

# 4H Project Guide: Swine Nutrition<sup>1</sup>

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A dependable and economical source of feed is the basis of a profitable hog operation. In fact, 60 to 80% of the total cost of producing hogs is feed. Thus, 4-H'ers who raise hogs need to be keenly aware of the types of feed available.

## Ingredients Needed

Swine rations, whether bought or mixed on the farm, usually contain a ground cereal grain, a protein source (usually soybean meal), salt, a calcium source, a phosphorus source, and a vitamin-trace mineral premix. Other ingredients commonly added are milk by-products such as dried whey; meat by-products such as meat and bone meal; cereal grain by-products such as wheat bran, wheat midds, or rice bran; and specialty products such as oat groats (de-hulled oats). Medications, such as antibiotics, may also be added to swine rations.

## Choice of Cereal Grains

About 50 to 85% of the ingredients in swine rations are cereal grains. They are the main way of providing energy (or calories) in swine rations.

**Corn** is the cereal grain (energy source) preferred by most pork producers and is best in feeding value. However, other cereal grains, at times, may be a better buy.

**Grain Sorghum**, often called milo, is sometimes fed to hogs. Good quality grain sorghum has about 95% of the feeding value of corn. Grain sorghum has a protein and amino acid (building blocks of protein) composition similar

to corn and can be interchanged on a pound-for-pound basis with corn.

**Wheat** is an excellent swine feed, with an energy value of about 98 to 100% of corn. Sometimes it is priced low enough to be considered for pig rations. Some pork producers prefer to feed a mixture of wheat and corn or grain sorghum because they feel performance is better with a combination of grain sources. However, wheat can be the only source of grain.

**Barley** is occasionally fed to hogs. It has an energy value of about 90% that of corn. Its lower feeding value is caused by its high fiber content. You get best results by feeding a mixture of barley with either corn or grain sorghum. Barley grown in the south is usually of low quality, and its value is much lower than 90% of the value of corn. You should not use such barley in rations for very young pigs.

## Swine Rations

Four to five (or even more) rations are usually required in complete farrow-to-finish hog operations. The basic ones are bred sow (gestation), nursing sow (lactation), starter rations (young pigs 20 to 40 pounds), growing rations (40 to 150 pounds), and finishing rations (120 pounds to market weight). Some producers may use the same ration for bred sows and nursing sows. Boars are usually fed the bred sow ration. Table 1 gives example swine rations that may be mixed on the farm if a pork producer has a feed mill.

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## Methods of Getting Swine Rations

Here are six ways of getting swine rations:

1. **Buy complete commercial rations by the bag.** This is usually the most expensive method. The added cost of bagging and handling compared to bulk feed and often the sale of small quantities cause higher prices. However, if you are feeding just a few pigs, this may be your only option.
2. **You may buy complete commercial rations in bulk (not bagged) and delivered directly to bulk tanks or large self-feeders on the farm.** The cost of this service includes mark-up on ingredients and charges of grinding, mixing, and delivery.
3. **Producers can often get a custom mix of a complete ration made at a feed mill.** Pork producers may deliver all the ingredients to the mill, have grain stored at the mill, and buy the additional ingredients from the mill or buy all ingredients from the mill. The cost may include handling and storage charges, mark-up on ingredients, and charges for grinding, mixing, and delivery.
4. **You may buy complete supplements for mixing with ground grain on the farm.** Two or three different supplements are usually required for farrow-to-finish systems (i.e. for sow feeds, starter feeds, and growing-finishing feeds). Supplements required in small quantities are bought in bags. Larger volumes usually justify bulk handling.
5. **You can buy base mixes (complete premixes) in bags and mix with soybean meal and ground grain on the farm.** This usually involves two or three different base mixes for farrow-to-finish systems. Base mixes are usually sold to be added at the rate of 50 to 100 pounds to a ton of complete feed.
6. **You can prepare base mixes (complete premixes) on the farm.** A mixer of the appropriate size and design is essential to insure adequate mixing. Each base mix is then mixed with soybean meal and ground grain to produce the ration. Required bagged ingredients include salt, calcium source, phosphorus source, and vitamin-trace mineral and antibiotic premixes. This method is used by many producers with 100 or more sows because it offers greater flexibility in ration formulation and lower ingredient costs.

## Further Information

1. Local UF/IFAS Extension service
2. Pork Industry Handbook (available through Purdue University Extension Service): <https://mdc.itap.purdue.edu/item.asp?itemID=19679>
  - a. Example Diets for Swine 07-01-15
  - b. Swine Feed Processing and Manufacturing 07-04-03
3. Websites
  - a. [http://edis.ifas.ufl.edu/TOPIC\\_4H\\_Animal\\_Science](http://edis.ifas.ufl.edu/TOPIC_4H_Animal_Science)
  - b. [http://edis.ifas.ufl.edu/TOPIC\\_Swine](http://edis.ifas.ufl.edu/TOPIC_Swine)
  - c. [http://edis.ifas.ufl.edu/topic\\_4h\\_animal\\_science](http://edis.ifas.ufl.edu/topic_4h_animal_science)
  - d. <https://agriflifebookstore.org>
  - e. <http://animalscience.tamu.edu/> (click on youth projects).

Table 1. Example rations fed to pigs.

|                           | <b>20 to</b>  | <b>40 to</b>   | <b>125 Lb.</b>   | <b>Gestating</b> | <b>Nursing</b> |
|---------------------------|---------------|----------------|------------------|------------------|----------------|
| <b>Ingredients</b>        | <b>40 Lb.</b> | <b>125 Lb.</b> | <b>to Market</b> | <b>Sows</b>      | <b>Sows</b>    |
| Corn, yellow              | 1040          | 1545           | 1645             | 1675             | 1535           |
| Oat groats                | 200           | --             | --               | --               | --             |
| Soybean meal, 48%         | 500           | 400            | 300              | 250              | 400            |
| Dried whey                | 200           | --             | --               | --               | --             |
| Calcium carbonate         | 15            | 15             | 17               | 20               | 15             |
| Dicalcium phosphate       | 30            | 27             | 25               | 40               | 30             |
| Salt                      | 10            | 10             | 10               | 10               | 10             |
| Vitamin-trace mineral mix | 5             | 3              | 3                | 5                | 5              |
| Antibiotics <sup>a</sup>  | +             | +              | +                | +                | +              |
| <b>Total</b>              | <b>2000</b>   | <b>2000</b>    | <b>2000</b>      | <b>2000</b>      | <b>2000</b>    |
| Protein, %                | 18.5          | 16.0           | 14.1             | 13.0             | 16.0           |
| Lysine, %                 | 0.95          | 0.80           | 0.66             | 0.60             | 0.80           |
| Calcium, %                | 0.78          | 0.64           | 0.65             | 0.90             | 0.75           |
| Phosphorus, %             | 0.66          | 0.56           | 0.54             | 0.70             | 0.60           |

<sup>a</sup>The choice of antibiotics or other feed additives varies depending upon need and class of pigs. See your 4-H leader, county extension agent, feed dealer, or veterinarian on choice of antibiotics to use in a ration.