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### G74-125 Oats in Swine Diets (Revised December 1981)

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# NebGuide

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G74-125

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## Oats in Swine Diets

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Oats are not considered a standard feed grain in swine diets in Nebraska because of the small acreage planted. However, oats can be used by all ages of swine with some limitations. The feeding value of oats is 80 percent that of corn. With proper formulation, limiting the amount of oats in diets will cause no reduction in swine performance.

The nutritive content of a feed grain is the primary factor in determining its use. A comparison of the major nutritional components of oats and corn is shown in *Table 1*.

The primary limitation in the nutritive content of oats that affects their use in swine diets is their high fiber content. This accounts for the lower metabolized energy value for oats. The fibrous hull is about 30 percent of the whole oat kernel, but this may vary from 24 to 50 percent, depending on the test weight of oats. When the fiber content increases, the energy value decreases and the test weight of oats decreases. The standard test weight of oats is 32 pounds\* per bushel and is an important guide in determining its nutritive value for swine. Oats with a 32-pound test weight or higher are recommended for swine diets.

Oats may be substituted for corn on a pound per pound basis in swine diets with some limitations. However, because of the higher crude protein content of oats, a savings in protein supplement is possible. All swine diets formulated with oats should be checked for amino acid content, especially lysine. Therefore, in ad-

dition to the regular determination of the dry matter and crude fiber analysis, the lysine content should be known. If the lysine content is not known, an estimate can be made by multiplying the crude protein percentage by 0.033. *Example:* 13 percent crude protein content x 0.033 equals a lysine content of 0.429 percent.

An example of swine diets formulated with oats for various classes is shown in *Table 2*. Other diet recommendations are available in EC 81-210, "Swine Diet Suggestions."

### Processing Oats for Swine Diets

The high fibrous hull of oats makes it necessary to process them prior to mixing. Most research indicates that whole oats should be ground to a medium to coarse grind for best results. Fine grinding may cause dustiness and creates a palatability problem. Excellent results have also been obtained with rolled oats.

### Gestation Diets

The higher fiber content and lower energy value of oats makes them an ideal grain for limit feeding gestating swine. However, due to the lower energy content, a gestating diet containing large quantities of oats will require a higher daily feed intake when compared to a corn or milo base diet. Therefore, it is usually necessary to limit oats to 50 percent in the gestating diet. At this level, a sow must consume about 5 pounds daily to achieve the energy equivalence of 4 pounds of a standard corn-soybean meal gestating diet. Recent research has indicated that during the digestion and utilization of a high oat diet, more heat is produced within the body. It is possible that a high oat diet during the summer months may adversely affect rebreeding in non-pregnant sows and the reproductive performance of gestating sows. On the other hand, a high oat diet may be beneficial during cold weather by assisting sows in maintaining their body temperature.

A-6

Table 1. Comparison of the nutritive content of oats and corn.

	Oats	Corn
Fiber, %	11.5	2.5
Fat (Ether Extract), %	4.2	3.9
Crude Protein, %	12.0	8.9
Lysine, %	.40	.25
Metabolizable Energy, Kcal/lb	1210	1550
Calcium, %	.10	.02
Phosphorus, %	.33	.25

To convert to metric system, multiply number of pounds by 0.45 to find kilograms.

## Lactating Diets

Oats have been a common ingredient in lactating diets because of their bulk, and are reportedly influential in lowering the incidence of constipation. Recent research indicates that a high energy lactating diet is recommended for optimum reproductive performance after weaning, especially for first litter sows. Based on this research, the level of oats in a lactation diet should be limited to about 20 percent. It is important that oats with a test weight of at least 32 pounds per bushel be used.

## Starter Diets

The beneficial effect of oats in the diets of young pigs has been reported in numerous Nebraska research trials. This benefit has been attributed to a reduction in the incidence of diarrhea, possibly due to the high fiber content of oats. This advantage has been noted with weaned pigs moved directly to a nursery on the same farm and in newly purchased feeder pigs originating from other farms. The level of oats most commonly used is about 20 percent. This level is recommended for most starter diets. A limited hand feeding program to about 90 to 95 percent of full feed for 3 to 10 days is recommended for

recently weaned pigs. Higher levels of oats in limited fed starter diets may show a beneficial effect by reducing the incidence of baby pig scours and possibly lowered pig morbidity and mortality when used for a short time.

## Growing-Finishing Diets

Oats have the limitation of being lower in energy than other feed grains for growing-finishing swine. However, heavy oats can be incorporated as up to 33 percent of the growing-finishing diet without seriously lowering pig performance. Generally, oat diets cause an increase in feed required per pound of gain. Recent research using high protein oats (above 14 percent crude protein and 0.55 percent lysine) has indicated that growing pigs can be fed a diet containing up to 60 percent oats without seriously affecting average daily gain. However, there was a trend for higher feed requirements as the level of oats in the diets was increased up to 60 percent.

Pigs finished on diets containing oats tend to have slightly softer carcass fat than those finished on corn diets, but the carcasses are acceptable by the packing industry.

Table 2. Sample swine diets formulated using oats.

	Gestation <sup>a</sup>	Lactation	Starter		Growing Finishing
			18% protein percent	16% protein	
Ground corn or milo	61.7	70.5	42.4	57.3	49.2
44% Soybean meal	8.6	14.9	21.5	19.4	12.0
17% Dehydrated alfalfa meal	—	—	—	—	2.5
Oats	25.0	10.0	20.0	20.0	33.0
Dried whey	—	—	5.0	—	—
54% Dried fish solubles	—	—	2.5	—	—
Dried brewers yeast	—	—	1.0	—	—
Animal fat (stabilized)	—	—	3.0	—	—
Dicalcium phosphate (24% Ca, 18.5% P)	2.7	2.6	1.6	0.9	1.1
Ground limestone	0.6	0.6	0.6	1.0	0.8
Salt	0.3	0.3	0.3	0.3	0.3
Trace mineral mix <sup>b</sup>	0.1	0.1	0.1	0.1	0.1
Vitamin-antibiotic mix <sup>b</sup>	1.0	1.0	2.0	1.0	1.0
Total	100.0	100.0	100.0	100.0	100.0

<sup>a</sup>Feed 4.5 lb per sow per day.

<sup>b</sup>See EC 81-210, "Swine Diet Suggestions," for trace mineral and vitamin levels.

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