Prospects for using increasing amounts of corn DDGS in poultry diets

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Feed prices have increased sharply due to increases in the feed-ingredient prices. However, corn distiller's dried grains with solubles (DDGS) can supply energy, protein (amino acids), linoleic acid, and phosphorus in poultry diets, often at a competitive price, and may help lower feed costs. In the Midwest, corn DDGS is included in poultry diets ranging from 0 to 15% of the diet, depending on the relative cost of corn DDGS and on the type and age of the birds. Although the number-one constraint to further increase the dietary corn DDGS content in poultry diets is its price, nutritionists may hesitate to include high amounts of corn DDGS in poultry diets because of concerns of adverse effects on bird performance if there are weekly fluctuations in the dietary inclusion rate of corn DDGS. Corn DDGS may be forced out of the least-cost diet formulations if its price and availability changes substantially from week to week. Recently, Wang et al. (2007) showed that weekly fluctuations in the dietary corn DDGS inclusion rate between 0 and 15% or even between 0 and 30% had minimal effects on growth performance of broiler chickens, but carcass quality decreased slightly in part due to reduced pellet quality. However, because of the diet formulation used in the particular study, at least part of the reduced carcass quality may have stemmed from a reduced supply of amino acids in the corn-DDGS diets compared with the control diet.

Another potential constraint in increasing the dietary content of corn DDGS further is a concern about the lack of consistency in corn DDGS' nutrient composition, which would adversely affect the poultry nutritionist's ability to precision-formulate diets to meet energy and nutrient specifications. Therefore, corn-DDGS manufacturers should pay special attention to the rate at which the solubles is applied to the grains, because the amounts of solubles applied to corn DDGS substantially affect its contents of metabolizable energy and phosphorus (Noll et al., 2007). Moreover, the temperature at which the corn DDGS is dried affect its phosphorus (Martinez-Amezcua et al., 2004) and amino acid bioavailability (Martinez-Amezcua et al., 2007). Thus, both the rate of solubles addition and the drying temperature can affect the energy and nutrient contents (and their bioavailability)—critical when corn DDGS supplies proportionally more of the energy and nutrients in poultry diets. Nevertheless, if the energy and nutrient contents in corn DDGS are consistent over time, very high dietary inclusion levels can be used in laying-hen diets, as was recently demonstrated by Scheideler et al. (2008) who fed diets containing up to 25% corn DDGS with no adverse effects on egg production, and by Pineda et al. (2008) who fed up to 69% corn DDGS to laying hens with no adverse effects on egg output. The two latter studies demonstrate that high inclusion rates of dietary corn DDGS for poultry are possible as long as the energy and nutrient contents of corn DDGS are consistent and known by the nutritionist.

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