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the unifoliates may appear bleached. Once photosynthesis begins this symptom quickly dissipates. (Image 4).

Image 1: Swollen hypocotyl.



Image 2: Broken hypocotyl and plant death



Given the significant variability in soybean emergence we are currently experiencing, the logical question that will arise is "Will this variability in soybean emergence lead to yield loss?". It has been well documented by many corn agronomists that variability in corn emergence can cause yield loss (Please see [Trouble with Doubles, Gaps and Peepers](#) by Joe Lauer). Yield loss caused by variable soybean emergence however has not

Delayed Soybean Emergence and Cotyledon Loss

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Differing weather patterns across the state of Wisconsin this spring have left some growers extremely pleased with their soybean stands while others find themselves at various degrees of displeasure or disgust. In a previous WCM article, I discussed [Predicting When Soybeans Will Emerge](#). The model described in that article does not take into account the physics behind soybean emergence in compacted or crusted soil environments. Soybean emergence in tough environments like these can lead to low or variable stands, cotyledon loss, plant injury, or plant death.

To facilitate emergence in compacted or crusted environments, the soybean hypocotyl will swell to increase the force against the soil surface (Image 1). The force is sometimes too great and the hypocotyl snaps and the plant dies (Image 2). Other times, one or both cotyledons are broken off during emergence; however the unifoliolate (and thus the apical growing point) remains intact (Image 3). If a plant loses one cotyledon, yield loss would be negligible. However if both cotyledons are lost, a yield loss of 2 to 7% is possible. In 2009, I have also noted several fields where the soybean has leafed out under the soil surface prior to emergence. When these plants do emerge,

been quantified in soybean, though anecdotal reports and testimonials may indicate otherwise. Stands that are below a threshold of 100,000 plants per acre at harvest will lead to decreased yield.

One way to mitigate stand loss due to crusted soils is to use a rotary hoe to breakup the crust as soybean are emerging. We have successfully used this implement for many years with very positive results. A small amount of damage to an existing stand of soybeans will occur when using a rotatoy hoe, however the benefits from breaking up the crust and allowing the soybeans to emerge will far outweigh the damage. Set the hoe to only breakup enough soil to allow the plants to emerge. Rotatoy hoeing can be delayed or eliminated if significant rain (usually over ¾") is in the forecast when soybean seedlings are struggling to emerge. Planning appropriate tillage ahead of time can reduce the need for rotary hoeing and insure a good stand of soybeans. This includes not working the soil when it is too wet, using no-tillage systems, and not overworking the soil so that the structure remains intact. Most crusting and compaction problems arise from excessive tillage at the wrong time.

Image 3: Cotyledon loss due to crusted soil.



Image 4: Soybean plant that had leafed out under the soil surface prior to emergence



Training sessions for TSP's, consultants and educators on NRCS' 2009 Organic Initiative

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The 2008 Farm Bill is providing new opportunities for certified organic farms and farmers interested in transitioning to organic certification. A special sign-up for conservation incentive payments through the USDA NRCS Environmental Quality Incentives Program (EQIP) is currently underway, through June 12. This **2009 Organic Initiative** will provide \$1.2 million in conservation incentive payments for Wisconsin farms. Farms currently certified organic and under transition to organic can receive bonus payment rates for adoption of six core conservation practices, including: Conservation Crop Rotation; Nutrient Management; Pest Management, Cover Crop, Forage Harvest Management, and; Prescribed Grazing.

There is also a new EQIP practice in Wisconsin, Organic Transition (in addition to forestry and on-farm energy planning), which requires development of an organic transition plan (OTP). The OTP is a "conservation activity plan" which also addresses any soil, water and other natural resource protection needs identified for the farm operation. The first state signup for Organic Transition assistance ended May 29, and received a reportedly small sign-up. More sign-up opportunities are expected in the future.

For more information on the 2009 Organic Initiative and Organic Transition programs, contact your county's NRCS District Conservation office, or go to the Wisconsin NRCS website www.wi.nrcs.usda.gov/programs/eqip.html.

In effort to facilitate success with these programs, five training sessions are being developed for current and prospective Technical Service Providers as well as conservation planning professionals and educators working with transitioning and certified organic farmers. Two sessions will provide an introduction to organic farming systems, organic certification requirements, and writing or evaluating organic transition plans. The other three will focus on NRCS requirements for conservation planning, resource assessment and writing conservation activity plans associated with the Organic Transition practice. These training sessions are offered by the UWEX Conservation Professional Development and Training Program, USDA SARE, and Northeast Wisconsin Technical College, with assistance from the Midwest Organic and Sustainable Education Services (MOSES) and the UW Nutrient and Pest Management Program.

Wisconsin Organic Initiative and EQIP Training Sessions, 2009:

Introduction to Organic Systems

Northeast WI Technical College course offering #47-090-499, for information, contact Valerie Dantoin Adamski @ (920)498-5568, valerie.dantoin@nwtc.edu ; or to register (920)498-5444.

June 30, Platteville (SW Wisconsin) area farm (class #53783).

July 15, Seymour, WI (class # 53784)

These sessions will provide an introduction to organic farming systems, steps necessary for transition and certification, educational and informational resources available and NRCS requirements for organic transition plans.

Writing Conservation Activity Plans and Organic Transition Plans

For more information see <http://conservation-training.wisc.edu> or contact Kevin Erb @ (920)391-4652, Kevin.erb@ces.uwex.edu .

June 17, UW Platteville Pioneer Farm

August 6, Wausau area (TBD)

September 22, location TBD

These sessions focus more on NRCS conservation standards and technical references, conservation planning and resource assessments, as well as requirements for organic transition plans, the USDA Organic Transition Program, and planner certification requirements.

Troubleshooting Hints for Common Early Season Insects (and slugs) in Corn

Bryan Jensen, IPM Program

Troubleshooting calls on seedling corn are likely to be starting if they haven't already. Once you have narrowed the cause down to insect there are still a number of choices you will need to make for an accurate diagnosis. Troubleshooting would be much easier if all we dealt with was classic, text book symptoms but that is rarely the case. Of course finding the insect will make the diagnosis easier. If not, here are some helpful hints.

Poor emergence is likely a result of either seedcorn maggot or wireworm feeding. Seedcorn maggots have a very short generation time and may not be present when you arrive in the field. However, there are a few other hints which can help. Adult flight periods are short and damage maybe confined to a small number of planting dates and more severe when germination and emergence is slow. Also, livestock or green manures may attract more adults into fields to lay eggs and increase the likelihood of damage. Leaf injury (small holes) is possible but infrequent and is usually limited to the first leaf. Wireworms may also be a cause of poor emergence. If fields are scouted early, larvae can be found feeding on the seed or in the base of the corn plant below ground. Larvae are somewhat mobile and you may not find them on every damaged plant so dig up a number of damaged seeds or plants. Field history will also be a help with wireworm diagnosis. Damage is often more severe in corn after small grains, pastures or other forage crops. Above ground symptoms include dead/dying plants and holes in the leaves but these symptoms are not exclusive to wireworm feeding but rather to any insect which feeds on the base of the corn plant. To confirm, dig up a number of corn plants and/or

seeds and try to find the culprit. If none are present, rely on field histories and crop rotations to confirm.

When above ground symptoms are evident (holes in leaves, wilted whorl, dying plants) the first order of business would be of course to find the insect. For help with identification go to the IPM Field Crops Scouting Manual which can be found on this website by clicking on publications and searching for the title. Insects are mobile and may not be found on every damaged plant so be sure do inspect a number of injured seedlings. Dig around the roots, look underground for feeding signs or an entrance hole, split the stalk, look for an above ground entrance hole and under crop residue. If you find nothing, it indicates that the insect you are looking for is very cryptic (slugs or billbugs) or is not present and therefore control measures are not necessary. However it is always a good idea to give the farmer a possible diagnosis so they know what didn't cause the damage and so they can better prepare for next season. These subtle hints can help.

Stalk borer damage is usually found next to fence rows, grassy waterways or other patches of perennial weeds, especially quackgrass and wirestem muhly. Initially you will notice small feeding scars in the whorl when larvae are small and beginning their migration to corn. Eventually they will move farther down into the whorl or burrow into the stalk above ground level. These symptoms will appear as larger holes in the leaves, wilted whorl or dying plants.

Hopvine borer injury is often confined to the same field areas as stalk borer and often their populations can be mixed. Hopvine borer damage corn by tunneling into the plant below ground level. Above ground symptoms are dead/dying plants without holes in the leaves.

White grub damage to corn roots can lead to loss of vigor or if they tunnel into the base of the corn plant symptoms similar to hopvine borer. Although white grub damage may be in pockets within a field it is usually not confined to fencerows and waterways like hopvine borer.

Billbugs are an occasional insect pest on corn and are very difficult to find. Rarely do they cause economic damage but the concern for this article is damage confused with insect pests of greater economic concern. Billbug feeding is concentrated along field edges and often in association w/ perennial grasses and yellow nutsedge. The adult weevil will chew a hole into the above ground stem leaving a feeding scar which results in leaves with holes that tend to be oblong. Rarely will you get dead or dying plants.

Slugs are a pest favored by cool wet weather, crop residue and/or weed growth. Slugs feed nocturnally and are difficult to find during daylight hours. Fortunately their damage is unique. Look for narrow longitudinal feeding scars running the length of the leaf. Initially the cuticle will remain intact leaving a window pane effect but will later drop out leaving an opening. Another telltale sign of slug feeding is the slime trail left during the previous nights feeding expedition.

Time for Postemergence Corn Herbicides

Chris Boerboom, Extension Weed Scientist

In driving through the state this last week, most corn fields look like they have a preemergence program that has controlled early season weeds well. However, there are some corn fields with modest densities of weeds emerging. These fields will soon reach the time when postemergence herbicides need to be applied to protect corn yields. In terms of yield protection, remember that it is better to err on the early side when it comes to weed control. It may be tempting to delay an herbicide application until all the weeds are up so they can all be killed. Unfortunately, they will have competed with corn for too long and have cut into yield by this time. An early herbicide application before weeds are 4 inches tall or the corn is about at the V3 stage will remove weeds before they inflict much damage. Even though some weeds might emerge after this timing (if a non-residual herbicide was used), the yield loss from their competition for the whole rest of the season will be far less than allowing early weeds to compete.

If later herbicide applications need to be made to control problem weeds or in rescue situations, be sure to make the applications before the maximum labeled growth stages to avoid corn injury or illegal residues in the harvested corn.

Common corn herbicides that can be applied postemergence and their labeled growth stages.

The chart can be found on the following page (Pg. 56)

In the chart, “V” refers to “V-stage”, which describes the number of leaf collars on a corn plant. The leaf collar is region where the leaf blade joins the leaf sheath, which wraps around the stalk.



Herbicide	Corn stage
Accent	0-20" or V6; to 36" or V10 with drop nozzles
Atrazine	0-12"
Basagran	no restriction
Basis	0-V2
Beacon	4-20" or V6; to tasseling with drop nozzles
Buctril	4 leaf to before tasseling
Cadet	V2 to 48"
Callisto	0-30" or V8
Celebrity Plus	4-24" or V6
Dicamba (Clarity, etc.)	0-8" or 5 leaf; to 36" with drop nozzles
Glyphosate (Roundup, etc.)	0-30" or V8; to 48" with drop nozzles on RR2 hybrids
Halex GT	0-30" or V8
Hornet WDG	0-20" or V6; 20-36" with drop nozzles if harvested for grain
Impact	emergence to 45 days before harvest
Laudis	0-V8
Ignite	0-24" or V7; 24-36" with drop nozzles
Marksman	0-8" or 5 leaf
NorthStar	4-20" or V2 -V6; to 36" with drop nozzles
Option	V1-V6; to V7 with drop nozzles
Permit	0-36"
Priority	0-V8
Resolve Q	0-V6 or 20"
Shotgun	0-8"; to 12" with drop nozzles
Status	4-36" or V2 to V10
Steadfast	0-20" or V6
Stinger	0-24"
Stout	0-16" or V5
Unity	V1-V5 or 16"
Yukon	0-36"
2,4-D	0-8"; to before tasseling with drop nozzles
Herbicides listed below can be applied postemergence for soil residual herbicide activity. They do not provide postemergence control of grass weeds.	
Bicep Lite II Magnum	0-5"
Camix	0-30" or V8
Dual II Magnum	0-40"
G-Max Lite	0-12"
Harness, Surpass, etc.	0-11"
Harness Xtra, Keystone LA	0-11"
Lumax	0-12"
Outlook	0-12"
Prowl	0-30" or V8
SureStart	0-11"