

Questions from February, 2008 webcast "Impact of Ethanol Co-Products on Nutrient Management"

What other products are used to make ethanol besides corn? What is the overall grain content of distillers grain? All corn? Barley? Rice? Wheat?

Galen Erickson: Any source of starch can be run through a dry mill ethanol plant, however, the majority in the United States today are corn. In the southern plains, and historically at times in Nebraska, some grain sorghum would be used. Wheat can be used (Europe and Canada do some of this). The starting grain can influence the nutrient content. When you get outside the United States wheat, barley, and sugar cane are used. For example, Brazil uses sugar cane, but in the United States uses corn and a little bit of grain sorghum.

Are the planned plants planning to use cellulose or, as of today, are they still planning to use corn?

John Lawrence: To my knowledge there are 6 cellulosic plants that are ramping up to the pilot scale. The vast majority of ethanol today is grain based. Right now corn is about \$.09 and forage is about the same cost per pound. Price of feedstocks is important, but don't get too hung up on forage. One of the densest source of cellulose is wood. So ethanol plants at paper mills or saw mills will be feasible.

Will not adding the "S" in DDGS remove a tremendous amount of the manure phosphorus? What are the nutrient concentrations in the condensed solubles?

Galen Erickson: That depends a little bit on the plant. Distillers grains is .9 phosphorus, but that varies from plant to plant. It wouldn't be unheard of to find distiller grains at .4 or 1.2, so you have to appreciate that these are averages. The syrup, generally speaking, run 1% to 1.5% phosphorus, it will be a little bit lower in protein. It will run from 20-25% protein instead of 30% (like distiller grains plus solubles) and it's generally a little bit higher in fat or oil content. It varies a little bit, a little bit more concentrated in phosphorus and less concentrated in nitrogen, but still high in protein.

Joel DeRouchey: I think it was implicating that if we remove the syrup would it help the phosphorus issue? I think that on the cattle side it certainly may, but as far as pig and poultry go that phosphorus actually adds value to the product and, in fact, our economics of using distillers is much higher and we're more beneficial to distillers because of its phosphorus and available phosphorus content. It would depend regionally where that product is going to in terms of it helping manure management plan side or just the economics of using it by species.

Galen Erickson: Not a lot of the amount of material comes out as soluble. Our estimates are that somewhere around 20-25% of the feed material is in the soluble stream. Even if we don't use solubles in feed, it won't solve the problem because it's only 15-20% of the feed that comes out. So even though it's concentrated in phosphorus, it's not the majority of weight of phosphorus that is coming out.

When you say monogastric fecal output increased by 15%, was that feces only, or total manure volume (feces plus urine)?

Joel DeRouchey: Total volume of manure increases by that amount. Mainly fecal since the fiber passes right through with little digestion. The energy value of distillers is quite similar to corn. Because of the higher fat content, we get the pigs and the poultry to utilize the fat very well, but along comes all the fiber with that, and it has very low digestibility. So even though we really don't expect that much of a difference in feed efficiency, most times our excretion level is going to increase because of that fiber. Since protein increases we are going to concentrate most of that ammonia in the urine, but we would not expect huge changes in urine output, maybe fecal output just because that fiber is going to pass through and cause more to come out. It is a thicker type of manure, too, and total volume increases.

Briefly touch of the topic of the press release about the impact of feeding distiller grains to cattle and the increase of E. coli 0517 in the lower gut and, differing data from the University of Nebraska.

Galen Erickson: Complicated issue, but K-state research suggested feeding 25% distillers grains compared to 0. In steam-flaked corn rations they observed an increase in e coli 0517:H7. It was based on a couple of feeding experiments where E. coli was measured over time and also some in vitro work. It was a little confusing after reading the data, but they observed some increase in the in vitro work but it was treating the intestinal contents with dry distiller grains. Now our data suggests that going from 0 to 10 to 20 to 30 percent distillers grains we actually saw no effect or a decrease depending on whether we're talking about shedding of 0157:H7 or a colonization. Now, at 40 and 50 percent inclusion, which are much higher than what we're feeding today, there was an increase in E coli 0517:H7 at those higher level. In my opinion, the verdict is still out.

John Lawrence: A later KSU study that found no difference in E coli levels compared to other diets. The latter finding is consistent with other research findings.

Is anyone allowing the land application of the syrup? If so, under what conditions?

Joel DeRouchey: I have not heard of land applying syrup as it has enough nutritional value it is wanted by some cattle and dairy producers directly. Otherwise, it helps the nutrient content of dried DDG as well. It is easy to put it on the drying product without the hassle of lining up trucks to land application.

Follow up by webcast viewer: Because of the explosion in the number of ethanol plants, especially in Michigan, and the lack of animals to feed the co-products to it appears that a large volume of syrup is going to anaerobic digesters or is going to land here.

Can DDGS be used to impact some digestive concerns, like ileitis?

Joel DeRouchey: Research has shown that DDGS does not impact digestive diseases, however, more is going to be researched in this area.

What are nutrient concentrations in Condensed Distillers Solubles?

John Lawrence: Check Table 2 of <http://www.extension.iastate.edu/Publications/IBC18.pdf>

Is there data available that shows where the DGS is being produced compared to the regions where DGS can be used for feed?

John Lawrence: I am not aware of such a map other than comparing the location of the ethanol plants to livestock and poultry density maps.

The nutrient value of each plants waste by-products must vary from plant to plant. Will the suppliers provide copies of the nutrient values to interested feedlots?

Joel DeRouchey: They should. Some do a good job of sampling while some do very limited testing.