

**NEW VISION CO-OP  
"PIG'S EAR"**

**"SMALL GRAINS AND ALTERNATIVE INGREDIENTS"**

Corn is the major energy source in swine diets. Reports indicate that the supplies of corn, at least until the 2012 crop is harvested, will be tight. Therefore, what alternative ingredients, especially for energy are available for swine producers to consider?

In the June newsletter we discussed DDGS and wheat middlings. In this newsletter we have reviewed feeding of small grains and calculated diet cost comparisons using various alternative ingredients.

**FEEDING SMALL GRAINS TO PIGS**

The current price for corn has Midwest swine producers asking for information on alternative small grain sources such as wheat, barley, and oats which are the principal grains being fed to swine in other areas of the country and world where corn isn't readily available.

Since swine diets are formulated against a set of nutrient restrictions, the following table provides the major nutrient contribution of corn and three small grains.

	Metabolizable Energy	Crude Fiber	SID Lysine	SID Threonine	SID Tryptophan	Available Phosphorus
	(kcal/lb)	(%)	(%)	(%)	(%)	(%)
Corn	1555	2.3	0.20	0.24	0.05	0.04
Wheat	1459	2.6	0.28	0.31	0.13	0.18
Barley	1322	5.0	0.32	0.28	0.09	0.11
Oats	1232	10.7	0.30	0.31	0.11	0.07

Generally, small grains contain significantly higher levels of the SID amino acids and available phosphorus than corn. The higher fiber content of the small grains results in a lower metabolizable energy level than corn. The lower energy content of the small grains can reduce feed efficiency, but studies have shown that pigs can consume higher amounts of small grain diets, compared to corn, to meet their energy requirements.

**WHEAT:**

- Wheat can replace corn entirely in all pig diets; however, a mixture with corn is preferred to minimize any possible problem(s) with finely ground wheat.
- Wheat particle size of 500 to 1000 microns is preferable.

**BARLEY:**

- Barley (plump – high test weight) can replace corn entirely in the larger or mature pig diets, but a mixture with corn or wheat is preferred.
- Barley has a higher heat increment than corn because of its higher fiber content.

**OATS:**

- Good quality oats is positioned as an effective supplement in full-feed corn-soybean meal swine diets at levels up to approximately 20% of diet. Much higher levels can be fed to gestating sows.
- Oats has a higher heat increment than corn because of its higher fiber content.
- Oats needs to be ground fine to prevent pigs from sorting.

Small grains are useful feedstuffs in swine feeding programs. In many instances pigs fed properly balanced heavy test weight small grains based diets can perform as well as corn-based diets. The bottom line is availability and quality of the grain and economics.

(over)

## DIET COST COMPARISONS USING ALTERNATIVE INGREDIENTS

A common discussion among swine producers is alternative diet formulations that will reduce feed costs and maintain performance. The following diet comparisons used a typical 1.0% Lysine Swine Grower-Finisher diet nutrient specification, with phytase, and on the farm ingredient costs of 12¢ /lb corn (\$6.72/bu), \$340.00/ton 46% soybean meal, and \$200.00/ton DDGS.

Diet	DDGS (lb/ton)	Soybean Meal (lb/ton)	L-Lysine (lb/ton)	L- Threonine (lb/ton)	L- Methionine (lb/ton)	Ingredient Cost/ton
1) Corn-Soybean Meal	---	458	3.2	---	---	\$271.82
2) Corn-Soybean Meal w/increased levels of synthetic amino acids	---	306	8.0	2.0	0.7	\$274.80
3) Corn-Soybean Meal w/30% DDGS	600	246	8.0	---	---	\$252.65
4) ½ Corn ½ Wheat – Soybean Meal w/30% DDGS <sup>1)</sup>	600	218	8.1	---	---	\$251.34
5) Corn + 10% Wheat Middlings w/30% DDGS <sup>2)</sup>	600	218	8.1	---	---	\$251.23
6) Corn + 20% bakery product w/30% DDGS <sup>3)</sup>	600	263	7.4	---	---	\$252.79

<sup>1)</sup> Per pound cost of wheat is at the same price as corn (wheat at \$7.20/bu).

<sup>2)</sup> Per pound cost of wheat middlings is at the same price as corn (\$240.00/ton).

<sup>3)</sup> Per pound cost of bakery product is at the same price as corn (\$240.00/ton).

Interpretations of these comparisons:

- If feeding only corn-soybean meal diets with the increased levels of synthetic amino acids and reduced amount of soybean meal (2), these diets are currently slightly more expensive than using the low level of lysine plus additional soybean meal (1). This relationship will vary depending on current corn and soybean meal price
- The use of DDGS significantly reduces diet cost (1 & 2 vs. 3)
- If wheat, when used at ½ wheat and ½ corn, can be purchased for less than the price of corn on per pound basis it would be considered an economical alternative (3 vs. 4) to lower diet cost.
- If wheat middling, when used at 10%, can be purchased for less than the price of corn on per pound basis, it would be considered an economical alternative (3 vs. 5) on a limited basis because of its lower energy content than corn.
- If dried blended bakery product, when used at 20%, can be purchased for less than the price of corn on per pound basis, it would be considered an economical alternative (3 vs. 6) to lower diet cost.

As these example comparisons suggest, these alternative ingredients are closely priced to the price of corn, except for DDGS.

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For additional information on the **Co-op Swine Nutrition Program** contact your local

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