Meeting the Nutritional Needs of Poultry

with Dried Distillers Grains and Next Generation Feed Products

Background on DDGs:

Distillers grains (DGs), often marketed as dried distillers grains with solubles (DDGS), are a co-product of the ethanol production process and an important source of protein that continues to be produced in large quantities by the dry-grind fuel ethanol industry. They are rich in the protein, fat, minerals, yeast, and vitamins that animals need, making them a very popular feed ingredient for cattle, swine, and poultry alike.

These distillers grains are widely used as feed for livestock and are marketed as DDGS, modified distillers grains with solubles (MDGS), wet distillers grains with solubles (WDGS), or condensed distillers solubles (CDS or corn syrup). Approximately 40 million metric tons of DDGS are produced annually. Poultry producers recognize the product as an economically beneficial, nutritionally valuable source of protein and energy, and research has found that increasing DDGS inclusion rates can help replace more costly, traditional protein ingredients such as soybean meal.

Poultry & Distillers Grains:

There are multiple advantages to feeding distillers grains. Drying them increases shelf life, allowing DDGS to be transported longer distances, and also enables pellet formation. As improvements in operating efficiency of biorefinery ethanol plants occur, new products and innovations are continuously being developed. There are several new corn fractionation technologies being deployed in dry mills in the U.S. These technologies create value by separating out the various components of corn to allow improved utilization of the subsequent product streams. By separating corn into its most valuable components, there is an opportunity for the nutritional needs of individual animal species to be better met and the subsequent protein and oil streams to have improved utilization. While corn and the current distillers grain products are advantageous when fed in combination, and will continue to be a great choice, poultry at different stages of growth may further benefit from specifically fractionated feed products that have the ability to provide nutrients at more optimal levels than products currently produced.

Where the Industry is Headed:

Where the Industry is Headed: With ongoing research and feeding trials, resources and materials for producers and nutritionists are being developed. Research has found that low oil DDGS improves egg yolk and skin yellowness without negatively impacting egg production or growth performance. The low oil DDGS are higher in crude protein, as well as higher in gross energy than traditional corn or soybean meal. Thanks to the higher gross energy level of low oil DDGS, including it in the ration helps maintain the critical energy level with less supplemented fat overall. When analyzing phosphorus, DDGS contain more than the animals consuming the product require, and now, provided by a study funded by a National Science Foundation grant, 80-90 percent of phosphorus can be recovered with a stir reactor. This recovered phosphorus can then be put back on the land as a fertilizer, thus furthering the agriculture circular economy.

"I've used these products during my career when they're priced competitively. It's important for people to know that distillers are not just a minor by-product anymore and have become a valued feed ingredient. When we look at these feedstuffs exclusively as a by-product, there tends to be a sort of negative connotation, which is interesting because soybean meal is also technically a by-product of soybean processing but certainly isn't treated the same way," said Dr. Mike Blair, Senior Manager of Poultry Research and Technical Service at United Animal Health. "When looking between plants, it's important to pay close attention to moisture level, fat level and stabilization, amino acid composition and availability, and overall product quality. Heat treatment at the plant can greatly impact the availability of amino acids, which is a critical component to poultry producers. If there's a good relationship between a company's purchasing agent, nutritionist, and the plant, you can expect good communication around product consistency and its true value in the diet. Nutritionists can start at a 5 percent inclusion rate and increase towards 20 percent inclusion rates or higher if product quality and the economics allow."

It is important to note that while some ethanol plants may invest in the biorefinery technology and produce these new products, others may not, which presents an opportunity for poultry producers to continue using the traditional DDGS products available to them but also explore new options. While there is much more to come on next-generation feed products, it is important to remember the value of current distillers grains products as well as corn grain. Any new products will require ongoing research and feeding trials to determine poultry response and performance and communication within the poultry industry to help producers make the choices that best serve their bottom line. For these reasons, the corn, ethanol and animal agricultural industries are co-dependent upon one another for their success and mutual prosperity. The National Corn Growers Association (NCGA) and its affiliates are proud to play an integral role with two important industries that impact the health of rural America.

References:

Cortes-Cuevas, A., Ramírez-Estrada, S., Arce-Menocal, J., Avila-González, E., & López-Coello, C. (2015). Effect of Feeding Low-Oil Ddgs to Laying Hens and Broiler Chickens on Performance and Egg Yolk and Skin Pigmentation. Revista Brasileira De Ciência Avícola, 17(2), 247–254. doi: 10.1590/1516-635x1702247-254

Dinani, O. P., Tyagi, P. K., Mandal, A., Tyagi, P. K., Gupta, S. L., & Junaid, N. (2018). Feeding Value of Distillers Dried Grain with Soluble for Poultry. International Journal of Current Microbiology and Applied Sciences, 7(11), 1389–1400. doi: 10.20546/ijcmas.2018.711.161

Guney, A., Shim, M., Batal, A., Dale, N., & Pesti, G. (2013). Effect of feeding low-oil distillers dried grains with solubles on the performance of broilers. Poultry Science, 92(8), 2070–2076. doi: 10.3382/ps.2012-02699

Recovering phosphorus from corn ethanol production helps reduce groundwater pollution. (n.d.). Retrieved March 11, 2020, from https://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=300170