Crop Quality Hurt by Rains

Charles R. Hurburgh
Iowa State University, tatry@iastate.edu

Alison E. Robertson
Iowa State University, alisonr@iastate.edu

Follow this and additional works at: https://lib.dr.iastate.edu/cropnews

Part of the Agricultural Science Commons, and the Agriculture Commons

Recommended Citation

The Iowa State University Digital Repository provides access to Integrated Crop Management News for historical purposes only. Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user. Users should make their own assessment of the information and whether it is suitable for their intended purpose. For current information on integrated crop management from Iowa State University Extension and Outreach, please visit https://crops.extension.iastate.edu/.
Crop Quality Hurt by Rains

Abstract
This year continues the chain of years with unusual harvest conditions driven by rapid weather changes in the latter part of the growing season. In mid August, crops were significantly ahead of schedule in terms of maturity. Heat and moisture in May and June accelerated the pace of development, to the point that signs of maturity were evident by the 15th of August. Rains followed by above average temperatures began over Labor Day weekend, and have been repeated nearly every weekend to date. The forecast for the weekend of October 7 is more of the same – very heavy rains with intermittent warm, sunny and high humidity periods. The 2018 crop is now at a point where the wet conditions are affecting quality.

Disciplines
Agricultural Science | Agriculture

This article is available at Iowa State University Digital Repository: https://lib.dr.iastate.edu/cropnews/2501
Crop Quality Hurt by Rains

October 8, 2018

This year continues the chain of years with unusual harvest conditions driven by rapid weather changes in the latter part of the growing season. In mid August, crops were significantly ahead of schedule in terms of maturity. Heat and moisture in May and June accelerated the pace of development, to the point that signs of maturity were evident by the 15th of August. Rains followed by above average temperatures began over Labor Day weekend, and have been repeated nearly every weekend to date. The forecast for the weekend of October 7 is more of the same – very heavy rains with intermittent warm, sunny and high humidity periods. The 2018 crop is now at a point where the wet conditions are affecting quality.

In some areas, flooded streams inundated mature crops. Please see this ICM News article written on September 27, for guidance in handling these crops.

Corn moisture contents vary widely but field mold is showing up. Most field molds grow on corn after blacklayer; rapid drydown normally prevents significant further problems. Fields should be scouted for molds because some species have the potential to produce mycotoxins. Those fields should be harvested as quickly as possible, and dried rapidly without a long period of wet holding. Field molds normally do not grow in storage after drying but wet holding and slow drying can cause growth and toxin increases before the corn is dry. The lower temperature and air drying systems will have difficulty in the weather conditions predicted to continue for the next 10 days. Run bin dryers as warm as manufacturer recommendations allow, and try to fill bins in stages to reduce depth and increase drying rates in individual bins. Rotating fills may require documentation for crop insurance purposes, to identify grain traceable to specific fields.

Good descriptions and photographs of field molds, mycotoxins and their impacts are available at https://cropprotectionnetwork.org/library, in the training modules section.
A two-part narrated presentation on mycotoxin effects on animals and on handling and management for toxin-affected grain is available on the Iowa Grain Quality Initiative website.

A recommended scouting/sampling procedure for mold identification is given below:

- Check at least 100 ears selected from throughout the field.
- If more than 10 percent of plants have an ear rot, harvest the field early.
- Dry and cool harvested corn quickly.
- Test moldy grain for mycotoxins before feeding to livestock

This year, the highest risks for mycotoxins are for vomitoxin (DON) in northern and SW Iowa, and for some aflatoxin in SE Iowa (where drought conditions prevailed until after Labor Day).

The longer the wet weather persists the more risk of mold and toxins that there will be. The moderately warm temperatures forecast for the next 10 days will accentuate mold growth. Moldy grain does not automatically contain mycotoxins; some species are not toxigenic, and not all toxigenic species always produce toxins. This is why end users (ethanol plants, feed mills, wet mills) will be screening composite samples of early harvest deliveries to determine if there are concerns. The often-present “polka dots” from...
*Cladosporium* are an example of field mold, that will grade damaged but that does not produce a toxin.

Stalk strength is low; there will be increasing amounts of downed or broken stalks. Harvest downed corn first regardless of moisture content because mold growth is accelerated, and drydown rates are reduced. Consider cleaning this corn if possible because the larger mass of material through the combine will create more airflow clogging fines and foreign material. It is always recommended to remove the center of bins before long term storage. That need will be greater this year.

General corn quality is average at best, as indicated by test weights. The kernel fill was not as complete as last year; dry corn test weights probably will be around 54-56 lb/bu. This still meets grade standards but expect a shorter storage life than last year. Because of reduced fill and kernel size, protein contents will probably be below the 7.5% long term average. The critical management actions this year will be rapid drying without long holding periods and cooling as quickly as possible to preserve future storage life. Always, actions right at harvest are the most crucial in determining future quality the following spring and summer.

The table below shows the time-moisture and temperature relationship for safe storage.
Both temperature and moisture content are important in grain preservation, but often temperature control is the most immediately important if drying capacity is limited.

Soybeans experience fewer in field mold problems than corn, because field moistures are normally low (<13%). However, if the soak-dry cycles continue with more heavy rain, expect pod splitting and eventually grey colored beans. Freeze-thaw cycles would further accentuate the splitting but currently there are no forecasts for frost in the near future. Do not try to store field molded soybeans; the oil will become rancid and continued deterioration is likely. The grey beans will grade damage in the market, but likely will get worse in storage. Aerate them for cooling, then market them as soon as possible.

The same needs for removing the center core of bins and dropping the temperature as rapidly as possible apply to soybeans as corn. Notice in the storage time table above that soybeans spoil at a rate equal to 2% points wetter corn. Soybeans are normally 13-14% or less in the field.

Soybeans are often stored in unaerated bins or buildings; this removes both the cooling and drying capability of aerated bins. Wet fields and warm temperatures may require special handling to be sure that beans in unaerated bins are cool and dry.

None of these wet-conditions problems affect grain yield; that was established earlier in the growing season. The predicted high yields and corresponding long term storage will make at-harvest management very important this year. Future ICM articles will update...
these issues, and identify long term storage management needs as weather conditions develop.

*Links to this article are strongly encouraged, and this article may be republished without further permission if published as written and if credit is given to the author, Integrated Crop Management News, and Iowa State University Extension and Outreach. If this article is to be used in any other manner, permission from the author is required. This article was originally published on October 8, 2018. The information contained within may not be the most current and accurate depending on when it is accessed.*

**Category:** Grain Handling and Storage

**Crops:**
Corn  Soybean

**Tags:** grain storage  mold  wet conditions

**Authors:**

[Charles Hurburgh](https://crops.extension.iastate.edu/cropnews/2018/10/crop-quality-hurt-rains)
Professor, Agricultural and Biosystems Engineering

Dr. Charles R. Hurburgh, Charlie to most everyone, is a native Iowan from Rockwell City (Iowa, USA). He continues to operate the family farm, and is a professor of Agricultural and Biosystems Engineering at Iowa State University. He has a bachelor's degree, master's degree, and doctoral degree fr...

[Alison Robertson](https://crops.extension.iastate.edu/cropnews/2018/10/crop-quality-hurt-rains)
Professor of Plant Pathology and Microbiology

Dr. Alison Robertson is an associate professor of plant pathology and microbiology. She provides extension education on the diagnosis and management of corn and soybean diseases. Her research interests include Pythium seedling disease of corn and soybean and Goss's wilt. Dr. Robertson receiv...

[Erin Bowers](https://crops.extension.iastate.edu/cropnews/2018/10/crop-quality-hurt-rains)