Crop Advisory Team
Alert
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Field Crop Advisory Team Alert

In this issue

Corn stalk nitrate test and N management

Darryl Warncke, Crop & Soil Sciences

The nitrate N concentration in the lower portion of the corn stalk at the time black layer formation occurs in the kernels is a good indicator of the nitrogen status the crop experienced throughout the growing season. The stalk nitrate test may also provide an indication of whether or not excess residual nitrogen is left in the soil. When used over a number of years, the stalk nitrate test can help identify N efficient fields or management systems, thus enabling fine tuning of N inputs.

As corn approaches maturity, plants stressed for N will move nitrate from the lower cornstalk to the ear resulting in a low stalk nitrate concentration. When corn plants have sufficient N or more than sufficient N for maximum yield, nitrate accumulates in the corn stalk. Extensive studies done by Purdue, Iowa State and Penn State universities have shown the usefulness of this test in distinguishing between sufficient and excess N situations. Their interpretation guidelines are given in Table 1. Both sets of studies showed that a stalk nitrate N concentration above 2,000 ppm is indicative of excessive nitrogen having been available to the corn crop. Quite often this is associated with the application of animal manure, but may also be related to over application of fertilizer N. In the Purdue studies, maximum yields were associated with stalk nitrate N concentrations above 450 ppm. Iowa State uses 700 ppm as the transition value. Above this value is considered the zone of "luxury" N consumption, i.e., no response to applied N. Values below 450 ppm have been associated with inadequate N being applied for maximum yield.

In N rate studies conducted at MSU over a three-year period, the stalk nitrate N concentration reflected the corn grain yield response and indicated when excess N had been applied. The total N concentration of the ear leaf at silking and the corn grain at harvest only showed when the N rate was too low or adequate, but did not reflect when excess N was applied. Hence, the stalk nitrate test is a better diagnostic tool. Even though it is post-mortem, it can be useful for long term adjustment of N management practices. Farmers are encouraged to try this test on a few fields with different N management practices. It can tell a lot about how N is being utilized by a corn crop. Over a few years, one can develop a good data base for evaluating the appropriateness of various N management practices. With the high cost of fertilizer N, elimination of excess N use improves the net return and provides a positive environmental situation.

Caution: Rainfall has been quite variable across Michigan this year. In areas that have

Table 1. Interpretation of the corn stalk nitrate N test. (*Concentration as ppm nitrate-N*)

Excessive	> 2000 ppm.		*Excessive N available to the crop, or some other production factor limited crop growth and yield.*
Optimum	450 to 2000 ppm (Purdue) 700 to 2000 ppm (ISU & PSU)		*Grain yield was not limited by amount of N available to the crop.*
Marginal	250 to 700 ppm (ISU & PSU)		*Nitrogen supply may have limited yield.*
Low	< 450 ppm < 250 ppm	(Purdue) (ISU)	*N was likely yield limiting during the growing season, especially < 250.*

Next issue: September 9

been very dry, corn plants are beginning to dry up and the ears are "maturing" due to lack of water. Under these conditions, the stalk nitrate test may not give a reliable indication of the N status of the plant.

Doing the test

The optimum time to take stalk samples is one to three weeks after black layer has formed in 80 percent of the corn kernels, although Penn State has found that samples can be taken starting at one-quarter milk line formation. Cut an eight-inch segment of the stalk, between six and 14 inches above the ground, from 15 stalks within the area of interest. As with soil sampling, sample within uniform areas. Sample areas differing in soil type, topography, management practices or other properties separately. Remove any portions of leaves that may remain attached. Split the stalk segments to facilitate drying. Lay the samples out to dry, preferably in front of a fan or refrigerate the stalk segments until the samples can be sent or delivered to a testing lab. Place the samples in paper bags. Do not use plastic bags as this will prevent drying and may result in spoilage. The testing lab will oven dry and grind the stalks prior to analysis. This service is provided by the MSU Soil and Plant Nutrient Lab (517-355-0218) and other private labs. Cost is $12 at the MSU lab. **IPM**

Planting winter wheat

Martin Nagelkirk, MSU Extension educator

The prospect of a new wheat season brings with it a sense of optimism. It is fueled by stronger market prices and the anticipation of timely planting. As planting time nears, it may be helpful to review some recommendations and suggestions.

Planting preparations

Achieving top yields requires a uniform stand of healthy seedlings. This is dependent on seeds being dropped as evenly as possible and at a uniform depth. Good seed placement, in turn, requires that fields are appropriately prepped, and drills receive disciplined inspection, necessary adjustments and deliberate calibrations.

Furthermore, because wheat planting usually coincides with row crop harvest, farmers should develop a plan that helps insure that enough attention, time and focus is placed on the planting operation. Several bushels of yield can easily be made or lost depending on the level of care taken at planting.

Planting date

Highest yields are most likely to be attained when planting approximately 10 days following the Hessian fly-free-date (ffd). Of course, the reality is that planting on anyone's preselected "best" date depends on weather conditions and when the preceding crop can reasonably be harvested. Nevertheless, it is important to be as timely as possible to insure that seedlings have sufficient time and warm weather to develop a strong root system and multiple tillers. Once 10 days have passed beyond the Hessian fly-free-date, yield potential tends to decline at least one bushel for each additional day of delay.

While the Hessian fly no longer poses a significant threat to wheat in Michigan, the Hessian fly-free-date is still a useful reference relative to wheat and disease development. Growers may do well to plant a fraction of their acreage within a few days of the Hessian fly-free-date. However, planting wheat prior to the Hessian fly-free-date is generally not encouraged as the crop may be at greater risk from viral and fungal diseases of the roots or foliage. *(Suggestion: reduce fertilizer nitrogen rates to 10 lbs. /acre or less when planting at or before the Hessian fly-free-date).*

Seed source

The best seed is certified and professionally treated. Where growers elect to plant their own seed, however, steps need to be taken to increase the odds of success: 1) reject grain from fields having any sign of a disease that can infect kernels internally (e.g. loose smut) or weeds whose seed tends to carry with the grain (e.g. cheat); 2) thoroughly clean the grain to remove small and light weight kernels; 3) submit the seed to a quality testing laboratory and 4) have the seed professionally treated with a fungicide (the exception here is that seed to be applied by airplane over soybeans should **not** be treated). *Reminder: it is illegal to provide bin-run or uncertified seeds to others.*

Inferior grain can sometime make acceptable seed. Examples include grain that has relatively high levels of DON or vomitoxin (assuming the seed is professionally cleaned and treated), and grain having a low level of sprouts or low falling number. In the latter case, it is important that the wheat be given a warm germination test and a stress test (Tetrazolium or Accelerated Aging), and that it is not held for the following year. Seed testing can be performed by the Michigan Crop Improvement Association. (517-332-3546).

Planting rate

It is generally recommended that growers plant 1.5 to 2.2 million seeds per acre. Seeding rates on the lower end of the range should be reserved for fields being planted early (within a couple days of the Hessian fly-free-date). As the planting season goes on, the seeding rates should become progressively higher. If planting continues into the second half of October, the seed rate should be increased to at least 2.0 million per acre. The seeding rates should also be adjusted upward when seed is known to be compromised by disease, sprout damage or condition.

Table 1 identifies the pounds of seed that a grower would need based on the seed count per pound and his target seeding rate. For example, if the seed bags specify that there are 14,000 seeds per pound and the target seeding rate is 1.8 million seeds per acre, 129 pounds of seed would be needed per acre.

Table 2 is useful when assessing the number of seeds being dropped by each 7.5 inch-spaced row unit. It is also helpful in observing the seedling population throughout the field (assumes a 90 percent emergence rate).

Seeding depth

Appropriate seeding depths usually range from 0.75 to 1.5

inches. The goal here is to achieve early and even emergence of the seedlings. Usually, a planting depth of approximately 1 inch will be deep enough to reach adequate soil moisture, provide for well anchored plants, and offer some protection against winter injury. A reasonable exception here is a grower who is working light or droughty soils and elects to plant at least 1.5 inches in order to reach soil moisture, particularly when it's relatively early in the planting season.

Tillage systems

Wheat establishment can be successful under conventional, minimum tillage and no-till systems. Generally speaking, no-till has won favor in recent years. It tends to result in more unevenness in the stand, but it can often provide improved moisture retention and less susceptibility to cold temperature damage. Tillage, even at a minimal level, can be helpful in distributing and incorporating residue, fertilizer and lime; and create a more uniform seedbed. Tillage can also be useful when attempting to reduce disease inoculum borne in crop residue (e.g. corn stubble or stalks infected with Fusarium).

Crop insurance reminders

Crop insurance continues to be an important risk management and marketing tool. Growers will likely be able to sign contracts for either the Yield (multi-peril) policy or the Revenue (CRC) policy in early September, but the formula market price under the Revenue policy will not be known until September 15. The sign-up deadline is September 30. To receive full coverage, wheat needs to be planted on or before October 25. **IPM**

Table 1: Relating seed size and seeding rates to the amount of seed required per acre

Seed size (seeds/lb.)	Target seeding rates (millions of seeds per acre)					
	1.6	1.7	1.8	1.9	2.0	2.1
	-------	Amount of seed required (lbs./ ac)				-------
10,000	160	170	180	190	200	210
11,000	145	155	164	173	182	191
12,000	133	142	150	158	167	175
13,000	123	131	138	146	154	162
14,000	114	121	129	136	143	150
15,000	107	113	120	127	133	140
16,000	100	106	113	119	125	131
17,000	94	100	106	111	118	124
18,000	89	94	100	106	111	117

* Seeds per ac /seeds per lb. = lbs. of seed per ac.

Table 2: Relating target seeding rate per acre to seed and seedling numbers (for 7.5 inch row spacing)

Target seeding rate (millions per acre)	Seeds per ft. of row[1]	Seedlings per ft. of row[2]
1.4	20.1	18.1
1.6	23.0	20.7
1.8	25.8	23.2
2.0	28.7	25.8
2.2	31.6	28.4

[1] Target seeding rate/ 43560 X 0 .625 = seeds per ft. of row (7.5" spacing).
Seeds per sq. ft. = target seeding rate/43,560.
[2] assumes 90 percent emergence

Soybean Sudden Death Syndrome seen in an alarming number of soybean fields in Southwest Michigan

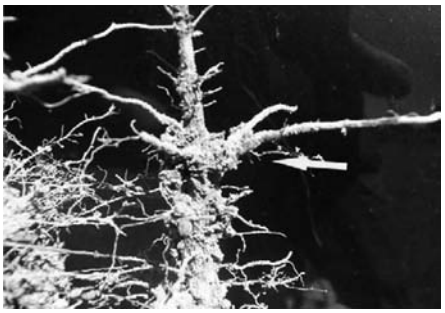
Bruce MacKellar, MSU Extension educator

Editor's note: This article was published to the web version of the Field CAT Alert *on August 20, 2010.*

Symptoms of soybean Sudden Death Syndrome have been popping up in a lot of soybean fields in southwest and south central Michigan, especially in southern Berrien, St. Joseph and Calhoun counties. Growers should be on the lookout for areas of the field that are exhibiting yellow and brown colored leaves in the upper plant canopy that appear to be prematurely drying down in fields. On closer inspection, plants will exhibit yellowing areas in the upper canopy, with severe symptoms showing browning tissue between the leaf veins. Initial symptoms may appear as yellowish spots on the leaves. Highly infected plants will show excessive yellowing or premature leaf drop and relatively sudden plant death. The primary damage from this disease is premature or aborted pod fill, which robs yields by preventing soybeans from sizing properly. How much yield loss occurs depends on how severely and how early the symptoms begin to develop in the field. In some fields, the disease may be appearing more in areas where compaction or early season standing water may have been an issue, especially along headlands of fields. In other fields, the symptoms seem to appear in pockets, more along the lines of what we see in soybean cyst nematode (SCN) infestations. Incidence of SDS has been closely linked to SCN. It may be a good idea to pull soil

Fields showing signs of SDS.

Two adjacent soybean varieties showing marked differences in tolerating SDS a research trial located near Decatur, Michigan.



SDS infected plants are showing blue to gray colored fungal growth in flecks on the root surface.

samples from the area of soybean root masses this fall if you have areas heavily affected by the SDS disease.

If you see signs of SDS in your fields **there is not anything you can do to treat the infection this season.** However, it is important to note both how widespread and severe the infection is so that you can make management decisions in future years. At this time, the two most important management tools you can use to reduce the impact of SDS in the future are:

1. Plant the most SDS resistant soybean varieties you can find in these fields.
2. Prevent soil movement from areas with known infection by pressure washing equipment between farms and between infected and non-infected fields.
3. Follow your rotation plan. Unfortunately, the limited research available shows that the pathogen can survive in the soil on residue, and rotation has not markedly reduced levels of SDS in fields in subsequent years.

There appears to be a great deal of variation between soybean varieties in their ability to tolerate SDS in highly infected fields. Our research this summer at a field site near Decatur has shown huge differences in symptoms, growth and yield potential between soybean varieties. Seed companies have been making significant efforts to screen for SDS resistance/tolerance in their breeding programs. They should have ratings for SDS resistance for the soybean varieties for 2011. You will probably have to ask them to provide a comprehensive rating comparison of their varieties for SDS, but they should be able to make one available.

This is one of the few times that a large scale scouting operation can be completed through a windshield at fairly normal speeds, so it will not take a lot of effort to look over fields in a short amount of time. This scouting however, must be completed fairly soon to distinguish SDS from areas naturally starting to turn color though the maturation process as early planted soybeans approach physiological maturity.

There is one caveat for this method of scouting. Not all yellowed pockets of soybeans in fields are caused by SDS. It is a good initial screening tool, but not the definitive answer. In driving a transect in Berrien County on August 18, there were plenty of other causes for yellowed soybeans, including manganese deficiency, potassium deficiency, spider mite damage and the lingering impacts of wet spots in fields. Be sure to look for the distinct yellow and brown pattern on the upper leaves. Even then, a disease called brown stem rot can create similar patterns on the leaves, but will exhibit a browning of the pith in the stem above the roots if the stems are split. SDS does not cause stem pith to turn brown. Also, if you dig the roots out and gently remove the soil from around the root mass, SDS infected plants are showing blue to gray colored fungal growth in flecks on the root surface, which is fairly evident this season (see yellow arrow on picture).

MSU and the Michigan Soybean Promotion Committee are hosting a field day at the Decatur SDS Research Plots on August 31 from 10:30 AM until around noon. You are welcome to attend if you would like to see how a severely infected SDS site impacts soybean yields on resistant and susceptible varieties. Speakers will include Dr. George Bird, MSU Field Crops Nematologist, Dr. Dechen Wang, MSU Soybean Breeder, Dr. Martin Chilvers, MSU Department of Plant Pathology and Keith Reinholt of the Michigan Soybean Promotion Committee. Light refreshments will be provided. The research site is located about ¼ of a mile east of 50th street on County Road 352, about 3 miles west of Decatur.

You can access more information on SDS from the MSU Department of Plant Pathology at the following website: http://ipmnews.msu.edu/fieldcrop/fieldcrop/tabid/56/articleType/ArticleView/articleId/3030/Soybean-sudden-death-syndrome-SDS-Fusarium-virguliforme.aspx **IPM**

Harvesting lodged soybeans

Mike Staton, MSU Extension and 2010 Soybean Coordinator and
Tim Harrigan, Biosystems & Agricultural Engineering

This year's soybean crop is taller than normal, increasing the potential for lodging to occur. Soybean producers should be especially careful when adjusting and operating their combines to minimize gathering losses this fall.

Some important recommendations for harvesting lodged soybeans are listed below:

- Decrease your ground speed to 2.5 to 3 miles per hour.
- Position the cutter bar as close to the ground as possible.
- Angle the pickup fingers on the reel back slightly to more aggressively pull the lodged plants to the cutter bar. Reduce the angle of the fingers if the plants are riding over the top of the reel.
- Run the axle of the reel 6 to 12 inches ahead of the cutter bar.
- Operate the reel as low as necessary to pick up lodged plants without causing them to ride over the top of the reel. Raise the reel if this happens.
- Consider installing vine lifters on the cutter bar if plants are severely lodged.
- If the plants are badly lodged in one direction, operate the combine in the opposite direction.
- Try increasing the reel speed in relation to the ground speed. The reel should run 10 to 25 percent faster than the ground speed under ideal conditions. However, if the beans are lodged, increase the reel speed up to 50 percent faster than the ground speed. Be careful not to beat the beans out of the pods before they reach the cutter bar.
- Make one adjustment at a time and stop frequently to evaluate how you are doing.
- Contact your local MSU Extension office if you would like information on estimating soybean harvest losses. **IPM**

U.S. agricultural labor statistics for summer 2010

Vera Bitsch, U.S. Agricultural Labor Statistics for Summer 2010

Each quarter, the National Agricultural Statistics Service (NASS) of the U.S. Department of Agriculture releases farm labor statistics for the national level and broken down by regions. This newsletter is based on the NASS release of August 19, 2010, and the data describe the situation during the week of July 11-17, 2010. While the data is considered reliable at the national level, data of individual regions often have a higher margin of error. In a time, when agricultural employers are looking for benchmarks to base their decisions on, this is the most current and comprehensive data available. For more details, the complete release is available at the NASS website (http://www.nass.usda.gov/). Select "Find NASS Publications" by "Title" or "Keyword" (Farm Labor).

During the survey week, the total number of hired workers is estimated at 1,244,000 individuals; that is down 1 percent from a year ago. In the reference week, 894,000 of these individuals were hired directly by farm operators. The average number of hours worked stood at 41.0, up 3 percent from a year ago.

The largest increases in the number of hired workers compared to last year occurred in California, and in the Northern Plains (Kansas, Nebraska, North Dakota and South Dakota) Corn Belt II (Iowa and Missouri), Appalachian I (North Carolina and Virginia), and Mountain II (Colorado, Nevada and Utah) regions. Above normal winter precipitation had provided California with more irrigation water, which allowed for more acreage. In the Northern Plains and Mountain II regions drier weather than during last year's reference week allowed field activities to progress. Cattle and poultry producers were hiring, in the Corn Belt II region. The Appalachian I region reported higher demand from the tobacco, vegetable and fruit industries.

The largest decreases in the number of hired workers compared to last year occurred in the Lake (Michigan, Minnesota and Wisconsin), Southern Plains (Oklahoma and Texas), Corn Belt I (Illinois, Indiana, and Ohio), Delta (Arkansas, Louisiana and Mississippi), and Appalachian II (Kentucky, Tennessee and West Virginia) regions. In the Lake, Corn Belt I, and Appalachian II regions, wetter conditions than during last year's reference week delayed field work. Heavy rains and flooding again caused problems in the Southern Plains. In the Delta region, reduced demand came from the nursery and greenhouse industries.

The trend of rising wages has picked up again. Hired worker wage rates were above a year ago in most regions. The largest increases in wage rates occurred in the Northern Plains, Northeast II (Delaware, Maryland, New Jersey and Pennsylvania), Corn Belt I and Southeast (Alabama, Georgia and South Carolina) regions. The average wage rate was $10.82 per hour, up 16 cent from a year earlier. Field workers received $10.12, up eight cents from last July. Livestock workers made $10.19, compared to $10.05 a year ago. These wage rates do not include the value of benefits. Increases were caused by a lower proportion of part-time workers, in the Northern Plains, Corn Belt I and Southeast regions, and due to a higher proportion of equine workers in the Northeast II region.

Hired workers include anyone, other than an agricultural service worker, who was paid for at least one hour of agricultural work on a farm or ranch. Worker type is determined by what the employee was primarily hired to do. Worker types are field workers, livestock workers, supervisors, and other workers (e.g., bookkeepers and pilots).

Field workers are employees engaged in planting, tending and harvesting crops, including operation of farm machinery on crop farms.

Livestock workers are employees tending livestock, milking cows, or caring for poultry, including operation of farm machinery on livestock or poultry operations.

Michigan, Minnesota and Wisconsin make up the Lake region. For the three states, the number of hours worked stood at 34.4 hours during the survey week, compared to 34.6 hours last year. The total number of workers, excluding agricultural service workers, is estimated at 64,000 individuals, compared 76,000 during last year's reference week. The average wage rate for all hired workers, including supervisors and other workers was $11.10 per hour. A year ago the average wage in the Lake region was $11.04 per hour. In this year's reference week, field workers earned $11.09, livestock workers earned $9.47 per hour, compared to $10.55 and $10.27, respectively, last year.

The lower number of individuals employed in this quarter's reference week, causes higher average wages, due to a lower number of seasonal, typically lower paid employees. Overall, the Lake region is in the top third of the wage distribution in this quarter with a wage average of 19 cents above the U.S. average. Wages have fallen below average for livestock workers by 72 cents, but are in the top three regions for field workers, 97 cents above the U.S. average.

In addition to analyzing wage rates by type of worker, NASS provides wage data by type of farm for ten regions with slightly different results. These data combine field workers and livestock workers, but exclude the other, typically higher paid, subgroups. Farm types include field crop farms, other crop farms and livestock or poultry farms.

The average hourly wage rates in 48 states, excluding Alaska and Hawaii; during this July's reference week were $10.14 overall, $10.17 for field crop farms, $10.05 for other crop farms, and $10.28 for livestock and poultry farms. Last year those rates were $10.04, $10.16, $10.05, and $9.95, respectively. Thus, wage rates for the 48 states show slight increases, except for livestock and poultry farms where wages have increased more, making up for their slowdown last quarter.

During the July reference week, the hourly wage rates in the Lake region were $10.45 for all farms, $11.14 for field crop farms, $11.36 for other crop farms, and $9.20 for livestock and poultry farms – excluding supervisors and other workers. During last year's reference week, the wages in the Lake region were $10.45 for all farms, $11.57 for field crop farms, $10.50 for other crop farms, and $10.07 for livestock and poultry farms. In conclusion, wages in the Lake region by type of farm are lower than last year for most groups, except other crop farms with an increase of 86 cents. The overall average by type of farm has stayed flat.

A farm or ranch is defined as a place that sells, or would normally sell, at least $1,000 worth of agricultural products during the year.

Field crop farms are farms producing wheat, rice, corn, soybeans, barley, dry beans, rye, sorghum, cotton, popcorn, tobacco or other such crops.

Other crops are farms producing vegetables, melons, berry crops, grapes, tree nuts, citrus fruits, deciduous trees fruits, avocados, dates, figs, olives, nursery or greenhouse crops. This category also includes farms producing potatoes, sugar crops, hay, peanuts, hops, mint and maple syrup.

Livestock or poultry are farms producing cattle, hogs, sheep, goats, milk, chicken, eggs, turkeys, or animal specialties such as furs, fish, honey, etc. **IPM**

1 – Southeast

Ned Birkey

Weather

It has mostly been dry with above normal temperatures. Rainfall for August has been below scarce, in contrast with measurable precipitation for 15 days in July.

Crop report

Alfalfa seeding during the latter part of August and early September is recommended and has started. Mature second and third cutting stands have been somewhat "stemy" this summer and hay sales are slack. Potato leafhoppers continue to be abundant. Farmers need to remember to fertilize with potassium and boron according to soil test recommendations and yields.

Corn is in the dough stage with black layer in advanced fields. Anthracnose, leaf rust and Northern corn leaf blight can be found in many fields, depending upon the varietal resistance. All corn insect pest trapping levels have significantly diminished the past two weeks and traps are being pulled out for the season. Some fields are mature and could be harvested within three weeks. Some corn will be harvested ahead of soybeans. No Gibberella ear mold is anticipated this fall, though stalk rots may be more common and some fields may have lodging problems if we get storms and high winds in early fall.

Soybeans will greatly benefit from an inch or more of rain for even the next couple of weeks as some fields still have blooms and all fields have small immature pods and seed development. Most fields are in the R5 stage and can still put on pods and rain will increase seed size. Sudden Death Syndrome is readily apparent, as is spider mite damage and soybean cyst nematode feeding.

Wheat acres will be up significantly based upon farmers reported intentions and seed sales. Some forward contracting in the $7 have been made.

Miscellaneous

August 31 is the date of a Fall Field Day at the Jerry Kuhl farm, 2834 Peckins Road, Chelsea, from 5:00 PM to 8:00 PM. Several corn and soybean plots will be shown and discussed at this site, along with a free ribeye steak supper at 7:30 PM. September 8 will be another field day at the Herb Smith farm, Minx Road, south of Ida Center Road, south of Ida, from 4:00 PM to 7:00 PM. Most of the same plots are replicated at both locations. All area corn and soybean farmers are welcome and invited to attend either or both field days. No reservations are necessary. A person from Qualisoy will be speaking at the Smith field day with a digital camera door prize. MSU ag meteorologist Dr. Jeff Andresen will give a La Nina fall forecast at the Jerry Kuhl field day. For more information or directions, contact Ned Birkey at 734-240-3172. **IPM**

3 – West Central

Fred Springborn

Weather

Weather across the region has been warm. Scattered rain showers have been hitting most areas though rainfall totals have been highly variable. Soils are generally quite dry as rainfall has not kept up with crop use.

Crop report

Corn silage harvest is under way. Much of the corn crop is far ahead of recent years in maturity. Nearly all fields are in dent stage. Western bean cutworm moth catch is down to zero, and we are pulling traps for the season. Larvae have pupated in most corn fields. One positive side to the dry weather is far fewer ear molds are being observed around wound sites in corn this year.

Dry bean harvest has begun, and early planted beans are generally yielding better than expected considering the root rot issues in the early plantings. The bulk of the crop will be ready to harvest in the next couple of weeks.

Soybeans are filling pods. Many fields are showing drought stress. **IPM**

Weather news

Jeff Andresen, Agricultural Meteorology and Geography

While the recent development of an upper air troughing pattern across the Upper Midwest is currently bringing relatively cooler weather to Michigan (Thursday, August 26, morning's readings in the 40's were the coolest temperatures since the beginning of July in many locations), most forecast guidance suggests the return of a ridging pattern across the region by this weekend similar to the predominant pattern of the growing season thus far. This pattern has led to abnormally warm and increasingly dry conditions across much of the state during the past several weeks. As can be seen in Figure 1, rainfall totals have varied greatly by location since late June, with some sections receiving heavy rains (e.g. northeastern Lower Michigan) while others have observed less than half of normal precipitation (e.g. northwestern and southeastern Lower Michigan). At the same time, temperatures have remained at above normal levels on an almost continuous basis (Figure 2). As a result, potential evapotranspiration rates have also remained at above normal levels with rapidly declining soil moisture levels leading to the development of drought stress symptoms during the past couple of weeks.

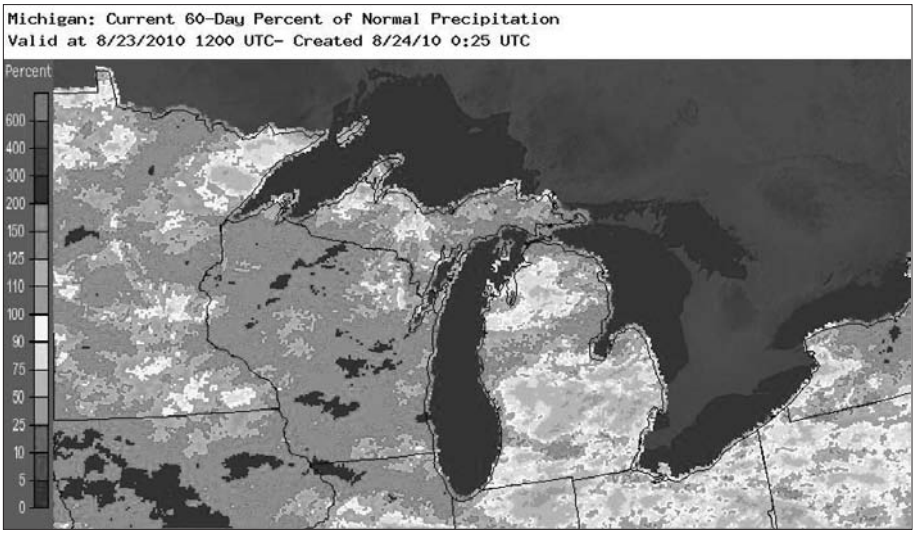


Figure 1. Percent of normal precipitation (%) from June 24 to August 23, 2010. Figure courtesy of NOAA National Weather Service, National Hydrologic Prediction Service (http://water.weather.gov/precip/).

In the forecast, high pressure across the region will lead to another sunny and dry day Friday, August 27. The center of high pressure is forecast to shift eastward of Michigan by Saturday, August 28, which should result in more fair, dry weather with gradually increasing temperatures through early next week. High temperatures Friday will reach the upper 70's to near 80°F statewide, increasing to the low 80's north to near 90°F south by Sunday, August 29. Lows are forecast to warm from readings in the 50's Saturday morning to the lower or mid-60's Monday, August 30. More warm and dry weather is expected for at least the first half of next week, with the next chance for significant rainfall by Wednesday or Thursday, September 1-2.

In the medium range time frame, the forecast guidance is suggesting upper air troughing across the western United States with southwesterly flow across the Midwest. Both the **6-10 day** for August 28- September 4 and **8-14 day** for September 2-8 outlooks call for above normal mean temperatures and above normal precipitation totals..

New NOAA long lead outlooks for the next few months are based heavily on La Nina conditions, which developed across central and eastern sections of the equatorial Pacific during July. Nearly all forecast guidance now suggests that La Nina conditions (with a deep surface layer of cooler than normal ocean temperatures in this region) will continue through the upcoming winter months into early 2011. The new outlooks for September and the three-month September through November period are very similar to the previous outlooks, calling for the likelihood of warmer than normal mean temperatures across much of Michigan and the Great Lakes region. The outlook for precipitation is vague, with near equal odds of below-, near-, and above-normal precipitation totals indicated for all of Michigan through the upcoming fall

months. As noted earlier, these outlooks strongly suggest that the large surplus of seasonal growing day units that has accumulated this season and the advanced crop and insect phenological stages that have resulted will continue through the end of growing season. **IPM**

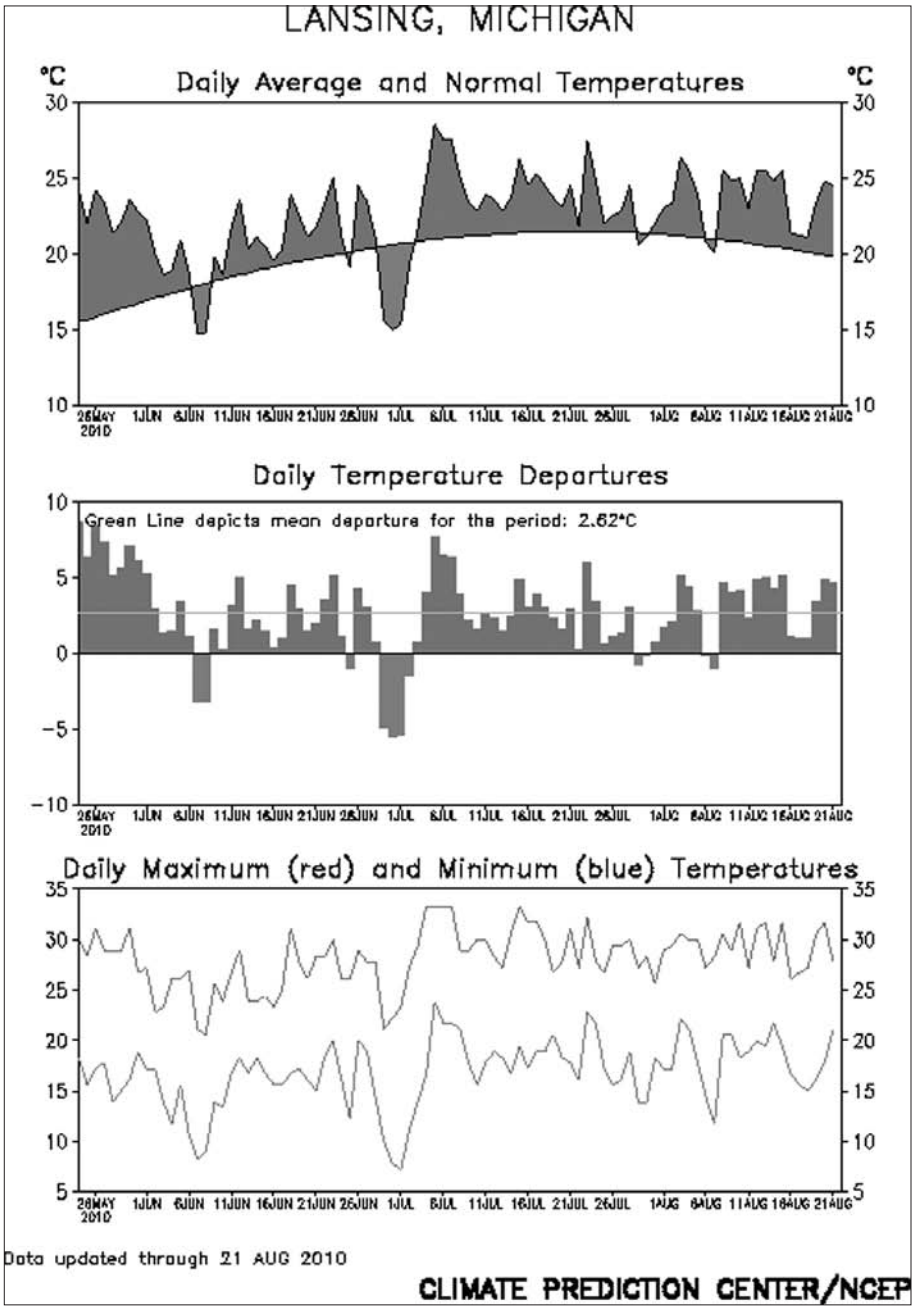


Figure 2. Daily observed versus normal temperatures at Lansing, Michigan, May 21 to August 21, 2010. Figure courtesy of the NOAA Climate Prediction Center (http://www.cpc.ncep.noaa.gov/products/global_monitoring/temperature/global_temp_accum.shtml).

ACTUAL AND PREDICTED DEGREE-DAY
ACCUMULATIONS SINCE MARCH 1 2010 (*)

STATION OR DISTRICT	BASE 42 BE DEGREE-DAYS AS OF 08/24 2009	2010	BY 08/29	BY 09/03	BASE 50 BE DEGREE-DAYS AS OF 08/24 2009	2010	BY 08/29	BY 09/03
WEST UP NORMS**		2369	2485	2592		1492	1569	1639
MARQUETTE	1995	2743	2819	2946	1159	1735	1780	1860
STEPHENSON	2349	3073	3158	3301	1445	2040	2093	2187
EAST UP NORMS		2146	2257	2361		1287	1359	1426
CHATHAM	1952	2684	2759	2882	1129	1684	1729	1805
SSMARIE	2064	2905	2987	3119	1181	1832	1881	1964
N.W. LP NORMS		2612	2737	2856		1678	1767	1849
PELLSTON	2163	2918	2997	3132	1304	1908	1957	2047
N.E. LP NORMS		2556	2678	2796		1626	1711	1789
ALPENA	2370	3036	3117	3258	1453	1990	2040	2133
HAWKS	2283	3008	3088	3228	1390	1968	2018	2109
ROGERCITY	2369	2900	2978	3112	1438	1877	1924	2012
W. CENT. LP NORMS		2846	2979	3106		1867	1961	2049
FREMONT	2745	3477	3577	3731	1714	2353	2421	2527
HART	2624	3337	3433	3581	1618	2235	2300	2400
LUDINGTON	2470	3188	3280	3421	1483	2107	2168	2262
MUSKEGON	2991	3725	3833	3997	1928	2574	2649	2764
CENT. LP NORMS		2931	3065	3192		1942	2036	2124
ENTRICAN	2706	3399	3500	3653	1684	2301	2369	2474
E. CENT. LP NORMS		2948	3085	3215		1957	2054	2144
SAGINAW	2918	3671	3784	3958	1866	2552	2632	2756
STANDISH	2552	3246	3346	3500	1576	2181	2249	2355
S.W. LP NORMS		3215	3360	3502		2170	2275	2377
ALLENDALE	2782	3456	3556	3716	1743	2331	2400	2513
BHARBOR	3122	3705	3813	3984	2028	2553	2629	2752
FENNVILLE	2898	3548	3651	3815	1842	2407	2478	2595
GRAPIDS	3183	3873	3986	4165	2091	2704	2784	2915
HUDSNVLLE	3112	3678	3785	3955	2025	2513	2588	2709
NUNICA	2896	3501	3603	3765	1852	2388	2459	2574
SOUTHBEND	3374	3937	4051	4234	2254	2746	2827	2960
S. CENT. LP NORMS		3155	3296	3432		2126	2228	2325
COLDWATER	3193	3753	3862	4032	2100	2595	2671	2793
ELANSING	3027	3548	3651	3812	1944	2419	2490	2603
S.E. LP NORMS		3164	3308	3445		2131	2235	2333
DETROIT	3376	4019	4132	4314	2239	2833	2913	3045
FLINT	2949	3704	3808	3975	1884	2572	2645	2764
HELL	3021	3603	3705	3867	1953	2474	2544	2659
LAPEER	2849	3488	3586	3744	1814	2387	2454	2565
ROMEO	2939	3597	3698	3861	1887	2471	2541	2656
SALINE	3035	3589	3690	3852	1968	2460	2530	2644
TOLEDO	3398	4031	4145	4326	2266	2852	2933	3065

* Since weather data for some agricultural stations are not available prior to April 1st, GDD values for those stations during February and March are estimated with closest available station data.
** District normals were calculated as the mean of daily GDD totals at several stations within each district for the period 1951-1980.

Report generated at 09:22, 08/25/10

Michigan State University Cooperative Agricultural Weather Service
Cumulative Precipitation Summary For 08/24/2010

PRECIPITATION TOTALS SINCE

STATION	DIST	08/18/2010 (last week) Actual	08/11/2010 (last 2 weeks) Actual	Dev. Norm.	07/28/2010 (last 4 weeks) Actual	Dev. Norm.	04/01/10 (since Apr.1) Actual	Dev. Norm.
MARQUETTE	WU	1.45	2.52	1.08	4.51	1.39	18.71	3.32
STEPHENSON	WU	0.49	0.58	-0.86	2.50	-0.62	17.90	2.51
CHATHAM	EU	1.45	1.63	0.17	2.32	-0.78	16.61	2.09
SSMARIE	EU	1.64	2.47	1.01	3.95	0.85	13.02	-1.50
PELLSTON	NWL	1.56	2.77	1.53	4.10	1.51	16.75	3.17
ALPENA	NEL	1.10	1.48	0.28	2.73	0.04	17.14	3.46
HAWKS	NEL	2.06	2.44	1.24	4.08	1.39	15.72	2.04
ROGERCITY	NEL	2.11	2.70	1.50	4.51	1.82	20.57	6.89
FREMONT	WCL	1.09	1.32	-0.24	1.79	-1.25	11.29	-2.72
HART	WCL	2.11	2.74	1.18	3.19	0.15	16.69	2.68
LUDINGTON	WCL	1.64	2.65	1.09	3.07	0.03	16.00	1.99
LUDINGTON	WCL	1.64	2.65	1.09	3.07	0.03	16.00	1.99
MUSKEGON	WCL	0.90	1.55	-0.01	1.79	-1.25	14.78	0.77
ENTRICAN	CL	0.44	1.54	0.03	2.69	-0.41	13.07	-1.86
SAGINAW	ECL	0.64	2.22	0.97	2.71	0.07	14.79	1.31
STANDISH	ECL	0.57	1.90	0.65	2.70	0.06	20.03	6.55
ALLENDALE	SWL	0.66	1.22	-0.15	1.97	-0.88	19.33	3.80
BHARBOR	SWL	0.36	0.36	-1.01	1.52	-1.33	13.83	-1.70
FENNVILLE	SWL	0.57	1.06	-0.31	1.87	-0.98	23.98	8.45
GRAPIDS	SWL	0.62	1.27	-0.10	1.61	-1.24	22.02	6.49
HUDSNVLLE	SWL	0.35	0.49	-0.88	1.16	-1.69	19.02	3.49
NUNICA	SWL	1.35	1.70	0.33	2.42	-0.43	20.21	4.68
SOUTHBEND	SWL	0.48	0.54	-0.83	1.25	-1.60	20.00	4.47
BATH	SCL	0.02	0.20	-1.35	0.48	-2.64	12.48	-3.09
COLDWATER	SCL	0.16	0.41	-1.14	0.97	-2.15	16.80	1.23
ELANSING	SCL	0.04	1.03	-0.52	1.37	-1.75	16.00	0.43
DETROIT	SEL	0.25	0.55	-0.95	1.05	-1.88	19.19	4.13
FLINT	SEL	0.01	0.13	-1.37	0.32	-2.61	13.45	-1.61
HELL	SEL	0.05	1.27	-0.23	1.90	-1.03	25.61	10.55
LAPEER	SEL	0.61	0.69	-0.81	1.44	-1.49	15.28	0.22
ROMEO	SEL	0.40	0.43	-1.07	0.76	-2.17	13.43	-1.63
SALINE	SEL	0.39	1.25	-0.25	1.71	-1.22	22.48	7.42
TOLEDO	SEL	0.77	1.38	-0.12	2.63	-0.30	21.13	6.07

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