B-98
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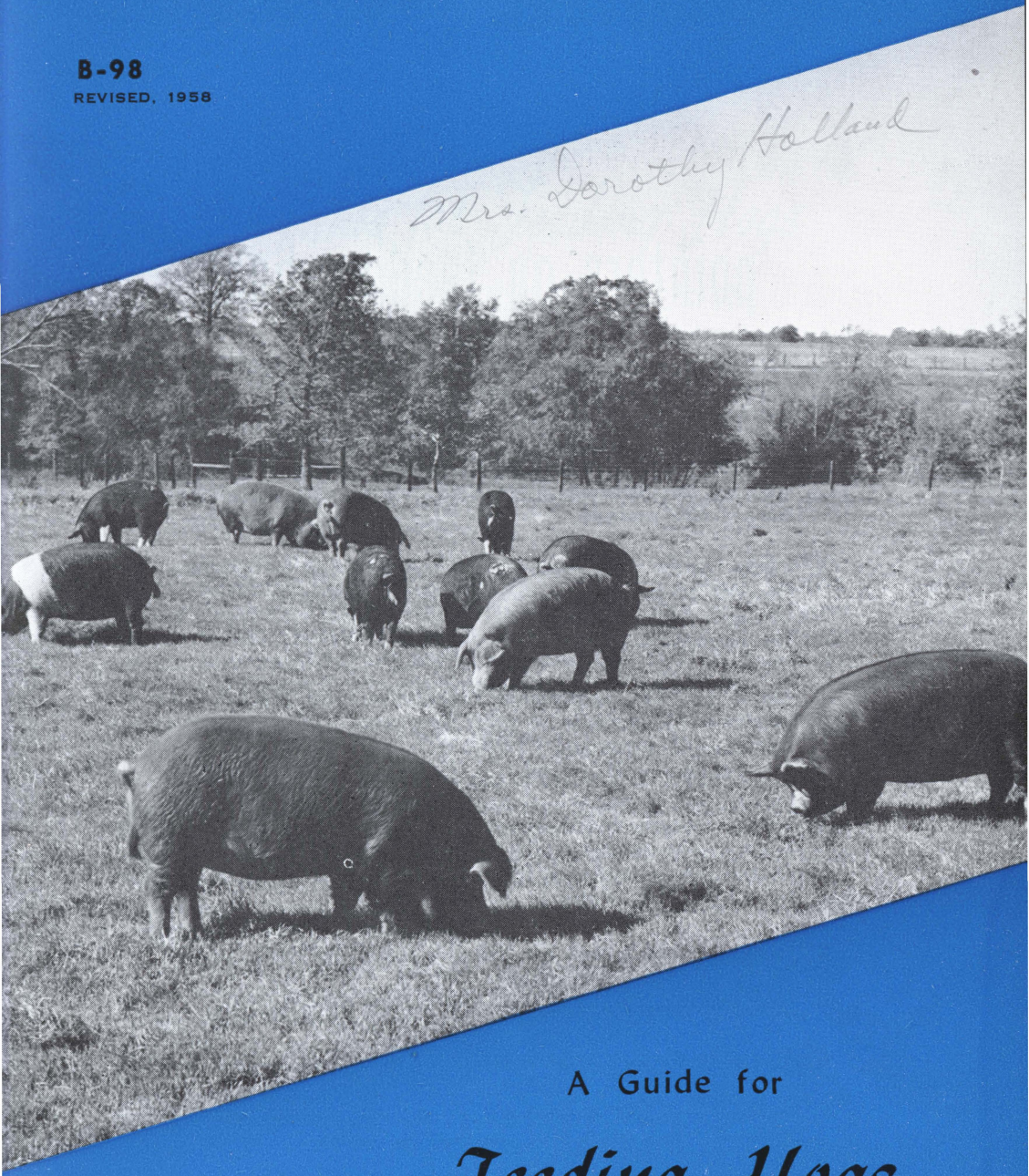
Mrs. Dorothy Holland



A Guide for

Feeding Hogs

TEXAS AGRICULTURAL EXTENSION SERVICE
J. E. HUTCHISON, DIRECTOR, COLLEGE STATION, TEXAS

pointers on feeding hogs

1. Annual grain requirement to sustain a sow and her two average litters and develop the pigs to weaning time—2,500 pounds

2. Annual protein supplement requirement to sustain a sow and her two average litters and develop the pigs to weaning time — 400 pounds

3. Usual grain requirement for market hogs to produce 100 pounds of pork from weaning to market size:
   Drylot — 335 pounds
   On pasture — 310 pounds

4. Usual protein supplement requirement for market hogs to produce 100 pounds of pork from weaning to market size:
   Drylot — 65 pounds
   On pasture — 35 pounds

5. Linear trough space on self-feeders — 1/3 foot per hog or 3 hogs per opening (One-fourth or one-sixth of the feeder should be partitioned for supplement and three-fourths or five-sixths, for grains.)

6. Linear trough space for water — 1 foot for 15 hogs

7. Sprinkler nozzles — one nozzle for 50 hogs or less

8. Concrete feeding floor space — 10 to 12 square feet per hog

9. Shelter area for market hogs — 12 square feet per hog for summer, 10 square feet per hog for winter

10. Standard floor space for farrowing houses — 8′ x 8′ or 8′ x 10′

11. Guard rail height and distance from wall — lower edge of rail 10 inches above floor and 10 inches from wall (See B-81, "Hog Lot Equipment," pages 4 and 5.)

A Guide for Feeding Hogs

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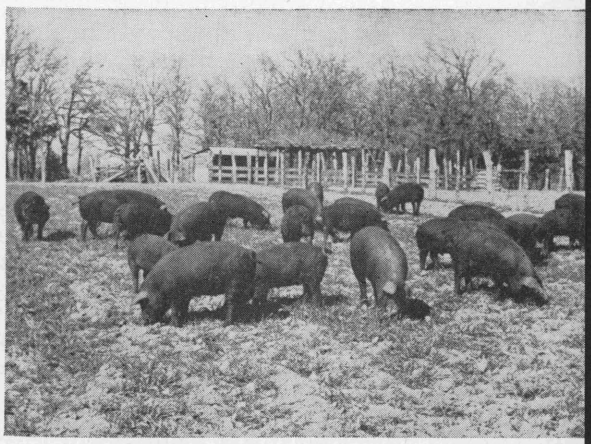
THE HOG EFFICIENTLY CONVERTS farm grains into pork. To succeed in profitable hog production, however, the farmer cannot depend entirely upon the efficiency of the hog. He must use good feeding, management and marketing practices and must produce hogs of good breeding. Under well-planned conditions, hog raisers produce 100 pounds of gain with 400 pounds or less feed.

Grain is the principal feed in pork production. An abundant, dependable, cheap supply, contributes to greater profits. Many farmers find growing grains and feeding hogs a good combination. About 170 bushels of grain satisfy the annual grain feed requirement for a sow and her produce based on two 7-pig litters, fed to the usual market weight.

Pastures

Green pasture furnishes the vitamins in which most concentrated feeds are deficient, and also much of the needed protein. Good quality pastures reduce the amount of protein supplement required by 50 percent. Pasture also supplies many minerals, space for needed exercise, makes sanitation possible, stimulates appetite and keeps hogs in top physical condition.

The feeding value of the various recommended grazing crops does not vary widely provided these crops are grazed while young and tender. Legumes, such as alfalfa, clovers and vetch are slightly superior to other crops. Hog pastures should provide young and tender grazing during most of the year. Supplementing permanent pastures with cultivated grazing crops aids in achieving this goal. A combination of legumes and grasses makes the best hog pasture.



Substitutes for Pastures

Alfalfa leaf meal, dehydrated alfalfa meal or alfalfa meal made from good-quality pea-green alfalfa hay can substitute for pasture. Use it to constitute about five percent or more of the ration. If neither pasture nor alfalfa meal is available, good-quality alfalfa hay can be fed in racks. The vitamin A content of alfalfa lessens with age in storage. Fresh meals are always preferred. The pea-green color to a certain extent denotes high vitamin A content.

Hogs should not be compelled to do without grazing for long periods. Hogs having had access to good grazing until they reached 100 pounds in weight can be finished to the 200-pound weight without pasturage.

Minerals

Mineral and vitamin deficiency diseases are common among hogs and cause considerable economic loss. In severe instances the hogs die and in less severe instances they fail to gain and make normal growth.

Some of the most common deficiency symptoms are leg weakness, down-in-the-back, paralysis of the rear parts and rickets or skin lesions. These deficiency ailments can be prevented largely by proper feeding. It is a good practice always to keep a good mineral mixture available to hogs of all ages, kinds and sorts. The cost of minerals remains negligible because hogs eat only a small amount. This small amount, however, repays the owner many times.

Almost all grain feeds are deficient in salt. Many contain a small supply of phosphorus. Most of the feeds high in protein are abundant in phosphorus, but all except milk and tankage are markedly deficient in lime. Pigs require the proper balance between lime and phosphorus. If the pig does not receive the proper vitamins, he cannot assimilate completely the minerals.

A number of minerals, in addition to the above, are found in the hog's body in minute quantities. All of these are thought to be essential and are commonly referred to as trace minerals. These trace minerals occur in the soil, in grazing crops and in feeds that are consumed by hogs in all areas of Texas. While iron is abundantly available, an additional supply of iron is sometimes needed by baby pigs because of close confinement. The same may be true for iodine.

In extremely rare cases, a zinc shortage will cause parakeratosis, a deficiency disease with skin lesions resembling

mange. This deficiency disease occurs more readily if the ration is excessively high in lime. Adding zinc in the sulphate, oxide or carbonate form will cure this deficiency disease.

If parakeratosis develops, supply some form of zinc at the rate of about 80 parts per million in the ration. Zinc sulphate is suggested because of its availability. The oxide or carbonate would give equal results. Mix about 9 grams of zinc sulphate with 100 pounds of feed. If mixed with the protein supplement only, use five times that amount and if mixed with the mineral mixture only, use 50 times that amount. Thorough mixing is important. Some feed manufacturers prepare mineral mixtures containing adequate amounts of trace minerals.

Common sources of lime are limestone flour, oystershell flour and bonemeal. Bonemeal has a high content of both lime and phosphorus. A mixture consisting of 2 pounds limestone flour or oystershell flour, 2 pounds bonemeal, 1 pound iodized salt and 1/10 pound iron sulphate furnishes the mineral needs for most rations. Limestone flour and oystershell flour are not obtainable in some localities. In this case, use 4 pounds of bonemeal in the above formula.

The mineral mixture can be put in a mineral box or feeder where it is accessible to the hogs at all times. At other times it may be preferable to mix the mineral with the feed. If this is done use 2 pounds of mineral mixture with 100 pounds of feed.

Certain minerals when mixed with feed cause the vitamin A to deteriorate very rapidly. Therefore, feed mixtures containing mineral supplements must be fed fresh. This, of course, is not a problem to the producer whose hogs are on good grazing.

Vitamin B_{12}

(Formerly called Animal Protein Factor)

Hog rations containing animal protein give better results than those containing only protein of vegetable origin even though the vegetable proteins have a good amino acid balance. Recent tests show that vitamin B_{12} accounts for the principle difference. Rations containing vitamin B_{12} and vegetable proteins give results about equal to those containing animal protein. If adequate amounts of both vegetable and animal proteins are present, very little is gained by adding vitamin B_{12}.

Antibiotics

The addition of antibiotics in most instances improves the ration. These chemicals stimulate the rate of gains and reduce the feed requirement per pound of gain. As yet their exact function is not definitely known, but antibiotics seem to contribute to the health of animals by preventing harmful organisms from developing in the digestive tract.

Some of the most commonly known antibiotics are aureomycin, terramycin, penicillin and bacitracin. Of these, aureomycin and terramycin seem to stimulate the rate of gains under a greater variety of conditions. New and effective antibiotics are being explored. Some may prove to be effective in hog rations. Present information indicates that 10 grams of antibiotics per ton of feed are about the right amount to use. Thorough mixing is important.

Feeding Methods

Self-feeders

Feeding hogs by the self-feeder method has proved its value. Self-feeders are great labor-saving devices. If properly constructed and managed, they do as good a job as can be done by hand in feeding market hogs. Hogs make frequent trips to the feeder during the day and night and eat slowly. Consequently, they chew the feed thoroughly. Most hard grains should be ground if hand-fed, but grinding is not necessary if the grain is fed in a self-feeder to pigs weighing less than 150 pounds.

The self-feeder also allows grain and protein supplement to be fed free-choice. In the free-choice method the grain is placed in one compartment, with the protein supplement in a second compartment of the same feeder. Hogs can eat either feed at will and balance their own rations. In starting hogs that have not been fed a balanced ration, put only 1 week's allowance in the protein compartment. Keep the grain compartment filled. Do not refill the protein compartment until the

next week begins even if all of the supplement has been consumed. Hogs soon overcome their craving for protein feed. The protein compartment can then remain full without danger of the hogs eating too much of the expensive supplement.

When self-feeders first came into use they were thought to be useful only for fattening hogs. Later they were tried with good results with brood sows that were suckling pigs. Sows and their litters can be put on self-feeders containing grain and protein supplement when the pigs are from 2 to 3 weeks old. By that time the pigs are old enough to consume all the milk that the average sow can give without danger of scours. Occasionally and extremely heavy milk-producing sow or a sow with few pigs, if fed this way, will give too much milk and cause the pigs to scour when 2 weeks old. In such cases it is necessary to wait a little longer before the sow can be put on a feeder.

Self-feeders are occasionally used in feeding bred sows and gilts. Care should be taken to prevent these animals from becoming too fat. Bred sows and gilts, in medium flesh at the time of breeding should gain about 1 pound per day average during the gestation period. Mixed rations of ground feed with a liberal amount of alfalfa meal added can be self-fed. The amount of alfalfa meal in the ration should be adjusted to get the desired daily gains. Rations containing large amounts of ground oats do not require as much alfalfa meal as do rations with less oats and more concentrated grains. If the hogs are on good grazing, the mixture should contain about 6 pounds of high protein feed, 60 pounds of grain and 34 pounds of alfalfa meal. If the grazing is poor, the protein feeds should be increased to 8 pounds and the grain reduced correspondingly. The amount of alfalfa meal may have to be adjusted periodically to get desired results.

Fast-feeding Method

Where grain is abundant and cheap, the fast-feeding method is usually best. With this method the sows are fed all they want from the time the pigs are 2 weeks old until weaning time, so they will produce an abundance of milk. The pigs are fed in a creep or on a self-feeder with their mother when they are 2 weeks old and from then on they receive all they can eat. At the same time they are provided with fresh, clean water, good shelter and an abundance of tender grazing. By this method, healthy pigs of good breeding will weigh 200 pounds or more when 5 to 6 months of age. This method saves time, reduces death losses, requires less pasture and equipment and enables the hogs to get to market before the sows farrow again.

Slow-feeding Method

Sometimes the slow-feeding method is employed for the purpose of better utilization of grazing and the production of a leaner carcass.

When employing the slow-feeding method, ample feed (especially protein) should be supplied during the suckling period and during the fast-growing period immediately following weaning. Limiting the supply of feed somewhat (about 15 percent) after the pigs pass the weight of 100 to 125 pounds, if on good pasture, will save feed slightly and will produce a leaner carcass but will require more time and labor.

The savings in feed and the higher carcass values may be offset by the greater time and labor costs. The advisability of using the slow-feeding method, therefore, depends upon premiums paid for leaner carcasses, availability and production costs of grazing, labor and equipment costs, the season of the year the pigs were farrowed and the hog market price outlook for the time of marketing.

Rations

Many good rations can be made from available Texas feeds. With some adjustments and substitutions, the following rations will fit most conditions.

Protein Supplement

Oil meal (cottonseed meal, soybean meal, peanut meal or linseed meal)	**40 percent**
Animal meal (tankage, meat meal or fish meal)	**40 percent**
Alfalfa meal	**20 percent**

This protein supplement contains about 40 percent protein. It can be fed free-choice in a self-feeder, by hand in a trough or mixed with ground grain to form a complete mixture. It can be fed dry or in slop.

Many good protein supplements are on the market. A producer can mix his own supplement or buy it ready-mixed.

Rations for Growing Pigs up to 100-125 Pounds

Growing pigs that are to be used for breeding or fattened for market should under most conditions be on full feed and receive an abundant supply of good protein, minerals and vitamins. Excessive fiber should be avoided. Their ration should contain from 16 to 20 percent protein—the younger the pigs, the higher the percent protein. Ample young, tender grazing and good sanitation are important. Growing pigs do well on self-feeders. A simple ration for growing pigs is 78

pounds of basic energy and fat-producing feeds, 20 pounds protein supplement and 2 pounds mineral mixture. This mixture contains about 16 percent protein.

Finishing Rations

Finishing rations are used after the pigs have made considerable growth, and weigh about 100 to 125 pounds. Such rations can be reasonably simple. They are used for only a short time and deficiency diseases usually do not develop in a short feeding period. Finishing rations can be made up of 84 percent basic energy and fat-producing feeds, 14 percent protein supplement and two percent of the recommended mineral mixture. This mixture contains about 14 percent protein. If the hogs have good grazing the supplement can be reduced to eight percent and the grain increased to 90 percent. Producers have had excellent results in finishing hogs on a self-feeder by the free-choice method. Pig parlors with concrete floors have given excellent results during this stage of feeding and green grazing is of lesser importance for finishing hogs.

Feeding Dry Pregnant Brood Sows and Mature Boars

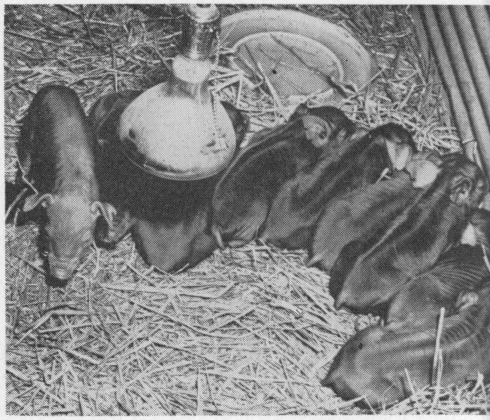
Hogs in this classification generally are hand fed on a mixed ration, so that their state of fatness can be controlled easily. They can be fed once or twice daily with equally good results. The hog raiser should feed these hogs enough to keep them thrifty and vigorous, but not too fat. Pregnant sows, if reasonably thin at weaning time, should gain about 1 pound per day during pregnancy. Their ration should contain not less than 14 percent protein. Self-feeding such hogs is described on pages 5 and 6.

Ground oats are desirable in a brood sow ration. A mixture consisting of 30 percent ground oats, 53 percent of some of the other basic energy and fat-producing feeds, 15 percent protein supplement and 2 percent mineral mixture is good for dry pregnant brood sows and mature boars. This mixture contains about 15 percent protein and about 6 pounds of feed per day are required per hog. Green grazing is most important during this period.

Feeding Breed Gilts and Young Boars

Hogs of this type usually are hand-fed after they weigh 150 to 175 pounds on a ration containing 14 to 16 percent protein. They should be given sufficient feed for normal growth but should not get too fat. A daily gain of about 1 1/3 pounds per hog is about normal. Grazing saves a good deal of feed and contributes to the well being of young breed-

ing stock. The feed mixture recommended for dry brood sows and boars or the ration recommended for lactating sows and pigs can be used for these animals.



Feeding Lactating Sows and Suckling Pigs

Feed lactating sows sparingly for a few days after farrowing. On the day of farrowing no feed is required. On the next day feed 3 pounds of wheat bran. On the second day feed 2 pounds of wheat bran mixed with 2 pounds of the lactating sow ration. On each succeeding day increase the amount of the ration so that when the pigs are 2 weeks old the sow is on full feed. The wheat bran should be discontinued after the first week. Full feed for a lactating sow when the pigs are 2 weeks old would be about 10 pounds of feed daily. If the pigs begin to scour, immediately cut the feed allowance in half. Two-week-old-pigs usually can take all the milk the sow produces and full feeding usually is desirable from that time until they are ready to wean.

A good ration for lactating sows is 53 percent basic energy and fat-producing feeds, 15 percent ground oats, 15 percent wheat shorts, 15 percent protein supplement and two percent mineral mixture. This mixture contains about 16 percent protein. The minimum protein recommendation is 16 percent without pasture and 14 percent with pasture. Good pastures are important in successful pig raising.

Lactating sows and suckling pigs can be fed successfully on self-feeders. The free-choice method can be used or a mixed feed can be put in the feeder. Pigs usually do better if they are creep-fed, provided the feed in the creep is always fresh and clean. The ration recommended for the lactating sow is also good for creep-feeding pigs.

Cooking, Soaking and Grinding Feeds

Cooking Feeds

A large number of experiments have proved that instead of a gain from cooking feed, in nearly every case there is a loss. Irish potatoes are excepted. The loss from cooking is usually about 10 percent. Raw meats and raw byproducts from slaughter houses as well as milk and garbage should be cooked to prevent the spread of diseases.

Soaking Feeds

It rarely pays to soak grain. When feeding young pigs, it has no advantage. Soaking grain may improve its feeding value slightly for hogs weighing 150 pounds and over if the grain is hand fed, but the saving usually is not enough to pay. In no case should grain be soaked sufficiently to cause it to sour. Wetting ground feed before it is fed has no effect on its feeding value, but does keep the wind from blowing it out of the trough.

Grinding Feeds

If the common grains are fed by the free-choice self-feeder method to young fattening hogs, it usually does not pay to grind them. Barley and oats are exceptions. Grains that are to be mixed with protein feeds always should be ground. Young hogs chew grain more thoroughly than older ones. If the grinding can be done cheaply and if grain is expensive, it may pay to grind for market hogs weighing over 150 pounds. Grain usually is ground for all mature breeding stock and for all hogs on a limited ration.

Feeding Floors

Feeding floors furnish a good place for feeding. The floors should be kept free of rubbish and filth. Feeding floors furnish a good place to locate self-feeders and water troughs, especially during wet seasons.

Basic Energy and Fat-producing Feeds

Common hog feeds that produce energy and fat are corn, grain sorghum, sweet sorghum seed, brewers' rice, rice bran, rice polish, wheat, oats and barley. These feeds are low in protein, vitamins and minerals, but are high in starches and fats—nutrients that produce energy and fat. A protein supplement and green grazing should be furnished with them so the hogs can make normal growth while they fatten. If these grains are fed alone, growth of the hogs is materially stunted, great inefficiency results and frequently deficiency diseases occur.

Corn

Corn is high in starches and fats but is low in proteins. White corn also is low in vitamin A, while yellow corn has a fair supply of Vitamin A. Corn also is low in minerals, particularly lime. It should always be fed with a protein supplement and with pasture. If properly balanced with other feeds, corn produces firm pork.

Grain Sorghums

Kafir, milo, feterita, hegari and many other grain sorghums have feeding values about 90 to 100 percent as high as corn. They are high in energy and fat-producing nutrients and low in proteins, minerals and vitamins. They can be substituted for corn, pound for pound, without materially changing the ration.

Sweet Sorghum Seed

This feed, similar to grain sorghums, has a considerably lower feeding value—approximately 70 percent of the value of corn. For best results, it should be ground.

Brewers' Rice

Brewers' rice is a byproduct of the rice-milling industry. It consists of broken grains of polished rice. Like corn, it is high in energy and fat-producing nutrients but low in proteins, minerals and vitamins. It produces firm pork and can be substituted in rations for corn, pound for pound, without materially changing the rations.

Rice Bran

Rice bran also is a byproduct of the rice-milling industry and consists of the outer layer of the rice kernel, the germ and a small amount of rice hulls. If rice bran does not contain over 12 percent fiber, the hulls will not be injurious. As a feed, it is high in fats and starches. While it is slightly higher in protein than corn, the amount is insufficient to balance a ration. It also is deficient in minerals (principally lime) and vitamins. Rice bran may soon become rancid in summer and will be distasteful to hogs. When fed in large amounts, rice bran tends to produce soft pork. For best results, it should not constitute over 40 percent of the ration.

Rice Polish

This is another byproduct of the rice-milling industry. It consists of floury particles that develop in the polishing process of the rice kernel after the bran has been removed. It is high in energy and fat-producing nutrients, but is deficient in proteins, minerals (particularly lime) and vitamins. It is slightly unpalatable to hogs. If fed in large quantities over a

long period it tends to cause hogs to go off feed and occasionally causes scours. For best results, it should constitute only about half the ration and should be fed with a protein supplement.

Wheat

When low in price, wheat can be fed economically to hogs. It is high in energy and fat-producing nutrients, and somewhat higher in protein than corn. It is low in minerals (particularly lime) and certain vitamins. It can be substituted, pound for pound, for corn without materially changing the ration.

Oats

Oats are higher in protein than corn. They are lower than corn in energy and fat-producing nutrients and are considerably higher in fiber. They contain a fair supply of phosphorus but are deficient in lime. They are low in vitamins. Oats are a splendid grain feed for breeding stock but are too high in fiber to be used as the sole grain for fattening pigs and feeder hogs. If fed for fattening purposes, they should constitute only half or less of the grain ration. Oats always should be balanced with minerals (particularly lime), protein supplements and pasture. For best results, oats should be ground. Heavy oats are more desirable as a hog feed than the lighter kind.

Barley

Barley is high in energy and fat-producing nutrients. It is deficient in proteins, minerals (particularly lime) and certain vitamins. It can be substituted for corn, pound for pound, without materially changing the ration. For best results, barley should be ground.

Garbage

Garbage varies greatly in composition and feeding value. A ton of average municipal garbage may produce 40 pounds of gain, while army garbage of excellent quality has yielded as high as 150

pounds gain per ton. It is not necessary to supplement garbage with grain unless the supply is limited. Do not feed garbage containing lye soap, washing powder, broken glass or cans. Garbage should be fed on concrete feeding floors. Particles of raw pork in the garbage may spread contagious diseases. Garbage always should be cooked by heating to boiling temperature for 30 minutes. Swine on garbage should be immunized against hog cholera.

Salvaged Feed

Salvaged feed from feed warehouses is sometimes used as hog feed. Some poultry feeds contain drugs that are detrimental to hogs. Nitrophenide, for example, is toxic to hogs at 0.01 percent. Avoid feeding such feeds to hogs.

Feeds High in Proteins

Hog feeds that primarily furnish protein (the nutrient that produces growth) are skim milk, tankage, meat meal, fish meal, cottonseed meal, peanut meal, soybean meal, wheat shorts and wheat bran.

Skim Milk

Skim milk is the best protein feed that can be produced on the farm. It is very high in excellent proteins of animal origin. About 1 gallon of skim milk per head per day furnshes the required protein of a ration. Skim milk is high in minerals, but is deficient in vitamins. Hogs fed on skim milk and grain should have access to pasture or a substitute for pasture.

Tankage and Meat Meal

These feeds are byproducts of the meat packing industry. They are made from meat and bone and may vary in protein content. A 50 percent protein tankage is most common. The feed tag on the sack always gives the protein content. These byproducts usually are high in good-quality protein and in calcium and phosphorus. They can be mixed with grain or fed free-choice.

Fish Meal

Fish meal is made from the waste of the fishing industry. It has an especially high value for swine because of the excellent quality of the protein it supplies. The protein content is variable depending upon the raw material used and the manufacturing process. The protein content is usually very high, averaging 63.9 percent.

Cottonseed Meal

Cottonseed meal is a byproduct of the cotton oil industry. Its protein content varies with the amount of hulls and fat. Meals containing 41 or 43 percent are best for feeding hogs. Meals with extremely low protein content should be avoided. Cottonseed meal is high in phosphorus but deficient in lime and vitamin A. If properly fed, cottonseed meal gives good results and the cost of protein supplement usually can be reduced by its use.

In swine feeds, cottonseed meals should be limited to 9 percent of the total ration or 40 percent of the protein supplement because of a material in the cottonseed called gossypol. If consumed in large amounts, gossypol may cause death losses.

The amount of gossypol in cottonseed meal can be reduced to a low level by suitable processing. Some cottonseed meals now on the market have a guaranteed free gossypol content of 0.04 percent or less. They can be fed safely in unrestricted quantities. In feeding meal of unknown gossypol content, the quantities recommended herein would apply.

For best results, hogs fed cottonseed meal also should have additional sources of lime and green pastures to balance the vitamin deficiency of the meal. If green grazing is not available, good-quality alfalfa leaf meal can be used to supply the needed vitamins.

Peanut Meal

Peanut meal is a byproduct of the peanut oil industry. It varies in protein content with the amount of hulls and oil present. Peanut meal with a high fiber content is less valuable. Hogs fed peanut meal should have additional source of lime and access to pasture. Excessive feeding of peanut meal or the feeding of meal with a high oil content results in the production of soft pork. Peanut meal can constitute 15 percent of the total ration with good results.

Soybean Meal

Soybean meal is a byproduct of the soybean oil industry. It is a good protein feed for hogs. In a properly balanced ration it produces a desirable firm pork. It contains from 40 to 50 percent crude protein. Soybean meal with excessively high oil content should be avoided. It is low in lime and, therefore, should always be supplemented with a mineral mixture containing limestone flour, oystershell flour or bonemeal.

Wheat Shorts

Wheat shorts is a byproduct of the flour milling industry. The protein content varies with the amount of flour and fiber.

Wheat shorts is a safe feed for hogs. Over a long period, it should be fed with some feed high in animal protein such as milk or tankage or vitamin B_{12}. Hogs also should have some additional source of lime and green grazing. Wheat shorts is a good feed for brood sows and for developing young breeding animals.

Wheat Bran

Wheat bran is a byproduct of the flour milling industry. It is fairly high in protein and fiber and relatively low in total digestible nutrients. It is an excellent feed for brood sows at farrowing time, and for sick hogs because of its laxative effects. It is too high in fiber to give best results when fed to fattening hogs. If fed over a long period, hogs should have an additional source of lime and green pasture. Under these conditions, it also should be supplemented with an animal protein feed, such as milk or tankage or vitamin B_{12}.

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