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Planting Season 2009 -- A wet start delays but does not prevent planting for most of Southwest Michigan

Despite a wet start, we have managed to stay relatively on track in St. Joseph County this spring. Not that there haven't been challenges. There are more wet spots, muddy wheel tracks and abandoned wet holes this year than in any growing season I can remember here in St. Joseph County on our well drained soils. The bright side may be that we have not had to spend much time irrigating anything except potatoes at this point.

The crops seem to be growing fairly well right now in this part of the St. Joseph River Valley. Early planted commercial corn is now in the 5-6 leaf collar stage of growth. Early planted soybeans are roughly in the V2-V3 growth stage (1-2 tri-foliates on the main stem extended). Corn at this growth stage is poised for explosive growth, so we will be working on side-dressing nitrogen very soon.

Field Crop Insects: Crop insect activity has been light so far this year, but we have recently found soybean aphids in low to moderate numbers in the Lansing area.

Alfalfa: Potato leafhopper numbers are on the rise: Keep an eye out for increasing numbers of PLH on re-growth alfalfa and be prepared to spray if you see leafhoppers in small alfalfa. Asiatic Garden Beetle white grubs seemed to have caused less damage in commercial corn fields this season but were found in high numbers in alfalfa stand losses in a couple of fields in south central St. Joseph County. We have had some success monitoring for the presence of adult Asiatic Garden Beetles in Western Bean Cutworm Traps (milk jugs with cut open sides) with propylene glycol (pink) RV antifreeze mounted on fence posts. If you have recently seeded an alfalfa stand or are considering a fall seeding, it may be prudent to consider monitoring for adult beetle activity around the border of your fields to in Mid July – Early August.

Corn: We are approaching the window when Western Corn Rootworm eggs should begin to hatch in earnest in a week or so. We will continue to monitor trap catches for Western Bean Cutworms and the Western Corn Rootworm variant this summer in southwest Michigan Fields.

Soybean Yield Contest: We purchased a used weigh wagon this last year to help with our on-farm research projects and it can also be used for the 2009 Michigan Soybean Yield Contest, which is sponsored by the Michigan Soybean Promotion Committee and MSU Extension. There are both dryland and irrigated categories in the contest, so if you have excellent soybean yields, please consider entering a field in the 2009 Contest. For details, see the attached form in this newsletter. Entry deadline is August 1, 2009.

Early Corn and Soybean Growth

Sometimes as producers we get so focused on the jobs at hand on the farm that we don't have time to really think much about in field factors that effect the growth of the crop.



Corn: When corn is planted into fields with a d e q u a t e moisture, it takes approximately 100-120 GDD's (heat units) for the seedlings to emerge. The seedling root (radicle) grows at the same time that the shoot (Coleoptile) grows to the surface of the soil. Seminal (seedling) roots grow from behind the shoot. The plant's main root system (nodal roots) do not really develop before the 2nd leaf collar stage until about V6. However, insect damage or environmental challenges that impact seminal root growth of the early seedlings can cause stunting of the seedling that can impact the growth and vigor of the plant all season long. Challenges from sidewall compaction of the seed channel, seed corn maggot or white grub feeding, excessive cold, cloddy soils that let light down to the developing shoot, and certain herbicides can really affect corn seedling growth and development at this early stage. The growing point stays roughly at or below the soil surface until the plant reaches the 4 leaf collar stage (V4). Embryonic tassel formation in the plant occurs at the 5 – 6 leaf collar stage (V5-V6). Uppermost ear shoots are thought to develop at around the same time. Stress induced kernel row number reduction for the uppermost ear shoots (harvestable ears) are thought to be determined between V6 and V8. The number of kernels per row is thought to be

determined by V15, but could be set as early as V12. While environmental stresses are usually more critical during pollination and early grain fill, stresses occurring in the mid to late vegetative growth stages can have impacts on corn yield potential.

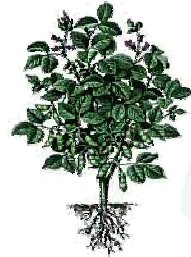
Soybeans: Germination occurs when the seed imbibes about 50% of their weight in water. Emergence often occurs within 5-10 days of planting, depending upon temperature and moisture conditions. With a trend towards earlier planting dates and reduced seeding rates, preliminary research conducted by Dr. Shawn Conley at the University of Wisconsin showed that 50% emergence of a group 2.6 soybean occurred at 130 GDU's and 90% emergence at 155 Soil Temperature GDU's (Base 50).

Soybean growth begins with the seed root (radical) and then the (stem) hypocotyl. The seed leaves (cotyledons) are pulled upward by the stem. The first part of the plant to emerge is the stem, which forms the crook that must straighten out for soybeans to emerge. Crusting or deep planting can cause the plants to run out of steam before the seed leaves are pulled out of the soil. It takes an additional 10 days or so to go from first emergence to V1 (uni-foliolate leaf emergence)

Soybean root hairs and lateral roots grow out of the seedling root. The seed leaves provide the energy for the plant for about 10-12 days after the cotyledons are out. The plants start becoming self sustaining around the uni-foliolate (V1) growth stage. Tri-foliolate leaves off the main stem are used to determine the vegetative growth stages of soybeans. The plants will add a

“V” stage about every 5 days through V5, and around every 3 days from V6 through the reproductive phases. Plants will begin to form nodules at around the V1 growth stage, and become decent at providing nitrogen at V2 (6-8) inch plants.

The largest challenges early in the growth stages for soybeans occur because of factors that cause stand loss. Since the growing point is exposed from the time the seed leaves are hauled above the soil surface, damage from frost, cutworms, deer and geese browsing and other factors can



mean stand losses and potential yield reductions. Once the plants have begun to produce tri-foliolate leaves, they can generally tolerate loss of leaf tissues and remain viable. Seedlings are also vulnerable to a number of diseases, including pythium and rhizoctonia on lighter soils, as well as phytophthora on heavier ones, which can cause stand losses.

The early growth of corn information was summarized from several articles written by Purdue Corn Agronomist, Dr. Robert Nielsen. You can visit Dr. Nielsen's excellent website, the Chat n' Chew Café on the web at: <http://www.agry.purdue.edu/ext/corn/cafe/>

Early soybean growth and development information was compiled from several sources, including University of Wisconsin Soybean Agronomist Dr. Shawn Conley. You can find Dr. Connelly's work on the UWEX website at: <http://soybean.uwex.edu/index.htm>

Corn Every Color But Dark Green...

This spring has been notable for wet and cloudy weather. It has also been notable for the number of different colors we have been able to find in corn leaves. Corn seedling leaves ranged from green to whiteish yellow, pink to purple-dark red in pockets of fields in St. Joseph County this year. Luckily for us, most of the causes of this discoloration are likely to be temporary and most should not have significant yield impacts. Let's discuss potential causes for corn discoloration from light to dark on the color spectrum for some of the most common reasons for off color corn seedlings.

Yellowed Corn:

Cool, cloudy and very wet conditions associated with the rains have left corn and other plants very "soft" this spring, which leads to some yellowing of the leaves.

We have also likely lost some of the available nitrogen applied as starters, or even perhaps manure, from leaching and de-nitrification. Remember, de-nitrification is the loss of soil nitrogen which occurs on warm soils when water ponds for 2-3 days.

Pre-emergence herbicides can cause some yellowing in the leaf tissue. This may be more pronounced in areas where soils have the least amount of organic matter, or are the sandiest. Pockets of differences in pH can also impact herbicide impact on plants.

White grubs feeding on roots can lead to yellowed leaves and uneven stand height. This sort of impact is often seen as very localized in patches of the field, and will most likely occur in fields that were rotated from soybeans or perhaps alfalfa.

Needle nematodes also can cause patchy yellowed and stunted growth in sandy soils. These pests often are associated with continuous corn. They generally tend to stay in infested areas of fields, so it may be worth checking for them if you have problem spots year after year in corn fields.

Yellow Striped Corn:

Magnesium deficiency has also been fairly common this year. It has been showing up on the lightest textured portions of fields or on areas that perhaps had less dolomitic limestone applied. Severe symptoms include very reddish colored lower leaves, that may show white spots on them. These areas will re-occur, and soil samples should be taken to look at the soil pH and magnesium levels. If you find severe deficiency symptoms, you can foliarly apply magnesium sulfate (epsom salts) to provide some relief for the current growing season.

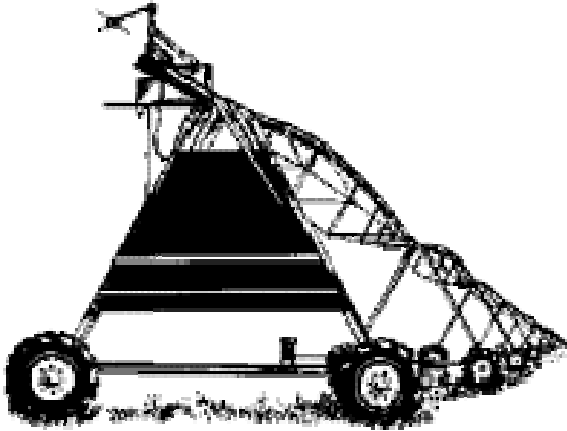
Purple or Dark Red Corn:

Purpling corn as a function of environmental stresses is fairly common in our soils. This stress may be caused by excessive wet soils, excessive dry soils, slight herbicide injury, compaction in the seedling root zone, etc. A return to bright sunlight and cool nights following a stress may really make these symptoms stand out in a field. The purple color is caused by the build up of sugars in the leaf tissue, and can be an indicator of a period of slower growth of the seedlings.

Purpling of leaf tissue in seedlings can also be an indicator of a lack of phosphorus in the soil. This can have longer term impacts on yields. Soils should be tested on a regular basis to monitor soil phosphorus and potassium levels.

The good news for almost all of the above symptoms is that they are generally temporary in nature. Corn plants at the V1-V5 stage of development are working on a lot of cell division in both the shoot and the roots, and as the plants grow, they reach the "Rapid elongation phase". This means that growth of the roots and shoots really takes off. Many of the soil fertility issues are greatly improved as the roots are able to extract nutrients as they expand into new soils or as nitrogen is applied.

How to Get More Out of Your Irrigation System



Most irrigators think of irrigation management as reducing or removing the impact of drought. Consider the following eight irrigation management factors to maximize your return on irrigation investments.

Make sure your irrigation application is uniform. There are easy catch can systems available to evaluate the uniformity of the application of your system. Make sure to make the correction.

Know your actual application. The catch can system available to evaluate the uniformity of the application of your system will also tell you the actual application rate. Your system provider or the website below can provide you with

tools to print a corrected percent timer chart if needed.

Assure yourself of an adequate water supply. Five gal/minute/acre pump capacity (.25 in./day) will meet all crop needs except for hot long dry spells of 15 days or more. That means a 500 gal/minute pump can provide 1" every 4 days on 100 acres. Avoid legal challenges or neighbor complaints that may reduce your availability to water.

Schedule irrigation applications. Have a plan to determine the appropriate amount of water to be applied to a crop at the correct time to avoid yield loss and conserve water. Under watering will reduce yield potential leaving valuable crop inputs under utilized. Over watering can waste nature resources and potentially push nutrient out of the root zone. Several irrigation scheduling tools are available at the website.

Use irrigation to lessen stand loss due to soil crusting. Apply ½ inch in most irrigated soil at the appearance of first spike if crusting is hampering emergence. Maintain a moist soil surface with small application till crop emerges.

Get maximum effectiveness of soil applied herbicide. Irrigate with ½" or more to activate herbicide within 48 hours if rain is not expected.

Reduce nitrogen fertilizer loss to volatilization. Water in nitrogen application with ½" or more of irrigation water to move nitrogen into the soil.

Consider fertigation to apply at least part of the nitrogen budgeted for the year. Split nitrogen applications reduce potential of early season loss during wet periods. Fertigation allows nitrogen application right when maximum nitrogen is used by the crop, with low labor and fuel use and no compaction of the soil. Make sure the system application is uniform and correct backflow safety valves and safety shut-downs are in place to protect the water supply for you and the neighbors.

Website Information Available: For more information on each of these irrigation management practices go to the St. Joseph County MSU Extension Irrigation website at <http://www.msue.msu.edu/stjoseph/> follow the Irrigation link on the left column of the page. Once on the irrigation website you should be able to locate all the items talked about in this fact sheet. If more information is needed contact Lyndon Kelley at 269/467-5511.

Soybean Weed Control Tips

Below is a summary of MSU's Soybean Weed Control Recommendations from MSU's E-434 "Weed Control in Field and Forage Crops", written by Dr. Christy Sprague, MSU Soybean Weed Control Specialist.

For Glyphosate Resistant (Roundup Ready) soybeans:

- Glyphosate should be applied at a minimum rate of 0.75 lb a.e./A in *Roundup Ready* soybeans. Rates may need to be increased to 1.1 – 1.5 a.e./A to adequately control larger common lambsquarters or giant ragweed.
- Glyphosate herbicides have different surfactant packages. If the product you are using does not contain a surfactant, consider adding a non-ionic surfactant at 0.25% by volume.
- Optimal timing of Glyphosate application is by the time annual weeds are 4 inches tall in narrow-row soybeans (7.5 and 15 inch rows) and 6 inches tall in 30-inch-row soybeans. Controlling weeds at this size limits risk of reduced herbicide effectiveness because of stress conditions and excess plant size.
- DO NOT let weeds compete for longer than 6 weeks after soybean planting, or soybean yield may be reduced.
- Addition of ammonium sulfate (17 lb/100 gal) should always be added to all glyphosate products. Use of AMS will minimize effects of hard water and improve weed control (especially on velvetleaf). It is especially important if weeds are under stress (drought, stem boring insects, leaf coverage issues) or larger than heights listed above.

A second glyphosate application may be made if needed to control late-emerging weeds. Narrow-row soybeans reduce the chances of late weed emergence.

For more information for optimizing your glyphosate application in soybeans, you can read the MSU Soybean 2010 Factsheet "Maximizing Glyphosate Applications", available on the web at <http://web1.msue.msu.edu/soybean2010/Maximizing%20Glyphosate%20Performance.pdf>

Soybean aphids found in Mid Michigan Fields

Chris DiFonzo, MSU Field Crops Entomologist

Soybean aphids were found near the MSU campus on Tuesday, June 2, in an early-planted research plot. The soybeans were approaching V2 (first trifoliolate expanded). Aphids were actually fairly common along the edge of the field, with perhaps 5% of the plants with an aphid. Soybean aphids tend to land on plants near clean-cultivated borders. Mature, non-winged mothers with new nymphs were found on the plants. It was thought that the adults were deposited 7-10 days ago. Winged

aphids were common too, indicating that there had been a flight of aphids, perhaps deposited with a rain event last week. Aphids were not found in a nearby field that was in the VC (seed leaf) stage of development, which shows the difference that even a few days in emergence can make in early infestations of soybean aphids. Soybean aphid thresholds for control generally are 250 aphids per plant.

MSU Delayed Corn Pre-emergence Herbicide Considerations

Dr. Wesley Everman, MSU Corn Weed Control Specialist:

- ◆ Pre-emergence herbicides should be applied as soon after planting as possible because delayed application increases the risk of poor herbicide performance, especially for grass control.
- ◆ Herbicides typically applied pre-emergence are listed in Table 1K (pg. 46) in the 2009 [Weed Control Guide for Field Crops](#). Many of these herbicides are also labeled for application after corn emergence.
- ◆ Below is a partial list of some common pre-emergence programs and maximum corn heights for application:
 - * Axiom and Princep should only be applied before corn emergence.
 - * Bicep programs, Cinch, Bullet, Microtech, Stalwart Xtra Parallel Plus should be applied before corn is 5 inches in height.
 - * Harness, Harness Xtra, Degree, Degree Xtra, Surpass, Surestart, Topnotch and Volley (as well as some others) should be applied before corn is 11 inches in height.
 - * Atrazine, Lumax and Lexar should be applied before corn is 12 inches in height.
- ◆ We advise that all herbicide treatments to emerged corn be applied with water as the carrier. Use of 28% liquid nitrogen as a carrier to emerged corn poses a risk of severe crop injury. This risk is increased under cool, cloudy conditions prior to application.
- ◆ MSU research has demonstrated that it is necessary to control weeds before they reach four inches of growth to prevent measurable yield reduction.

Marketing Corner – A conversation with Dr. Jim Hilker, MSU Ag Economist

I recently asked Dr. Jim Hilker, MSU's Commodity Marketing Specialist, about his thoughts on marketing the new crop. "Jim, it has been a wet spring across Michigan and the rest of the Midwest, and commodity prices have been on a bit of a roll lately, what should producers be thinking about as we begin to wrap up planting?"

"If you look at planting progress for corn, we were in a whole lot tougher situation last spring compared to where we are now. And look at how well that crop recovered last season. Until today (June 3rd), the markets have been moving upward pretty well. I guess I would like to see producers think about their cost of production and do some marketing to take advantage of some of the prices that we have seen, perhaps in the 15-30% of the new crop range, which still leaves room for taking advantage of a rally. U.S. ending stocks are tight in soybeans, political challenges in Argentina have had an impact on soybeans. Anything that impacts old crops should have a positive effect on new crop. It should be interesting to see if production estimates of the South American crop get downgraded."

The other thing Dr. Hilker thinks should begin to move to the top of the agenda for producers as field work subsides is getting paperwork around for the USDA Farm Program DCP/ACRE signup and for the SURE Program. He suggests that growers may have a rather unique window of opportunity to get a feel for the potential for the ACRE Program to trigger because the August Crop Report will be out August 12th, two days before the signup deadline on August 14th. He thinks that producers may want to have the paperwork in place to be able to signup for the ACRE program but perhaps wait to make the decision until the August Crop report is released, which provides a pretty fair glimpse of crop productivity.

Bruce MacKellar – June 3, 2009

Calendar of Upcoming Events

Crop and Soil Sciences Weed Day

July 1, 2009

Visit research plots, attend field presentations, compare herbicide programs, and evaluate weed management strategies. Botany Field Lab, 9:00 AM - 5:00 PM.

Ag Expo 2009

July 21 - 23, 2009

Michigan's largest outdoor farm show, featuring MSU research, equipment dealers, service providers, demonstrations, and seminars.

Michigan Groundwater Stewardship Program On-Farm Field Day

August 18, 2009

Join us for an evening of good food and company as we discuss the past growing season and look forward to next spring! Windy Knoll Farm, 70811 Lakeview Road, Sturgis. Free. RSVP to Melanie at 269/467-6336.

