FIELD & FEEDLOT



NORTHWEST AREA EXTENSION SEPTEMBER 2008

Ear Abnormalities and Stalk Rots

By Mark Licht, ISU Extension Field Agronomist

Now is the time of year when fields are frequently being checked for yield and part of that is looking at ears and kernel set. Consequently, this is the time of year ear abnormalities are being found. I say ear abnormalities but this could also be ear diseases. Ear abnormalities can be caused by several things including but not limited to drought, temperature extremes, disease and insect injury, or misapplied pesticides. Some abnormalities affect yield very little while others not only affect yield but drastically affect grain quality. A great resource for troubleshooting abnormal corn ears and corn ear diseases can be found at the following Ohio State University web URL: http://agcrops.osu.edu/corn/EARABNORMALITIES.php.

This fall could be a year for stalk rots and ear diseases. Many parts of NW Iowa have experienced high winds that caused root lodging and/or greensnap and yet other parts of NW Iowa have experienced varying degrees of hail damage. Hail and root damage along with insect injury become entry points for root, stalk and ear diseases. These diseases are most often of fungal origin.

Stalk rots common to Iowa include anthracnose, Fusarium, Gibberella, Diplodia and charcoal rot. Most stalk rots are specific to corn and therefore the presence of corn residue increases the amount of available inoculum. Checking stalk quality in the field is increasingly important in corn following corn or other high residue systems.

Ear rots that are common to Iowa include Fusarium, Gibberella and Diplodia when precipitation is normal to above normal from silking to harvest and Aspergillus under hot and dry conditions. As with stalk rots, ear rot pathogens are harbored in corn residue and therefore there is increased risk under corn following corn and high residue situations.

If ear and stalk diseases are present be aware of potential grain quality issues. Also, these affected fields should be harvested in a timely manner and quickly cooled and dried down to 15 percent moisture.

Grain Storage & Management Considerations

By Joel DeJong, ISU Extension Field Agronomist

This has not been a warm summer, and the average silking date for many cornfields in NW Iowa was later than average. If we silk later, then corn will reach maturity later. The later we mature, the less favorable the weather is likely to be for good field dry down of corn. In addition, NW Iowa looks to be fortunate – corn yields look like they might be quite good for most of the area. We might have a lot of corn to store and to possibly dry this year. Therefore, it is probably wise to plan how we will properly store our crop in advance of harvest. Here are some things to think about, as adapted from Dave Nicolai at the University of Minnesota.

Sanitation. Be sure that the storage structure and grain-handling equipment (conveyors, wagons, trucks, elevators) are clean and keep outside areas clean. A common rule-of-thumb is, “If you can tell what has previously been in the bin, it is not clean.” Debris and grain spills outside the bin encourage rodents and insects. Keep weeds from growing around bin areas-these sites are ideal for pests to hide.

Combining and loading into storage. Grain harvested with a clean and properly adjusted combine should also be run through a grain cleaner to further remove fine materials, particularly if you plan to store it into the next summer. These “fines” make life easier for molds and insects. In addition, a grain distributor is extremely helpful, it spreads fine material uniformly across the grain mass. When loading, you want to create a grain mass that’s clean, dry and uniform, without foreign material. Immediately after the bin is filled and the grain is level, use a grain protectant if storing grain for one year or more to help control insects that enter through roof openings.

Aeration. In the fall, and with any bin that holds more than 2,000 to 3,000 bushels, aerate to cool the stored grain and create a better storage environment. Those who grow field crops should be able to cool grain to temperatures below 50 degrees F by gradually cooling through the fall. Insect activity is reduced at this temperature. Aerate to cool grain to 25 to 35 degrees F for winter storage. When aerating dry grain, about 0.1 cubic feet of air per minute per bushel of grain is recommended. When natural-air drying grain, allow four to six

weeks, depending on the weather and initial crop moisture. For more detailed information, see the Minnesota Extension publications "Grain Storage Tips" at www.extension.umn.edu/distribution/cropsystems/M1080-FS.pdf, and another titled "Natural-Air Corn Drying in the Upper Midwest," http://www.extension.umn.edu/distribution/cropsystems/DC6577.html. Both are good references that help prepare you for managing your valuable commodities.

Monitoring. Check stored grain regularly for temperature, moisture, insects and molds. Inspect stored grain every 7 to 14 days when either outdoor or grain temperatures are higher than 50 degrees F. If the grain is in good condition and has been cooled to less than 30 degrees, you can increase the inspection interval to once every three to four weeks during cold weather.
For more grain storage information, visit the University of Minnesota's Grain Drying, Storage and Handling web page: http://www.extension.umn.edu/topics.html?topic=4&subtopic=44.
In addition, here are a few more grain management tips.

Desired grain moisture for safe storage

Soybean sold by spring	14.0%
Soybean sold up to one year after harvest	12.0%
Corn sold by spring	15.5%
Corn sold up to one year after harvest	14.0%

Rules of thumb on harvest losses

- 4 soybean per ft^2 = 1 bushel/acre
- Soybean yield loss also occurs from uncut stubble
- 2 kernels per ft^2 = 1 bushel/acre
- 1 ear per 125 ft of 30 inch row = 1 bushel/acre
- 1 ear per 100 ft of 38 inch row = 1 bushel/acre

Grain shrinkage
Corn shrinkage is caused by two factors; 1) water shrink and 2) handling loss. Handling losses can be estimated at 0.5%. Water shrink on the other hand depends on the harvest grain moisture and the final grain moisture. Water shrink therefore is determined by multiplying the percentage of moisture points removed by the water shrink factor. And total shrink is water shrink plus 0.5% handling loss.

Water shrink factors for drying shelled corn to various moisture levels.

Final Grain	Water Shrink
%	% shrink / point
15.5	1.183
15	1.176
14	1.163
13	1.149
12	1.136

Soybean yield loss when harvested below 13% moisture.

Harvested Yield	Soybean Moisture at Harvest						
	7	8	9	10	11	12	13
bu/ac	----------Yield Loss (bu/ac)----------						
60	4.1	3.4	2.7	2.0	1.3	0.7	0
50	3.4	2.8	2.2	1.6	1.1	0.6	0
40	2.7	2.3	1.8	1.2	0.8	0.5	0
30	2.1	1.7	1.4	1.0	0.7	0.4	0

Feed Diet Formulation & Ingredients Impact Nutrients in Manure

By Dave Stender, ISU Extension Swine Field Specialist

A swine diet with phytase and added synthetic amino acids will save money in feed cost, but will reduce the fertilizer value of the manure. The University of Illinois did a study on nitrogen balance in growing pigs fed reduced crude protein diets. In that study they compared 14% vs. 19% protein. The two diets had similar performance because the low protein diet added the synthetic amino acids of Lysine, Threonine, Methionine, and Tryptophan. Reducing crude protein in this trial decreased ($P<0.001$) urinary N excretion by 56% and total N excretion by 41%. Dr. Gary Cromwell from Kentucky summed up similar research with a thumb rule that every 1% change in protein in the swine diet changes the total nitrogen in the manure 10%.

The National Center for Manure and Animal Waste Management have a white paper on their web site that says the impact of amino acid supplementation with low crude protein diets to reduce nitrogen excretion ranged from **28 to 62%** depending upon the size of the pig, level of dietary crude protein reduction and initial crude protein level in the control diet. The average reduction in nitrogen excretion per unit of dietary crude protein reduction was 8.4%.

A 10% reduction of nitrogen in manure is more valuable today as the price of fertilizer increases. Typically a pig produces about 8.4 pounds of total nitrogen in manure for each finishing pig. A 10% reduction calculates as a .84 pound loss of nitrogen. If for example, the price of anhydrous ammonia is $0.61/lb nitrogen, then a loss of .84 lbs of nitrogen is worth about $0.50 per finishing pig.

The tradeoff is that reducing the protein in the diet typically reduces the cost of the ration and with high feed cost producers are looking for ways to reduce feed cost. To reduce protein 1% feed formulators remove about 65 lbs of soy meal and replace

that with 63 pounds of corn and 2 pounds of synthetic lysine. The performance of the pigs will be the same. If the soy meal cost is $0.17/lb, corn $0.09/lb and lysine $1.20, then the cost savings of feed calculates about $2.98 per ton.

Depending on the feed conversion, a ton of feed will finish close to three pigs, therefore the feed cost savings by addition of low priced lysine in this example is about $1.00 per pig. The cost advantage can change rapidly depending of the price of soy meal relative to the prices of corn and synthetic lysine. The value of fertilizer can also change relative to the feed cost savings, so this is a calculation swine producers that want nitrogen fertilizer from their manure should check occasionally.

A calculation can also be done for phosphorus fertilizer compared to adding phytase to feed. When 1000 units of the phytase enzyme is added to feed, about 15 lb of di-calcium phosphate (dical) can be removed from the diet. Dical is currently priced over $.50/lb so 15 pounds is worth $7.50, the phytase enzyme is worth about $1.00 and 14 pounds of corn $1.26, so $7.50 worth of dical can be replaced with $2.26 worth of corn and phytase; a savings of $5.24 per ton in this example. If three pigs eat a ton of feed, savings per pig is $1.75.

The tradeoff is that considerable recent research has shown that phytase addition will **reduce P excretion from 25 to 35%.** A pig produces about 7 lb of phosphorus therefore 30% less is 2.1 lbs of phosphorus. If the price of phosphorus fertilizer in this example is $.88/lb, then the reduction in phosphorus fertilizer value in manure is $1.84 per finishing pig.

Phosphorus is typically in excess relative to nitrogen in swine manure in an every year application situation such as corn on corn, therefore extra phosphorus in the manure is not needed and is an environmental risk. However if manure is only applied every other year in a corn soybean rotation, manure is closely balanced in nitrogen and phosphorus needs of the corn soybean rotation. In this case, adding phytase to the ration generally reduces the manure phosphorus enough to start reducing phosphorus soil levels unless commercial phosphorus fertilizer is applied. Price ratios can change quickly so this calculation should be checked occasionally. As prices fluctuate rapidly, producers need to keep a sharp pencil to keep up with the changes. Dave Stender ISU Swine Field specialist is working on a spreadsheet that does these calculations. If you want to help beta test the spreadsheet send a note to Dave at dstender@iastate.edu.

Iowa State Fair 4-H Beef of Merit Results

By Dennis DeWitt, ISU Extension Livestock Field Specialist

The 2008 Iowa State Fair 4-H Beef of Merit show was down slightly from the past few years, but the quality and yield grades this year were one of the best. The 48 steers started last winter averaging 616 pounds and weighed 1308 pounds at the Iowa State Fair with an average daily gain of 3.14! Sixty nine percent were USDA Choice and 75% were yield grade 1 & 2. Ten percent Low Select & Standard are unacceptable quality. This year there were 3 dark cutters.

Seventy seven percent of the steers met all the guidelines for Window A-High Cutability Grid Market. That is outstanding! Only 6 (12.5%) steers met the Window B-High Quality Grid Market. This is below the industry average and this is an industry problem of having beef grade in the upper half of the Choice grade. This year we did have 2 Prime quality graded steers.

Matthew Whittle, Winneshiek County, won Window A- High Cutability Grid. His steer was 8th place in Class 2 of Window A in the live show. The Whittle steer weighed 1325 pounds with a 3.73 average daily gain. The Low Choice yield grade 1.97 steer had .45 inch backfat with a 16.4 square inch ribeye area. Logan Bauer, Audubon County exhibited the reserve champion Window A carcass. This steer placed 3rd in the live show.

Hannah Hibbs, Marshall County, won Window B-High Quality Grid with her black white face steer. Her 1345 pound steer gained 3.61 per day. The 850 pound carcass measured .40 inch backfat and 13.4 square inch ribeye area. This steer increased in carcass value over $4 per day! The Hibbs steer was exhibited in Window B of the live show and was 6th overall. Luke Petty, Tama County showed the live Window B Champion and was awarded the reserve champion overall Window B carcass.

Over $4000 in prize money was paid in premiums. The two champions are awarded $500 by the Sale of Champions Winner's Circle Club, Vermeer Manufacturing of Pella, Al & Jeanne Conover of Baxter and the Iowa State Fair.

You may view the results on the Internet. Access them through the Iowa Beef Center webpage at: http://iowabeefcenter.org

Now is the time to start selecting your beef of merit steer for next year. If you have any questions email me at dewitt@iastate.edu or call me at 712.336.3488.

Are Your Livestock COOL?

In light of mandatory country-of-origin labeling (COOL) taking effect Sept. 30, 2008, Iowa State livestock experts can help producers understand how they will be affected. "There's no need for producers to panic, but we should pay attention and be prepared," John Lawrence, Iowa Beef Center director, said. "Sellers are likely to ask for an affidavit stating the origin of the animal, but buyers' normal records should be sufficient to back up the affidavit." Visit www.iowabeefcenter.org to learn more about COOL.