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Dale Norton, pork producer from Bronson, Mich., and National Pork Board member

Feed Prices Provide **MOTIVATION**

There's no doubt about it. As this year's corn and soybean crops began entering the storage bins, we witnessed a surge in grain prices that caused me and my fellow pork producers to cringe. However, as always, we're an industry that's used to challenges and one that looks for new ways to deal with adverse conditions.

First, we all need to take a close look at input costs. And since feed makes up roughly two-thirds of most farms' cost of production, that's a good place to start. Today, that means looking at the possible inclusion of dried distillers grains with solubles (DDGS) as a way to reduce diet costs without sacrificing pig performance or carcass quality.

Many producers already use DDGS in swine diets, and with higher grain prices they might be inclined to use it even more. While that may be a logical decision, be sure to weigh the likely results that a diet change using DDGS or any alternative feedstuff can cause. This is where the advice of your nutritionist and consultation with your packer can be critical.

In this edition of *Pork Checkoff Report Special Edition*, you'll learn what today's experts are saying about DDGS and what you need to consider if you choose to use it. Also, you'll see how the Checkoff investment in DDGS research continues to provide insights into this alternative feed ingredient to the benefit of the entire industry.

Dale Norton



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Inside: Learn more about using DDGS to reduce feed costs.



As feed ingredient prices continue to climb from recent lows, it would be easy to decide to add more dried distillers grain with solubles (DDGS) to swine diets. However, as with most things, it's not that simple. Getting optimum performance from grow-finish pigs takes a comprehensive approach. That includes knowing the possible unintended consequences that could occur when changing diets.

Although many producers are now familiar with DDGS, it's important to know what their inclusion in swine diets can mean. The Pork Checkoff has funded many different studies to help provide answers.

Intake, Carcass Weight May Vary

One researcher who has done a lot of work on DDGS is Jerry Shurson, a swine nutritionist at the University of Minnesota. He says that pigs' feed intake response to DDGS in the diet is puzzling because of disparate research findings.

He references work done by the University of Illinois and University of Minnesota that summarized 23 published studies reporting performance responses of grow-finish pigs with diets consisting of up to 30 percent DDGS. In these studies, average daily feed intake increased in two experiments, declined in six experiments and was unaffected in 15 experiments when DDGS diets were fed.

The reasons for the variable feed-intake responses to DDGS was unclear, Shurson said, and there is limited evidence suggesting that alternating between DDGS and non-DDGS diets could decrease feed intake in grow-finish pigs. Consequently, his research group conducted an experiment to determine the effects on pig performance and carcass quality of

finishing pigs by switching between a diet of corn and soybean meal and a diet of corn, soybean meal and DDGS.

The results suggested that the frequent inclusion and removal of 20 percent DDGS from diets for finishing pigs does not adversely affect pig performance or carcass characteristics. However, it does appear that alternating 40 percent DDGS in and out of the diet may reduce feed intake and the hot carcass weight of finishing pigs.

Energy Considerations Can Affect Profits

Does feeding DDGS to growing pigs work as well as it does in finishing pigs? Part of the answer lies in how much net energy is available to the pigs. However, that's not a standard measurement offered by DDGS suppliers.

To remedy this, Checkoff-funded research conducted by Hans Stein, a University of Illinois swine nutritionist, looked carefully at how the net energy of swine diets can differ substantially from the more common measurements of digestible energy or metabolizable energy. His findings showed that the latter two measurements systematically overvalue fibrous or high-protein feedstuffs and undervalue fats. Since these deficiencies in the measurement of dietary energy are critical to the economics of pig production, there is increased interest in using a system based on the net energy.

Using net energy rather than digestible or metabolizable energy, Stein said, would improve profits \$2 to \$3 per pig. His findings back this up since they showed that the net energy of DDGS was greater in finishing pigs than in growing pigs – something to consider when working with your nutritionist in devising a DDGS strategy for multiple phases of production.



Checkoff Research Delves into DDGS

Know Your Pigs' Iodine Value Score

Regardless of your pigs' diet today, it's good to know their iodine value. Why? Because it's become a common measurement used to predict carcass-fat quality, especially in the belly, which can be negatively affected by feeding DDGS at too high of a rate.

Key Measurements

As a rule of thumb, Steve Dritz, a Kansas State University swine nutritionist, tells pork producers that for every 10 percent of DDGS fed in the diet, the iodine value will rise two points. So, if you know your herd's baseline iodine value (work with your nutritionist and packer if you don't), you can generally predict the final value that will be measured at the plant, Dritz said.

Another factor affecting iodine value is genetics. Market pigs from maternal lines will generally have a lower baseline iodine value than pigs from terminal-line genetics. So, Dritz says you can feed certain genetic lines more DDGS than others and still come in under the packer's upper threshold for the measurement. For many packers, an iodine value of 73 seems to be the upper limit, but this can vary.

As an example, Dritz said that if your herd's iodine value is 71 without feeding any DDGS, then simply feeding 10 percent DDGS all the way to market would likely result in a two-point increase, for a final value of 73. However, many producers withdraw or reduce the level of DDGS in diets prior to market, which can complicate the ability to accurately predict the final iodine value, he said.

Packer Considerations

As you determine what inclusion rate of DDGS works best for your farm, be sure to consult with your packer early in the process.

Some packers test the iodine value at the jowl, while others take a fat sample directly from the belly. This difference is worth knowing. However, more important is knowing the upper acceptable iodine value before shipping market hogs to packers. ✓

Digging for the facts surrounding dried distillers grain with solubles (DDGS) has been an ongoing priority among Checkoff-related research. A quick search on the Checkoff's website found at [pork.org](http://www.pork.org) offers 22 completed studies over the last few years alone. More are currently under way as well, which will only bolster the industry's knowledge on this subject.

Here are two of the newest completed studies on DDGS as they relate to pork quality to help producers weigh the pros and cons of using this alternative feed ingredient.

The Influence of Dietary DDGS and Glycerol on Pork Loin and Bacon Quality

The goals of this study were to determine the impact of 0 and 20 percent DDGS and the inclusion of glycerol at levels of 0, 2.5, and 5 percent in grow-finish rations on loin and bacon quality, and to determine the relationship between belly firmness and slicing yield for commercially produced bacon.

In summary, feeding DDGS and glycerol in combination or singularly at the levels tested did not practically impact loin quality traits. Feeding 20 percent DDGS did decrease belly firmness, although not to a degree that would affect any processing characteristics.

Also, the results suggested that the addition of 20 percent DDGS to finishing swine diets will not be detrimental to sensory components in bacon. Feeding glycerol at 2.5 and 5 percent of the diet did not positively or negatively affect any fresh belly or bacon characteristic that would increase or decrease the profitability of bacon production. Finally, adding glycerol to the diet 2.5 and 5.0 percent did not change fatty acid composition of loin intramuscular fat or belly fat.

*Principal investigator: Terry Houser, Kansas State University.
For more details: <http://www.pork.org/ResearchDetail/1370/InfluenceofdietaryDD.aspx>*

Assessment of Corn DDGS from Ethanol Production on Performance and Carcass Quality of Grow-Finish Swine

Fortified corn-soybean meal diets containing 0, 15, 30 or 45 percent DDGS were fed to grow-finish pigs in three phases. There was a significant increase in the polyunsaturated fatty acids in the fat from the backfat tissue as level of DDGS was increased in the diet, indicating a softer fat in pigs fed DDGS. The iodine values of the inner layer of backfat increased from 61.6 in the controls to 82.5 in that of pigs fed the highest level of DDGS, again reflecting a softer backfat.

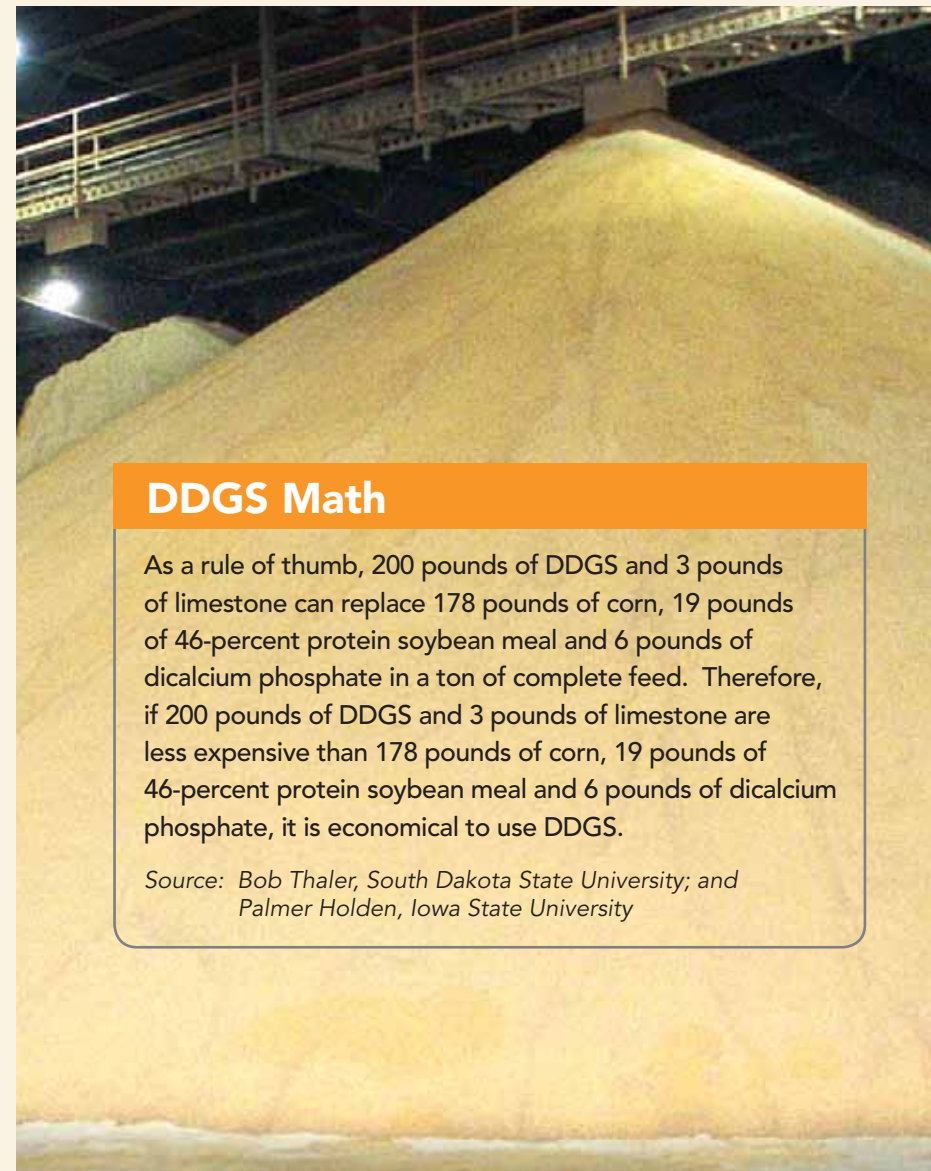
In summary, these results show that high levels of DDGS (up to 45 percent in the diet) can be fed to grow-finish pigs without having much of an effect on growth performance or carcass leanness. However, these high levels do result in a higher proportion of polyunsaturated fatty acids in the backfat, higher iodine values in the backfat and softer, more flexible bellies.

*Principal investigator: Dr. Gary Cromwell, University of Kentucky
For more details: <http://www.pork.org/ResearchDetail/1293/AssessmentofCornDist.aspx>*

More Research on the Use of DDGS Under Way

The Pork Checkoff continues to fund additional research on DDGS and related issues since this alternative feedstuff remains a moving target in terms of its nutritional value and impact on pig performance and carcass quality. Some of these studies include:

- Evaluation of Choice White Grease and Beef Tallow to Improve Pork Quality when Pigs are fed Distillers Dried Grains, led by Dr. Brian Richert, Purdue University.
- Assessment of the Effects of Diets Containing DDGS with Supplemental Tallow on Fat Digestibility, Growth Performance, Carcass and Fat Quality in Growing-finishing Pigs, led by Dr. Gerald Shurson, University of Minnesota.
- Methods of Restoring Carcass Firmness and Other Post-Harvest Traits in Finishing Pigs Fed a High Level of DDGS, led by Dr. Gary Cromwell, University of Kentucky. ✓



DDGS Math

As a rule of thumb, 200 pounds of DDGS and 3 pounds of limestone can replace 178 pounds of corn, 19 pounds of 46-percent protein soybean meal and 6 pounds of dicalcium phosphate in a ton of complete feed. Therefore, if 200 pounds of DDGS and 3 pounds of limestone are less expensive than 178 pounds of corn, 19 pounds of 46-percent protein soybean meal and 6 pounds of dicalcium phosphate, it is economical to use DDGS.

Source: Bob Thaler, South Dakota State University; and Palmer Holden, Iowa State University

DDGS Checklist

Quality, consistency and nutritional analysis of DDGS can vary by and even within a supplier. Also, season and corn quality can affect these attributes – all things to take into account before formulating swine diets. Steve Dritz, swine nutritionist at Kansas State University, and Mike Brumm, owner of Brumm Swine Consultancy, Mankato, Minn., offer a few key steps to consider before taking delivery on any product.

- ✓ **Deal only with reputable dealers** who adhere to the Association of American Feed Control Officials quality standards.
- ✓ **Try to use a single DDGS source** to ensure better product consistency.
- ✓ **Work closely with a nutritionist** to determine the feed value of your specific DDGS co-product to achieve optimum results.
- ✓ **Make sure you know the moisture content** of the DDGS product and how it will work in your on-farm feed and delivery system. (Too much moisture can be a major hassle.)
- ✓ **Plan for the inherent handling and storage differences** at the farm. Consider equipment modifications that may be needed.
- ✓ **Know the quantity** that you have to buy to achieve a discount.
- ✓ **Implement an ongoing quality-control process** to ensure product integrity.
- ✓ **Don't be afraid to reject a load** of DDGS if the product doesn't meet your standards.

For More Information

Here are some resources that can shed more light on feed efficiency, DDGS, alternative feedstuffs and related issues, such as mycotoxins.

- Go to [pork.org](http://www.pork.org) under the news tab to view the *Pork Checkoff Report Special Edition* newsletter, "Feed-Quality Challenges," April 2010.
- From the Checkoff Pork Store (www.porkstore.pork.org/), the *Alternative Feed Ingredients in Swine Diets II* booklet is available.
- Check out Kansas State University's DDGS calculator at <http://www.asi.ksu.edu/DesktopDefault.aspx?tabid=1220>.
- Go to [pork.org](http://www.pork.org) and use the search function to find over 20 Checkoff-funded DDGS studies.
- Check out the *Distillers Grains By-products in Livestock and Poultry Feeds* booklet from the University of Minnesota at <http://www.ddgs.umn.edu/>.