Grain News

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Grain elevators, buyers on look-out for aflatoxin

Corn stressed by drought and high temperatures is at risk for *Aspergillus* ear rot, a powdery, olive-green mold that produces aflatoxin as a byproduct.

In the United States, this is normally only a concern in the southern states where the chances are greatest for dry, hot weather. However, this year's drought and high temperatures across the Midwest, where much of the country's corn crop is grown, has everyone from farmers to grain companies to ethanol plants on alert for aflatoxin.

Aflatoxin produced by the *Aspergillus* fungus is dangerous for humans and livestock at high levels. The U.S. Food and Drug Administration's (FDA) action level for aflatoxin is 20 parts per billion (ppb). One highly contaminated kernel in a 5-pound sample could result in more than 20 ppb aflatoxin.

All corn export shipments from the United States are tested for aflatoxin, and buyers can specify additional testing should they choose.

Jay O'Neil of Kansas State University noted that any graded grain, such as No. 2 or No. 3 U.S. corn, can contain only 20 ppb aflatoxin or less for it to be exported. "This is one way foreign buyers are protected," he said.

Should buyers choose, they can set a lower threshold in their negotiated contract.

O'Neil also said buyers can also specify a U.S. Federal Grain Inspection Service (FGIS) Cu-Sum Load Plan for their shipment. It offers a narrower tolerance for all grain quality standards and helps ensure a more consistent load.

In the United States, FDA has set use guidelines (chart) for corn containing aflatoxin. In general, they are based on maintaining performance and avoiding disease related to aflatoxin, except for dairy cattle in which prevention of aflatoxin residues in milk is the main concern. For example, human foods and feed intended for dairy cattle must contain less than 20 ppb.

In the United States, corn can contain up to 300 ppb aflatoxin depending on the target species that will be fed the corn. However, rules relating to aflatoxin can vary in different countries.

FDA guidelines for acceptable aflatoxin level in corn, based on intended use of that corn Source: Iowa State University

Intended use	Aflatoxin level (ppb)
Milk (Dairy Feed)	None detected
Corn of unknown destination	<20
Corn for young animals	<20
Corn for dairy cattle	<20
Corn for breeding beef cattle, swine, and mature poultry	<100
Corn for finishing swine	<200
Corn for finishing cattle	<300

While aflatoxin can kill livestock and poultry at high levels, more commonly it reduces the feed efficiency and reproductivity of livestock.

So far this harvest season, there have been reports of aflatoxin detected in central and southern Iowa, said Alison Robertson, who is in the plant pathology department at Iowa State University, Ames, Iowa. Levels ranged from 8 ppb to less than 200 ppb.

"Thus far, the problem does not appear widespread; however, fields across the state are at risk for

*See **Aflatoxin** on page 4*

Typical signs of *Aspergillus* ear rot from a field in southeast Iowa. Source: Iowa State University.

U.S. Grains Council • 20 F Street, NW Suite 600 • Washington, DC 20001
Phone: (202) 789-0789 • Fax: (202) 898-0522 • Email: grains@grains.org • www.grains.org

Corn crop update: Illinois

Yield estimates calculated by Kent Kleinschmidt on his farm in central Illinois average in the 110 to 130 bushel per acre range (6.9 tons to 8.2 tons per hectare). "There's some better and some worse, but if I end up with a 120 bushel average (7.5 tons), I'll be happy," he said.

Yields in a normal year, he said, would be in the 175-210 bushels per acre range, which equates to 11.0 tons to 13.2 tons per hectare.

Flat, black soil that had good subsoil moisture heading into the growing season will have the best corn yields overall this year, while corn planted on hillsides, terraces and rougher ground will see lower yields due to the drought and high growing season temperatures.

"I've got all those different soil types, so I expect to see a wide variability in yields this year, just like most farmers across the United States," said Kleinschmidt, a farmer from Emden, Ill.

Kleinschmidt said he expects to begin harvesting corn this week – early for Illinois but typical this year with the type of growing season farmers have experienced. "I had some neighbors already harvesting corn and they've reported yields between 70 to 160 bushels per acre," he said, which is 4.4 tons to 10.5 tons per hectare.

Monitors installed on harvesting equipment give a good estimate of yields as farmers move through the field harvesting corn. In some neighbors' fields, Kleinschmidt said, yield monitors went from 160 bushels per acre to 0 when they moved over poor soil. "The yield drop off over poorer soils is just that quick," he said.

As for test weight, Kleinschmidt said he expects corn in his area to be lighter than normal – but still within the range of the No. 2 Yellow Corn grade, which is 54 pounds per bushel or more. (No. 1 Yellow Corn is 56 pounds or more.)

"Test weights have been decent in our area," he said. "I also haven't heard of any issues with aflatoxin from farmers in the area, and I've scouted my fields pretty good and haven't found any aflatoxin issues, either."

Illinois farmer Kent Kleinschmidt.

State yield estimates

In its crop production report in August, the U.S. Department of Agriculture estimated yields in Illinois at 116 bushels per acre (7.3 tons per hectare) with total production in the state of 1.5 billion bushels (38.1 million tons).

This compares to last year when yields were 157 bushels (9.9 tons) and production was 1.9 billion bushels (48.3 million tons).

ProFarmer, a crop information and marketing service, conducts a popular crop tour in August each year as way to gauge crop conditions and yields.

The area ProFarmer tour participants surveyed had an average yield of 121 bushels per acre(7.6 tons per hectare), but when adjusted for the whole state, the company's estimate matched USDA's estimate. ♦

On the left is a small ear on Kleinschmidt's farm. On the right is a more normal ear of corn from the same field, showing the variability U.S. farmers are seeing this year.

Global grain buyers may need to examine options to meet goals

The unleashed "entrepreneurial proactiveness" of grain buyers will be on full display this year, with a healthy dose of risk aversion thrown in, according to Daniel O'Brien, an extension agricultural economist with Kansas State University.

"In other words, it is likely that grain buyers will weigh the net cost of grain buying plus logistical procurement costs across a full spectrum of grains they could buy to accomplish their goals," he said, whether that is for feeding livestock, food use or building up grain stocks.

He said the increase in world wheat feeding among former feed grain users is an example of buyers becoming more flexible in their purchasing strategies.

"The bottom line cost of comparative grain supplies net of logistical costs will be a large driver in these sorts of decisions to as large a degree as we have seen in recent years," he said.

As for strategies for buyers to lower costs, the options are relatively few – simply because grain futures and markets have already adjusted to the expected smaller U.S. corn crop.

Darrel Good, an economist at the University of Illinois, said buyers can work to reduce the quantity of grains they may need at this time by purchasing substitutes, operating more efficiently or by scaling back.
"Alternatives are always an option, especially in the feed sector," Good said. "Finding additional sources for protein or starch that are cheaper are key, but markets are pretty efficient and those kinds of options don't stay available for long."

Buyers may also be able to lower costs by delaying purchases as long as they can. "Prices for deferred contracts are lower than current pricing," he said, "yet that only works for those who don't need grain now."

It is likely grain prices will remain high at least through the end of the calendar year, Good said, with few chances for price breaks.

If there are any price breaks, they would seem very likely to be met with eager buyers in world export markets, O'Brien said.

"Overall, it will be a 'raucous year' of hand-over-hand competition to procure needed grain supplies in world grain markets," O'Brien said, "at least until we are fortunate enough to have some larger world feed grain, wheat and/or oilseed crops and begin to rebuild world stocks." ♦

Council's Tunisia office expanding

The U.S. Grains Council's office in Tunis, Tunisia, is expanding to serve a larger geographic region.

The Tunis office is managed by Cary Sifferath, senior regional director for the Council.

The office is taking over most of the areas served by the Council's former office in Amman, Jordan. The Amman office closed as of September 1.

The Tunis office can be reached at 9 bis Avenue Louis Braille, #A3, 1002 Tunis-Belvedere, Tunis, Tunisia. Telephone 011-216-71-908-622 or email tunis@usgrains.net.

India
U.S. Grains Council staff in the Kuala Lumpur, Malaysia, office are also serving contacts in India.

The Council's Southeast Asia office is headed by Adel Yusupov.

Amit Sachdev, the Council's consultant in India, remains in that position and can be reached at telephone 1-24-404-5892 or email usgcindia@gmail.com. ♦

Aflatoxin: Buyers on alert *from page 1*

aflatoxin considering the hot, dry conditions we had during pollination and are having now as much of the crop reaches black layer," she said of Iowa's corn crop.

Aflatoxin has also been detected in Missouri, Illinois, Nebraska, Indiana and Kansas. While levels vary, most are well below the 20 ppb limit.

For example, a private grain inspection service in Nebraska said most of the tests it has completed were zero or only 1 ppb, although a few were as high as 80 ppb.

"From what we've seen so far, aflatoxin does not appear to be a significant problem this year," O'Neil said. "However, we will know more once more of the crop has been harvested, and certainly we will keep an eye on it."

Only about 10 percent of the crop was harvested as of Sept. 2.

Robertson said the key for farmers who detect *Aspergillus* is to harvest the grain as soon as possible and keep the grain cool. That will prevent the fungus from growing and producing aflatoxin.

Still, grain elevators will be using black lights to detect the fungus on grain samples and then respond accordingly, including using test kits to quantify the amount in specific parts per billion.

Grain elevators can refuse corn that is over 20 ppb aflatoxin - unless they can segregate it from non-contaminated corn or they have a known approved use for it.

In the United States, corn-based ethanol plants, which produce distiller's dried grains with solubles (DDGS), generally have a lower aflatoxin threshold – even zero – because aflatoxin can be concentrated in the DDGS.

U.S. DDGS importers who are concerned can require aflatoxin testing and set limits in their purchase contracts. ♦