only about six per cent, so whether this will cover the cost of grinding and soaking is a problem for each individual feeder to decide.

Small grains such as wheat, barley, oats and the grain sorghums give best results when ground. The soaking of grain for 12 hours takes the place of grinding when the latter is not convenient.

Feeding Pigs on Pasture.—The importance of a legume pasture to economical pork production cannot be too strongly emphasized. It is essential to maximum growth, and greatly reduces the costs. While the pigs are on such pasture, two pounds of grain should be fed for each 100 pounds of live weight. In some cases when pasture is very cheap, the amount of grain may be reduced, but never below one pound per 100 pounds of live weight.

Legume Hay for Fattening Pigs.—Ordinarily fattening pigs should not receive more than three to five percent of hay in their ration. More than this amount will make the rations too bulky.

Use of the Self-Feeder.—In the fattening of hogs the self-feeder has proved to be not only a labor-saving device but an economical one. It can be successfully used in drylot feeding, resulting in more rapid gains, and less concentrates for the pro-

duction of 100 pounds of gain. The self-feeder is also extensively used for pigs being fattened on pasture. Faster gains are secured when the self-feeder is employed, but a very slight increase in the feed requirements for 100 pounds of gain is observed. When the labor saved by the self-feeder is considered, the slight increase in feed requirements fades as an objection. Each feed fed can be placed in a separate compartment of the self-feeder, or it may be mixed with the others in the proper proportions, and fed in one large compartment. Generally the latter method of feeding is recommended.

Hogging-Down Corn.—The hogging-down of the corn crop is an economical method of converting corn into pork. Its use has been on the increase in the cornbelt states. Young shoats weighing from 90 to 130 pounds are usually the most efficient utilizers of the corn crop when the hogging-down is practiced. When this practice is compared to ordinary drylot feeding, greater gains are produced by the hogging-down method and less concentrates are required to produce 100 pounds of gain. It is very important to feed some nitrogenous supplement such as skimmilk, buttermilk or tankage. When 0.2 pounds to 0.3 pounds of tankage have been added the pigs have made a more efficient utilization of the corn crop.

Start pigs upon the new cornfield gradually so as to prevent digestive troubles.

Fattening Rations.—The following fattening rations are recommended for pork producers. Where possible, gains and feed requirements for 100 pounds gain are given.

Many of the rations given use tankage as a protein supplement. Evvard has found that a mixture of tankage 50 pounds, linseed oil meal 25 pounds, and ground alfalfa meal 25 pounds, when used as a protein supplement, gives better results than tankage alone.

Ration No. 1 (Henry and Morrison, Feeds and Feeding, P. 625)
Corn 4.4 Lbs., Tankage 0.48 Lbs.—Drylot
Initial weight 69 Lbs.
Feed Required 100 Lbs. Gain
Corn .....387 Lbs.
Tankage ..... 42 Lbs.

Ration No. 2 (Henry and Morrison, Feeds and Feeding, P. 625)
Corn 6.1 Lbs., Tankage 0.67 Lbs.—Drylot
Initial weight 148 Lbs.
Feed Required 100 Lbs. Gain
Corn .....400 Lbs.
Tankage ..... 43 Lbs.

Ration No. 3 (Henry and Morrison, Feeds and Feeding, P. 632)
Ground barley 6.3 Lbs., Tankage 0.43 Lbs.—Drylot
Initial weight 109 Lbs.
Feed Required 100 Lbs. Gain
Barley .....439 Lbs.
Tankage ..... 30 Lbs.

Ration No. 4 (Henry and Morrison, Feeds and Feeding, P. 634)
Ground wheat 6.2 Lbs., Tankage 0.64 Lbs.—Drylot
Initial weight 104 Lbs.
Feed Required 100 Lbs. Gain
Wheat and tankage .....440 Lbs.

Ration No. 5 (Henry and Morrison, Feeds and Feeding, P. 636)
Rye and Tankage—Drylot
Feed Required 100 Lbs. Gain
Rye .....413 Lbs.
Tankage ..... 42 Lbs.

Ration No. 6 (Henry and Morrison, Feeds and Feeding, P. 636)
Rye, Barley and Tankage—Drylot
Feed Required 100 Lbs. Gain
Rye .....178 Lbs.
Barley .....257 Lbs.
Tankage ..... 32 Lbs.

Ration No. 7 (Henry and Morrison, Feeds and Feeding, P. 636)
Rye, Barley, Corn and Tankage—Drylot
Feed Required 100 Lbs. Gain
Rye .....139 Lbs.
Barley ..... 53 Lbs.
Corn .....239 Lbs.
Tankage ..... 30 Lbs.

Ration No. 8 (Henry and Morrison, Feeds and Feeding, P. 638)
Ground Kafir, Tankage, Shorts or Hay—Drylot
Initial weight 122 Lbs.
Feed Required 100 Lbs. Gain
Ground Kafir .....402 Lbs.
Tankage ..... 25 Lbs.
Shorts or Hay..... 49 Lbs.

Ration No. 9 (Henry and Morrison, Feeds and Feeding, P. 643)
Corn* 4.5 Lbs. and Skimmilk 7.1 Lbs.—Drylot
Initial weight 75 Lbs.
Feed Required 100 Lbs. Gain
Corn .....346 Lbs.
Skimmilk .....535 Lbs.
*Yellow corn is recommended in this ration

Ration No. 10 (Henry and Morrison, Feeds and Feeding, P. 653)
Corn 3.35 Lbs. and Middlings 2.64 Lbs.—Drylot
Initial weight 119 Lbs.
Feed Required 100 Lbs. Gain
Corn .....266 Lbs.
Middlings .....201 Lbs.

Ration No. 11 (Henry and Morrison, Feeds and Feeding, P. 655)
Corn 5.0 Lbs., Middlings 1.94 Lbs., Tankage 0.49 Lbs.—Drylot
Initial weight 140 Lbs.
Feed Required 100 Lbs. Gain
Corn .....293 Lbs.
Middlings .....120 Lbs.
Tankage ..... 30 Lbs.

Ration No. 12 (Henry and Morrison, Feeds and Feeding, P. 657)
Corn 4.7 Lbs., Linseed meal 0.48 Lbs.—Good Pasture
Young Pigs
Feed Required 100 Lbs. Gain
Corn .....3.59 Lbs.
Linseed meal .....35 Lbs.

Ration No. 13 (Henry and Morrison, Feeds and Feeding, P. 657)
Corn 5.0 Lbs., Tankage 0.30 Lbs.—Good Pasture
Young Pigs
Feed Required 100 Lbs. Gain
Corn .....354 Lbs.
Tankage ..... 21 Lbs.

Ration No. 14 (Henry and Morrison, Feeds and Feeding, P. 666)
Corn 4.9 Lbs., Tankage 0.31 Lbs.—Legume Pasture
Initial weight 52 Lbs.
Feed Required 100 Lbs. Gain
Corn .....370 Lbs.
Tankage ..... 24 Lbs.

Ration No. 15 (Henry and Morrison, Feeds and Feeding, P. 666)
Corn 4.1 Lbs., Tankage 0.42 Lbs.—Rape Pasture
Initial weight 56 Lbs.
Feed Required 100 Lbs. Gain
Corn .....399 Lbs.
Tankage ..... 41 Lbs.

Ration No. 16 (Henry and Morrison, Feeds and Feeding, P. 683)
Corn 5.8 Lbs., Tankage 0.54 Lbs., Alfalfa Hay 0.22 Lbs.—Drylot
Feed Required 100 Lbs. Gain
Corn .....402 Lbs.
Tankage ..... 38 Lbs.
Alfalfa hay ..... 16 Lbs.

Ration No. 17
Corn, Barley or Kafir ..... 45 Lbs.
Millet ..... 45 Lbs.
Tankage ..... 10 Lbs.

Sanitation

Sunlight and fresh air are the best germicidals known and also the cheapest. It is necessary in raising hogs profitably that it be done without worm infestations. Rotation of hog lots will help. This means changing hogs from one lot to another each year and then raising a crop if possible on the lot. If this is not possible at least plow and give an occasional discing thru the summer.

The system that has given the best results in preventing round-worm infestation was devised and worked out in McLean County, Illinois, by Ransom and Raffensparger of the U. S. Bureau of Animal Industry and is known as the McLean County System of Sanitation. Briefly it is as follows:

1. Clean the farrowing quarters and scrub them with a solution of one pound of lye to 30 gallons of boiling hot water.

Then thoroly disinfect with any standard disinfectant and put in fresh clean straw.

2. Thoroly brush or wash the sow all over, but be sure to wash teats and udder of sow with warm water and soap. This removes worm eggs from the sow. The sow is then put in the clean pen a few days before she is due to farrow.

3. Haul (do not drive) the sow and pigs to clean pasture on which hogs have not run since a crop was grown.

4. Confine pigs to clean pastures until they are at least four months old.