

# Feed-Quality Challenges

## Tips on Mycotoxins and More

It's certainly no secret that the 2009 harvest was one of the most grueling in recent memory. Most of the Corn Belt suffered unseasonably cold, wet weather that delayed harvest and left many acres unharvested before winter snows buried them.

If that wasn't enough, much of the corn that did make its way out of the field was generally light weight and poor quality, with some of it harboring molds. This has resulted in continuing challenges to pig performance and health. So, to help producers navigate this unusual set of circumstances the Pork Checkoff has called upon some of country's leading experts to provide keen insights and tips on how to best deal with this latest challenge.

"This is an issue that can affect the health and well-being of both pigs and workers," said National Pork Board President Tim Bierman. "As such, the feed/grain quality issues cropping up now are another challenge for producers to address as part of the industry's We Care initiative."

### Worse than Usual

"This is the worst Gibberella mold problem I've seen since 1972," said Dr. Charles Woloshuk, a plant pathologist



**"This new-crop corn really could become a performance and health issue for pigs."**

*Greg Lear,  
Wean-to-finish Pork Producer  
Spencer, Iowa*

at Purdue University. "It's certainly unusual to see this level of poor grain quality, and that can lead to a host of issues during storage and feeding of swine."

According to Iowa State University grain specialist Charles Hurburgh, the poor condition of feed grain should not be too surprising at this point. "We knew last fall when we had very low test weights that this crop would give us problems. And the fact that it was generally greater than 20 percent moisture content," Hurburgh said.

Low corn test weights (less than 52 pounds per bushel) often indicate lower protein content, as well. This has

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proven to be the case across the Midwest, with protein going below 7.5 percent, Hurburgh said. Since a good percentage of the crop was also immature, producers also are dealing with very fine feed particles, which can lead to increased waste and ulcers in pigs. And not to overlook soybeans, Hurburgh reminded producers to make sure bean meal is actually testing at its claimed protein level and not a percentage point or so less, which could lead to incorrect diets.

### Storage, Handling Challenges

For Greg Lear, a wean-to-finish producer in Spencer, Iowa, it's still an anxious spring as he deals firsthand with poor-quality grain. "The molds are there in some of the corn right now, and it continues to be a challenge to deal with it."

Lear, who works with many producers in Iowa in his role as a sales representative for a feed company in northwest Iowa, said, "This new-crop corn really could become a performance and health issue for pigs. That's why producers must keep testing, preferably once a week beginning in April, to know the exact protein, starch and lysine levels. And they definitely need to do spot-testing for molds."

Just like the Extension experts are advising, Lear said producers need to realize that many bins have fines and trash in the center column, leaving the door open for mold growth. For this reason, he recommends that producers "core" the bin out to reduce this risk. This involves opening

the center well of the unloading auger and removing at least one or two loads of grain from the bin to remove the fines and trash to provide better air circulation.

As a producer, Lear understands the importance of watching expenses, but he advises fellow producers not to skimp on protein and energy levels in diets. "With this year's grain, it would be very easy to get low levels of protein and energy and that could really hurt production," he said.

From a storage perspective, Iowa State's Hurburgh said producers should expect only about half of what's normal with this year's corn. (See table for corn and soybean storage times.) He attributes this to mold damage in the field – about 3 to 5 percent compared with 1 to 2 percent normally.

He added that toxins will not go away in storage, but usually do not increase either. Regardless, tests for toxins need to be drawn with at least a 5-pound sample, which is completely ground. Composites of several individual loads or undivided bin samples are best.

### Use Proven Strategies

There are more products that claim to ease the struggle of dealing with poor quality grain, but experts warn producers to make sure they know what they're getting.

"Vomitoxin can increase in storage if environmental conditions are

suitable," said Pierce Paul, a plant pathologist at Ohio State University. "However it won't be reduced because it's stable, so there are no fungicides or other chemical treatments that I'm aware of that have been used effectively to reduce vomitoxin in stored grain."

Similarly, he added that there is no control for ear mold rots or mycotoxins that can be used either in the field or in the bin. However, there are some agents that bind the toxin and make it inactive to allow the corn to be fed to livestock, but they may work better for aflatoxin, he said.

Back in Iowa, Lear agrees about what additives may work. "It seems it's a mixed bag to me as there isn't a lot of black-and-white research that backs up some of the claims being made. I do know that some producers do feel some of products appear to work," he said.

According to the *Journal of Swine Health and Production*, the use of mold inhibitors and mycotoxin binders in swine diets may be advisable when grain moisture is 14 percent or more and when relative humidity in storage is greater than 85 percent with a temperature of 55 degrees or more.

Regardless of any conditioning product used or not, experts contend that testing is the critical component. And once those results are known, mixing and diluting are realistic methods for using subpar grain, but even that strategy could be stretched to the limit this year, since Hurburgh says it can take up to 300 bushels of good quality grain to offset one bad bushel. This can also be complicated by the use of Dried Distillers Grains with Solubles (DDGS), which experts

agree can concentrate toxins if present in the grain used to create them. 🍌

Maximum storage time (months) for corn and soybean\*

Corn Temperature °F	Moisture Content % Corn (top %), Soybean (bottom %)							24% N/A
	13%	14%	15%	16%	17%	18%	18%	
40	150	61	29.0	15.0	9.4	6.1	1.3	
50	84	34	16.0	8.9	5.3	3.4	0.5	
60	47	19	9.2	5.0	3.0	1.9	0.3	
70	26	11	5.2	2.8	1.7	1.1	0.2	
80	15	6	2.9	1.6	0.9	0.9	0.06	

\*Based on 0.5% maximum dry matter loss — calculated on the basis of USDA research at Iowa State University. Corresponds to one grade number loss; 2-3% points in damaged seeds. Soybean approximated at 2% lower moisture than corn.

Due to the overall poor quality of the 2009 corn and soybean crop, experts agree that expected storage times are roughly half of normal. If mold is already present, warmer weather will likely exacerbate the problem, making weekly checks a must, experts contacted by the Pork Checkoff agreed.

# Are Mycotoxins Affecting Your Pigs?

On your daily trips to the barn, make sure you keep a sharp eye out for any of these symptoms that may be related to ingestion of mycotoxins. As always, contact your veterinarian immediately if pigs show signs of health distress. Regular grain and feed tests should quickly reveal any mycotoxin present.



## And what about you?

As producers, you care about your pigs, but make sure you don't overlook your own health or that of your employees when it comes to working in dust-prone environments. Extension specialists recommend wearing respiratory protection to protect your health, especially if molds and/or mycotoxins could be present. 🍌

## Symptoms Checklist:

- Reduced feed conversion
- Reduced growth rate
- Increased age at puberty
- Reduced libido
- Unexplained levels in infertility
- Reduced numbers born alive
- Reduced milking ability
- Abortion
- Increased disease incidence
- Poor immunity
- Inconsistency of body condition
- Pale pigs
- Vomiting
- Rectal or vaginal prolapse
- Sudden death



Photo courtesy of Dr. Charles Woloshuk, Purdue University

## Molds Lead to Toxins

Be aware of several major mycotoxins that may end up in swine feed. The major ones include:

**Vomitoxin.** Gibberella ear rot fungus produces the mycotoxin called deoxynivalenol (DON), also known as vomitoxin. Although it does not cause health or reproductive problems, when the total concentration in the diet reaches 1 part per million (ppm), pigs will eat less feed.

**Zearalenone.** In contrast to vomitoxin, the mycotoxin zearalenone has estrogen-like effects that tend to cause problems in the breeding herd. It can cause a number of health issues, from swollen vulvas to reduced birth weights, said Dr. Hans Stein, a swine nutrition specialist at the University of Illinois Extension, who noted that zearalenone seems to be less detrimental in grow-finish pigs.

Stein said, *"If you have to feed it, try to get it into the diet of grow-finish pigs and try to keep it out of the diet of the breeding herd and developing gilts."*

**Ochratoxin.** This mycotoxin is a concern in swine diets. Reduced performance has been reported with levels as low as 1.4 ppm, and high levels are toxic. Feed no more than 1 ppm of ochratoxin in the final diet, Stein said.

**T2 toxin.** Particularly in the diets of young pigs, T2 is very toxic and reduces feed intake and average daily gain. This mycotoxin also reduces the immune function of pigs, said Stein, who recommends no more than 0.5 ppm of T2 in the final diet.

**Fumonisin.** Quite a bit of fumonisin has appeared since last fall. Don't feed more than 10 ppm, Stein said. *"If you are above this level, you need to blend it down,"* he said.

**Diplodia.** Diplodia is not toxic and can be fed to pigs with no detrimental effects.

"There are some reports that feed intake may go down a little when you feed diplodia corn, however," Stein said. *"Watch this, and try to blend it up as much as you can."*

**Aflatoxin.** This is the only mycotoxin regulated by the U.S. Food and Drug Administration. No more than 20 ppb of aflatoxin is allowed for interstate shipment of contaminated grain. At low levels (20 to 200 ppb), aflatoxin often decreases feed intake, depresses growth rate and can suppress the pig's immune function. 🍌

## For More Info...

Dealing with subpar grain will continue to be an issue throughout much of 2010. This will be one of the topics addressed by leading swine experts at this summer's Pork Academy, hosted by the Pork Checkoff.

Pork Academy will be held Wednesday, June 9, and Thursday, June 10, during World Pork Expo in Des Moines, Iowa. Check [pork.org](http://pork.org) in the coming weeks for additional information.

Many land-grant universities also will continue to offer information and resources for pork producers to use on this topic. For more information, visit these online sites:

🔗 <http://www.ag.purdue.edu/extension/cornmold/Pages/default.aspx>

🔗 <http://www.extension.iastate.edu/CropNews/2010/0309hurburgh.htm>

🔗 <http://www.oardc.ohio-state.edu/ohiofieldcropdisease/Mycotoxins/mycopagedefault.htm>

## An Economist's Perspective



"Feed quality will continue to be an issue well into the summer months."

Steve Meyer, president of Paragon Economics and a Pork Checkoff consultant

During the last few months, pork producers have generally liked the news they've heard from economist Steve Meyer, owner of Paragon Economics and a Pork Checkoff consultant. That's because he's said the profit potential for pork producers looks much brighter for 2010 than it did over the past two-plus years. However, he admits it's unexpected challenges such as poor grain quality that can make achieving that prediction a tougher objective to reach for several reasons.

"First, with the onset of spring, there's no doubt that warmer weather will pose greater challenges for producers who must rely on corn that's already prone to mycotoxins," said Meyer. "Both in terms of mixing and diluting the grain for swine feed use and when it comes to potential harmful effects to pig performance."

Meyer also points to low test weights that often indicate potentially low energy and protein levels as a possible complication to obtaining optimum swine diets. "This will continue to be an issue well into the summer months as we rely on the 2009 crop to make swine feed, so producers need to work very closely with their nutritionists, feed representative and their veterinarians to make the best of this situation and take every opportunity to maximize profit potential."

This issue of the newsletter, brought to you by the Pork Checkoff, provides an overview of one of 2010's biggest challenges - grain and feed quality. See the articles inside for tips on how to avoid possible pitfalls stemming from mycotoxins.



*This is a special-topic newsletter sent periodically to you by the Pork Checkoff.*

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