

# INFOsource

In a review by Dr. Bill Dudley-Cash, the paper by Dr. Batal was referenced and the comments on direct replacement of corn with DDGS were expanded. He provided the following table comparing key nutrient levels in corn, DDGS and soybean meal.

**Comparative Nutrient Composition**

Nutrient, %	Corn	DDGS	Soybean Meal
TME, Kcal/kg	3,390	2,897	2,458
Crude Protein	7.5	27.0	47.8
Crude Fiber	1.9	8.5	3.0
Crude Fat	3.5	9.0	1.0
Phosphorus, total	0.25	0.89	0.65
Phosphorus, available	0.09	0.55	0.21
Lysine, total	0.24	0.80	3.02
Lysine, available	0.19	0.60	2.75
Methionine, total	0.18	0.51	0.80
Methionine, available	0.16	0.43	0.64
Cysteine, total	0.18	0.50	0.72
Threonine, total	0.29	0.92	2.00
Arginine, total	0.40	1.10	3.60
Tryptophan, total	0.07	0.20	0.70

Dr. Dudley-Cash indicated that it was easy to see why DDGS is not a direct replacement of corn; it contains significantly less energy and three to six times more of some of the other nutrients compared to corn. Compared to soybean meal DDGS is relatively deficient in lysine and contained significantly lower levels of several of the key amino acids.

Both authors discussed DDGS problems with excessive nutrient variability; ingredient handling and flowability problems; and pellet quality concerns. Both agree that DDGS can be successfully used in poultry diets to reduce costs, provided, accurate nutrient levels are used in formulating the diets. Nutrient variability must be minimized through assessment and formulation if production standards are to be met.

*Batal, Amy B. 2009. How much DDGS for Poultry? Feed Management; June/July issue; pages 23-23.*

*Dudley-Cash, Bill. 2009. DDGS an Alternative. Feedstuff; September 7 issue; pages 10-11.*

## Phosphorus Availability

Forty-eight grower pigs were used to evaluate the effects of feeding low phytic acid (LPA) corn, LPA soybean meal, normal corn (NC), normal soybean meal (NSBM), and phytase on nutrient digestibility and excretion. Barrows weighing about 45 kg were randomly assigned to one of eight dietary treatments in a 2 x 2 x 2 factorial arrangement with six pigs per treatment. Pigs were fed twice daily at three times the metabolizable energy requirement for maintenance. Phytase was added to the diet at 510 phytase units/kg of feed at the expense of corn starch and all diets were formulated to provide 0.39% total P, 0.50% Ca, and 1.0% lysine with no supplemental inorganic phosphorus. Pigs were adapted to metabolism crates and dietary treatments for 7 days followed by a 3-day total collection of urine and feces. Total fecal dry matter excreted, percentage of dry matter of feces and percentage of dry matter digested were not different among treatments. Fecal phosphorus excretion was reduced for pigs fed LPA corn, LPA soybean meal, and phytase treatments. Phosphorus digestibility was increased for pigs fed diets containing LPA corn, LPA soybean meal, phytase and the treatment that contained all three dietary treatments (LPA corn, LPA soybean meal, and phytase). Corn type and soybean meal type had no effect on water-soluble phosphorus excretion. However, pigs fed diets containing phytase tended to excrete less total water-soluble phosphorus than those without phytase inclusion. This study demonstrates that responses from feeding any combination of LPA corn, LPA soybean meal, and phytase were additive, phosphorus digestibility was improved significantly, and phosphorus excretion decreased dramatically thus reducing the potential impacts of phosphorus from pig manure on the environment.

*B. E. Hill, A. L. Sutton and B. T. Richert. 2009. Effects of low-phytic acid corn, low-phytic acid soybean meal, and phytase on nutrient digestibility and excretion in growing pigs. J. Animal Sci. 87:1518-1527.*