

**CROP NOTES for September 17, 2009**

Past issues of Crop Notes are posted at:

<http://www.extension.iastate.edu/winneshiek/info/crops.htm>

**Iowa State University Extension Information for Northeast Iowa**

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## **WEATHER**

### **Degree Days for Corn**

From May 1 to Present:

Nashua = 2,139 GDD (393 below normal)

Cedar Rapids = 2,232 GDD (494 below normal)

## **GROWTH & DEVELOPMENT**

### **Corn Silage**

Most corn in northeast Iowa is ¼ to ½ milk line, 2 to 3 weeks from physiological maturity, but the ¼ to ½ milk line stage of maturity maximizes whole plant dry matter accumulation and forage quality. Corn silage harvest is underway.

When the ear is initially at full dent (all of the kernels have just dented), the kernels are at about ¼ milk line and the crop has about 3 weeks to black layer (safe from frost). Silage harvest begins anytime from ¼ to ½ milk line, but should be double checked on actual crop moisture with the appropriate equipment (Koster Tester, microwave oven, etc.). The most accurate means of checking silage moisture is with the Koster Tester. Information on this is available at: <http://www.kostercroptester.net/> Directions for using a microwave oven are included in the following publication: <http://www.cheboygancoop.com/animalscience/general/dr14.pdf>

Dry matter accumulation of grain for corn at ¼ milk line is about 75%, and at ½ milk line it is about 90%. Iowa State University has a publication that discusses grain harvest issues with corn and soybeans affected by an early frost. Go to: <http://www.extension.iastate.edu/Publications/PM1635.pdf>

There is still some late planted corn following the June 17 hail storm that currently ranges from milk to dough stage, with some of the most advanced of these plantings just starting to dent some kernels. Immature corn silage has less starch but more sugar than “normal” corn silage. The tons per acre is somewhat less, but quality is still very good. The greatest challenge is to accurately estimate percent moisture for proper ensiling (Koster Tester, microwave, etc.).

### **Corn Grain**

Dry matter accumulation of grain for corn at ¼ milk line is about 75%, and at ½ milk line it is about 90%. Iowa State University has a publication that discusses grain harvest issues with corn and soybeans affected by an early frost. Go to: <http://www.extension.iastate.edu/Publications/PM1635.pdf>

ISU has a color publication on staging corn, SR-48. It can be ordered at: <https://www.extension.iastate.edu/store/ItemDetail.aspx?ProductID=6065&SeriesCode=&CategoryID=15&Keyword>

Although, you may be more interested in the Purdue University’s website which include many photos explaining grain fill. The section on Dent Stage at this site discusses milk line. Go to: <http://www.agry.purdue.edu/ext/corn/news/timeless/GrainFill.html>

The Purdue University also has a nice website with discussion and photos on reasons for poor kernel set in corn;

go to: [http://www.agry.purdue.edu/ext/corn/news/articles.01/Krnl\\_Set-0820-Gallery.html](http://www.agry.purdue.edu/ext/corn/news/articles.01/Krnl_Set-0820-Gallery.html)  
And, an article from the University of Minnesota regarding hail damage and poor pollination:  
<http://www.extension.umn.edu/cropenews/2008/08MNCN23.html>

## **Soybeans**

<u>Stage of Development</u> <u>accumulation</u>	<u>Days to maturity</u>	<u>Approximate DM</u>
R6, One pod in top 4 nodes on the main stem filled	27	50%
R6.5 All pods in top 4 nodes on the main stem filled	18	89%
R7 One pod on main stem with mature color	7	98%
R8 100% of pods mature color	0	100%

The plant is basically “frost-safe” once it reaches R7 stage. For a complete explanation of stage of development in soybeans get ISU Extension publication PM-1945, “Soybean Growth and Development”.

<https://www.extension.iastate.edu/store/ItemDetail.aspx?ProductID=6451&SeriesCode=&CategoryID=20&Keyword>

Iowa State University has a publication that discusses grain harvest issues with corn and soybeans affected by an early frost, including dealing with “green beans” at harvest. Go to: <http://www.extension.iastate.edu/Publications/PM1635.pdf>

There is still some late planted soybeans following the June 17 hail storm that currently ranges from early R5 to early R6 stage. Soybean silage could be an option for those that feel their soybeans will never reach R6 before a killing frost. The following publication includes a discussion on soybeans for forage:

<http://www.extension.iastate.edu/Publications/RECOVERY40.pdf>

## **MOLDS & MYCOTOXINS**

With the considerable acres of hail damage, there are many concerned with what might be present in these fields regarding molds on grain or silage, and the potential of mycotoxin development from these molds. The concern is really with potential mycotoxin development. The presence of molds does not mean that the field has a problem with mycotoxins. Even if mycotoxins are present, as long as the concentration is known, the product’s use can still be maximized. Feeding guidelines are provided in numerous publications including the ISU Extension publication, Pm-1698 “Corn Ear Rots, Storage Molds, Mycotoxins, and Animal Health”. This is a full color, 15 page publication available through your County Extension Office for \$3.00. I have attached the mycotoxin concentration guidelines table from this publication with this Crop Notes.

## **Testing Silage**

There are many private testing labs available to send samples to, and many farmers may also send samples through their nutritionists. But if you choose to use the ISU Veterinary Diagnostic Laboratory, guidelines are provided below:

- 1) Minimum 2 lb. forage sample to be sent for testing. The better you can grab-sample subsamples from a field to create the 2 lb. sample, the better the sample will represent the situation.
- 2) Place the sample in a sturdy paper bag, or even a double paper bag... Do Not use a plastic bag. It could allow for increased mold and mycotoxin development during shipping.
- 3) Place the sample in a plastic lined box (plastic trash bag in a cardboard box, throw in some crumpled newspaper or paper towels around the bagged sample). Make certain that the box will not leak during shipping. That would create Homeland security issues and a penalty fee for shipment.
- 4) Include the Vet Diagnostic Lab sample submission form that is available at: [http://vetmed.iastate.edu/sites/default/files/vdpam/Veterinary\\_Diagnostic\\_Laboratory/Forms/TissueSubmission\\_2008-11j.pdf](http://vetmed.iastate.edu/sites/default/files/vdpam/Veterinary_Diagnostic_Laboratory/Forms/TissueSubmission_2008-11j.pdf) On this form, you only need to fill in your contact information at the top right of the front page, and then near the bottom of the back page check the box labeled “Chemistry / Toxicology”. On the line following “Chemistry / Toxicology” write in “Mycotoxins, Panel”, or to be more descriptive, I would write “Mycotoxins, Panel for corn silage sample”. This is the quantitative test for Aflatoxins, Ochratoxin, T-2, Vomitoxin, Zearalenone/Zearalenol. The fee schedule lists this test for \$75, and a lab processing time of 4 to 7 days. The fee schedule is available at: [http://vetmed.iastate.edu/sites/default/files/vdl/FeeSchedule\\_0.pdf](http://vetmed.iastate.edu/sites/default/files/vdl/FeeSchedule_0.pdf) And the “Mycotoxins”, “Panel” test is found in the third column a little more than half way down the page.
- 5) Mail the sample (UPS or US Postal Service) to the address at the top of the Vet Diagnostic Lab sample submission form. Package the sample as describe above. Overnight mail is not necessary.

One mold that you may have seen quite a bit of on standing hail-damaged corn plants is a black colored mold that developed on the dead tan/brown plant tissue. This kind of mold should not be a concern as far as any development of mycotoxins. These are largely saprophytes, which are fungi that decay dead material. These include Alternaria, Cladosporium and several others. The only concern with these molds is all of the dusty debris and spores that get kicked up with harvest that could cause respiratory issues. Take appropriate precautions to avoid breathing in too much of this.

### **Testing Grain**

Same guidelines as above, however you would not need the plastic lined box as long as the box does not have gaps for any grain or residue to escape.

### **HAIL DAMAGED WEB PAGE**

Just a reminder that the Hail Damage web page is still at:

<http://www.extension.iastate.edu/disasterrecovery/info/haildamage.htm>

#### **A few of the more recent postings include:**

Corn Silage Pricer: an Excel spreadsheet to estimate value of hail damaged silage. Its under the heading “Financial Issues” on the website.

[Risk of Mycotoxins Associated with Hail Damaged Corn](#)

(9/1/09) By Alison Robertson and Gary Munkvold, Iowa State University Department of Plant Pathology

## Quality Issues Related to Hail Damaged Crops

(9/10/09) By Charles R. Hurburgh, Department of Ag and Biosystems Engineering; Alison Robertson and Gary Munkvold, Department of Plant Pathology

### **GRAIN HARVEST ISSUES**

#### **Harvest, Drying and Storage**

The cool season may result in some similar harvest issues that we had last year with a somewhat late planted crop. Articles written last fall to deal with a somewhat wet crop at harvest may apply again to this fall. Two such articles from last fall include Dr. Hanna's article on combine adjustment tips for the 2008 harvest, and Dr. Hurburgh's article on corn quality issues. Both articles are linked below for your reference.

<http://www.extension.iastate.edu/CropNews/2008/0923hanna.htm>

<http://www.extension.iastate.edu/CropNews/2008/1023hurburghrobertson.htm>

Dr. Wilcke, University of Minnesota, also has an excellent website regarding grain harvest, drying and storage issues. It is available at: [http://www.bbe.umn.edu/Post-Harvest\\_Handling\\_of\\_Crops.html](http://www.bbe.umn.edu/Post-Harvest_Handling_of_Crops.html)

### **WHAT IS A KILLING FROST?**

**Corn & Soybeans** usually require 28 F for a complete kill. Frost killed plants can no longer accumulate carbohydrates in the grain so the maximum yield potential is reached. Temperatures above 28 F do not kill the entire plant, but will damage leaves and upper stem tissue. This reduces the photosynthetic area of the plant and its ability to transport carbohydrates from these areas to the grain.

Corn within one week of physiological maturity ("black layer") killed by frost would be at about ¾ milk line and suffer a yield loss of only about 3%.

Soybeans within one week of physiological maturity killed by frost would suffer a yield loss of about 5 to 10%. Soybeans within one week of physiological maturity is two-thirds through the R6 stage. Soybeans that still have green beans in the pods should be left in the field for normal dry down, and then left in storage long enough for the green beans to turn to the brown color.

**Alfalfa** usually requires 24 F to completely kill its topgrowth. Temperatures above 24 degrees F will cause visible damage, but the plant will continue to grow using the remaining leaf area. The main reason not to harvest alfalfa after a light frost is that the harvest would remove all of the leaf area, and the plant's continued development until a true killing frost and plant dormancy would be entirely at the expense of root reserves. To optimize plant development and its overwintering ability, allow the plant to grow until a killing frost or mid-October; whichever comes first. If no killing frost occurs by mid-October and a harvest is desired, harvest the forage. The short daylengths and cold autumn temperatures of mid- to late October will minimize the use of root reserves prior to the "soon-to-come" killing frost.

There is an old, persistent false-hood around that alfalfa becomes toxic following a frost. Alfalfa does not contain any "toxic" compounds that arise from exposure to frost. However, alfalfa can cause bloat, and immediately after a frost alfalfa's bloat potential is higher than normal. An oversimplified and very brief explanation for this is: Bloat is largely caused by a rapid release of soluble proteins into the rumen. Alfalfa has considerable amounts of soluble proteins. As cattle

eat alfalfa, their chewing action breaks up plant cells and slowly releases the soluble proteins into the rumen. If the cattle eat recently frosted alfalfa, they eat already-broken cells from the frost which rapidly releases soluble proteins (not a slow release), which increases the chance of bloat. Once the frosted parts of the plant dry, alfalfa's bloat potential is back to normal.

**Sudangrass & Sorghum-Sudan Hybrids** require 28 F for a killing frost, however even a "light" frost requires special management. Prussic acid accumulates in the frosted tissue within a few hours after thawing and wilting. A "light" frost may damage just the tops of plants. If this occurs, delay grazing or harvest a few days after frost to allow the prussic acid to dissipate from the plant tops. Livestock can be returned to frost injured sudangrass (18 inches or taller) and sorghum-sudan (28 inches or taller) after 5 to 7 days.

Sometimes a "light" frost enhances development of young shoots from the base of the plants. If this occurs, delay sending livestock to graze this forage since these new shoots would be high in prussic acid. Ideally, wait for the new shoots to get to a proper grazing height, but more than likely a complete killing frost will occur before that would happen. Once a complete killing frost occurs, wait at least 10 days (wait until the frosted tissue is drying out) before grazing or harvest.

If haying the forage, the curing process decreases the prussic acid content as much as 75%, which removes the feeding concern. If green-chopping the forage, chop only as much forage as the cattle will consume in 4 to 5 hours. Never green-chop the forage and let it sit on the wagon overnight. If ensiling, harvest at proper moisture for your storage structure to ensure good fermentation. This takes a minimum of 4 weeks. The fermentation process will reduce the prussic acid content. Since immature plants can contain higher prussic acid levels, leave this forage ferment for at least 8 weeks before feeding. Never allow horses to graze sorghums or sudangrass at any time.

## **INSECTS**

### **Soybean Aphid Update**

Once again this insect has done something that it has never done before in its 9-year history in Iowa. The research plot numbers at Decorah that reached about 2,000 aphids per plant starting on Aug 15, then leveled off, are still at about 1,800 per plant as of Sept. 13. Back in 2001-2005 this insect decrease sharply in population in late Aug. Last year the population did not increase until early August and hung on into early Sept. This year the insect followed last year's early Aug. start of the problem, but it has hung on through mid-Sept. This raises a few new questions as to how late we may have to deal with this pest. Although, the research trial at Decorah once again supports treating at the 250 threshold, in that our application of foliar fungicide on Aug. 3 resulted in aphid populations at sufficiently low levels even through this week so as to maximize control with just one application.

## **DISEASE**

### **Sudden Death Syndrome (SDS), White Mold and Brown Stem Rot**

All 3 of these diseases are present this year in parts of Northeast Iowa. In general, there is more SDS south of Hwy 3, and more White Mold north of Hwy 3 and towards the Mississippi River. What is important at this time is to identify which disease or diseases are present in your fields so that you can adopt management practices in the future to reduce these problems. These 3 disease have different "Best Management Practices", so identification is quite important. All 3 diseases

cause the same leaf symptoms illustrated at the following link:

<http://www.ipm.iastate.edu/ipm/icm/2006/9-18/sds.html> Assuming the leaf symptoms are found, identification of White Mold is obvious with the cottony growths that develop on the outside of the plants. Brown Stem Rot will cause the pith of the stem to be brown while SDS will still have a white pith.

Management tips for each of these diseases are:

SDS, go to: <http://www.ipm.iastate.edu/ipm/icm/2003/1-21-2003/sdsmanage.html>

White Mold, go to: [http://www.plantpath.wisc.edu/soyhealth/pdf/whitemold\\_06.pdf](http://www.plantpath.wisc.edu/soyhealth/pdf/whitemold_06.pdf)

Brown Stem Rot, go to: [http://www.plantpath.wisc.edu/soyhealth/pdf/bsr\\_06.pdf](http://www.plantpath.wisc.edu/soyhealth/pdf/bsr_06.pdf)

## **WEEDS**

### **Pasture Weed Management**

Just a reminder that this is a good time to tackle biennial, winter annual and perennial weed control in pastures. The link to the 2009 Pasture Weed Control Guide from SDSU is: <http://agbiopubs.sdstate.edu/articles/FS525P.pdf> It provides tables on weeds and product control ratings (pg 18), recommended rates, timing of application, grazing restrictions (pg 20), and more.

## **EVENTS**

### **Sept 23, Pasture-Walk Event, Garnavillo**

1:00 to 3:00 pm, hosted by Andy Schaefer on his farm at 25037 Lake Rd. The grazing field day will emphasize Andy's organic dairy, new swing-nine parlor, and late fall grazed stockpiled hayfields. Directions: From Garnavillo, go east on C17 3.5 miles, then south on 232 St. for 1.1 mile, then south on Lake Rd. for 2.3 miles.

### **Oct 7, Pasture-Walk Event, Decorah**

1:00 to 3:00 pm, hosted by William Pardee on his farm at 1558 Manawa Trail. The grazing field day will emphasize discussions on pasture-finished beef, converting CRP to pasture, and grazing Dexter cattle. Directions: From Decorah, go north on Locust Rd. 4 miles, then east on Canoe Ridge Rd. (A-38) 1.2 miles, then east on Middle Sattre Rd. 0.5 miles, then east on Manawa Trail 1.4 miles to the farm.

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