If you would like to be added to this mailing list, send a request to Molly Werner at werne022@umn.edu. This newsletter and the advice herein are free. You usually get what you pay for.

Crop weather
Rainfall, air and soil temperatures, degree-days, soil moistures, and other current and historical weather data for a little spot about two miles west of Lamberton, MN can be found at the University of Minnesota Southwest Research and Outreach Center (SWROC) website: http://swroc.cfans.umn.edu/WeatherInformation/index.htm.

At the SWROC, 1658 degree-days (Base 50F) have been accumulated from May 1 through August 11, 5-6 days behind the long-term average of 1776 degree-days. The SWROC is slightly behind the long-term precipitation average for the same period.

Recent rainfall has been spotty. Rain on August 10 ranged from 0-2.5 inches across SW, SC, and WC MN. Where rainfall has been lacking, field areas with coarse textured soils or gravel/and subsoils are showing moisture stress. This will impact crop pests like spider mites and aphids on corn and soybean.

Corn is early milk (R3) stage or less. Common rust and northern corn leaf blight are the most prevalent pathogens but I have not heard of alarming levels in many fields.

Very early-planted group 00 soybeans at the SWROC are now at mid R6 with lower leaves and pods starting to yellow. Most soybeans are now at R4 (full pod) to R5 (beginning seed) except for those that were late-planted. Vegetative growth has ceased in early planted, shorter season soybeans. Bacterial blight is the most obvious pathogen in soybeans I have looked at.

Corn rootworm - Damage in one longer-term study site in SW Minnesota was down this year. Both Northern (NCR) and Western corn rootworms (WCR) are still emerging. It will be prime rootworm prime beetle scouting for the next few weeks. Watch for beetles in late pollinating corn.
Based on several phone calls, it appears that WCR populations (and their damage) may be heavier in SE MN. It's a harsh environment out here on the prairie.

**Aphids in corn**

Well, it is that time of year again. Aphids are present in corn, particularly where moisture stressed. Sometimes we see more aphids where fungicides or insecticides were previously applied and the beneficial insects and fungi removed.

There are three species present in SW MN corn now: Small, dark bird-cherry oat aphids are usually found lower in the canopy. English grain aphids and larger blue-green corn leaf aphids tend to frequent the upper part of the canopy.

Any of these species can become very abundant, covering plants aphids and honeydew. Other than isolated areas of fields, I have not yet seen or heard of any fields where aphids were excessively abundant.

Are aphids in corn a big deal? Thresholds are based on whorl stage and pre-pollination populations. At this time corn has already pollinated and pollinated well. My inclination is to leave these late season populations alone. Walk away from dented corn where a large portion of yield is already fixed- the aphids usually do.

Chances for a payback for insecticide applications in blister to dough stage corn are less likely because of insecticide coverage issues for aphids lower in the canopy. Secondly, very high aphid populations may, in part, be a symptom rather than cause of crop stress. These heavily infested areas often show stalk rot later in the season. Insecticide applications to pollinating corn are hard on benficials and pollinators. Finally, insecticide applications can make aphid populations worse by killing beneficial insects and they can flare spider mites or other secondary pests.
If, however, you feel an uncontrollable urge to kill some corn aphids, make sure it is not just the field borders of or pockets in the field that are infested. Leave wide enough check strips to account for spray drift and leave multiple check strips to account for spatial differences in corn yield potential and aphid populations.

We did get one SWROC corn aphid trial in this year. If we find a heavy infestation we may put in a second to help answer question on yield impacts.

**Caterpillars in soybean**

*Leaf rollers were observed in central Minnesota soybeans.* Rick Gilbertson emailed a photo of this larva and the associated silk webbing. The same insect was observed in northeastern ND.

Defoliation was minor but it is always good to check out unfamiliar species. A side benefit is it helps prevent boredom in IPM specialists.

Thanks to the assistance of colleagues in ND and Indiana, we have a probable ID to species. It is one of several native leaf rollers and a member of the moth family Tortricidae. Banded sunflower moth would be another member of the family.

Soybeans may be a host of opportunity rather than a preferred host. *The insect is not likely to cause any economic damage to soybean.* I will post the species once confirmed.

**Spider mites**

*Dry weather in many areas has raised spider mite concerns.* Spider mite populations often start at field edges near mowed grasses or alfalfa. Curt Burns found mite symptoms and spider mites in soybeans near highway 212 and the U of M Extension crew has reported some mites in soybeans near Rochester. Travis Vollmer, SWROC plot technician, planted some soybeans at his Lamberton house and they are loaded with mites. Fortunately, Travis does a better job keeping soybeans in the greenhouse watered.

*It is not yet time to panic.* Two-spotted spider mites or symptoms are scarce in most SW MN fields. If one looked long enough, they could find a spider mite or two in most soybeans every year. *Yield limiting two-spotted mite outbreaks are usually triggered by*
prolonged hot, dry conditions and aging corn and soybean crops. Up to this point, cooler weather has slowed spider mite population increases.

Cool, wet weather and heavy dews can trigger outbreaks of mite-killing Neozygotes fungi. Cool weather seems to minimize mite symptoms but not necessarily mite yield effects.

Bifenthrin being a notable exception, some pyrethroid insecticides can flare mite populations. Easily found mites would indicate that care should be taken if choosing an insecticide for soybean aphids. The presence of symptoms and abundant mites should trigger increased scouting to determine if spider mite control is warranted.

**Soybean Cyst Nematode (SCN)**

*I see many fields showing SCN symptoms now.* SCN, along with a few other pests and pathogens is likely to force a change in the way corn and soybeans are grown in Minnesota.

The marked line between the normal soybeans (upper) and stunted, chlorotic soybeans (lower) is caused by SCN interacting with Iron deficiency chlorosis (IDC) in a Brown County soybean field. Both sides were planted to the same PI 88788 resistant soybean. The deficient soybeans are in a C-C-S-C-S rotation and the healthy appearing soybeans were a C-C-C-C-S rotation. All plants had female SCN visible on the roots; I'll leave it to the reader to guess which roots had more.

Prolonged, widespread use is reducing the effectiveness of SCN resistance genes. Simply relying on resistant varieties in no longer an option in an increasing number of fields. Making things more difficult, a preliminary survey of 2015 SCN resistant varieties
marketed in Minnesota reveal only 3 that are not PI887788 - and two of those may be the same! One of the tenants of IPM is to use multiple tactics to control pests. Crop and resistance rotation is an important but often ignored aspect of SCN management.

There is no reason to expect that as new areas in Minnesota discover SCN, they won't discover SCN populations virulent on resistance sources...and in fact they are.

Soybean aphid thresholds demystified - a satirical examination

Before anyone gets too bent out of shape over this... Yes, I know this is a stressful time for some soybean growers, most of their advisors and for aphid researchers too. It is not illegal to apply insecticide to any population of soybean aphids as long as it is within label restrictions. Finally, I am not the police and it's the soybean farmer's money, not mine, at risk. Insecticide resistance does tend to spread itself around though.

Based on emails and phone calls, there seem to be several economic (action) thresholds for soybean aphids in use now.

1) The widely adopted threshold endorsed by research and Extension entomologists in the North Central States is: 250 aphid average/plant threshold for soybeans with increasing populations is valid for soybeans less than the R6 (full seed) stage. This threshold has data from numerous trials over numerous years and numerous environments behind it. This threshold is conservative and works even when crop prices are high and treatment costs are low. It protects beneficial organisms and insecticide effectiveness to boot.

Some collect the information to apply this threshold by using scouting techniques that require several hours in each field. Inefficient scouting and poor math(counting) technique can lead to the adoption of one or more of the following thresholds.

2) The "I am going on vacation and need to get this over with" threshold is widely used this time of year. It is closely related to the "I am sick and tired of scouting" threshold. The "going on vacation threshold" provides excellent economic results when you schedule your vacation before or after your aphid populations average 250 aphids/plant.

2a) The "Adding insecticide to your last herbicide pass just in case" is a unique subset of the "I am tired of scouting threshold". It is most often practiced by growers or their advisors that like to re-treat soybeans fields for aphid re-infestations and spider mites. Those experienced in using this threshold are able to make all fields aphid problem fields and assign all application costs to the herbicide application. A complicated economic analysis then allows subsequent ground or aerial application costs to disappear along with yield losses from re-infested and un-scouted fields.
3) The "Spray when my neighbor sprays" threshold is used by some and with varying levels of success. This threshold works perfectly as long as you and your neighbor have identical varieties, planting date, crop management practices and soybean aphid populations. To work most effectively, it requires that you neighbor knows what he is doing, has scouted your field and does not use threshold 2. Some of you do have bona fide genius neighbors!

4) The "I just do what my crop advisor tells me to do" is also a valid threshold. It is most effective if you advisor scouts your field and uses threshold 1. Advisors that practice threshold 2 or 3 often provide fields free of soybean aphid yield loss but treat a lot of fields - sometimes more than once. Trust your advisor or get one you can trust to provide advice in your economic interest.

There are several other thresholds that can be found on the internet, TV, radio and watering holes. Those that I have come across are closely related to one of the four above.

Try to enjoy yourself out there. The 2014 aphid season will soon be history.

**Late season aphid information** by Captain Obvious

*Late season aphid scouting is complicated by dense canopies that are hard to walk through, early morning dew and aphids inconveniently scattered through the canopy. We have been through this before.*

- It is very easy to underestimate soybean aphid populations spread through the canopy of large soybean plants.

- Calibrate your eye by closely counting a few leaflets of varying aphid densities. Learn what 10, 20, 100, etc. aphids look like on different leaf sizes. Use this skill to quickly estimate aphid populations through the foliage of plants you pull while moving through the field. Re-calibrate your estimating skills occasionally.

- Shaking the plant before estimating aphid populations will help remove water droplets and dead aphids - seems to makes things easier for me anyhow.

- Enlist help if you have vision problems or otherwise cannot effectively scout fields.

- Unless you are doing soybean aphid research, lighten up. For practical purposes there is not much difference between 200 and 250. There is a difference between 50 and 250 though.
Don't waste time. Get through fields quickly but don't scout just the field edge. If you don't find any aphids on the field borders you less likely to find economic infestations in the field interior. Of course, you can spend as much time in as you want.

Some folks pull enough plants trying to make a decision to cause yield loss. Some fields are obvious problems or have few aphids. Don't keep pulling and counting aphids. Make a decision and move on.

Don't assume things are OK. Deep throat has reported some early, "insurance" applications of "long"-residual insecticides now need re-treatment. Imagine that! Change your insecticide class if spraying a field a second time.

What is happening in one field may not be the same as what is happening in another. No one can see aphids must less assess a field through the phone.

Use common sense - don't spray everything because one field is at economic threshold. Conversely, don't call in a plane and skip one field because it is not quite at threshold. Growers who spray their own fields have more flexibility.

Watch for spider mite infestations in drouthy areas.

Some are observing many fields where only field edges or small hotspots in the field are infested to any level. Spraying borders for aphids does not often work well because of undetected in field "hot spots". If you do treat borders be ready to treat the field interior later.

Population increases have slowed in many areas. This is due in part to cooler temperatures increasing the time needed for a generation to develop. Early R5 stage soybeans tend to have slower aphid population growth than earlier or later stages.

Winged aphids are abundant now. Late planted fields are attractive to immigrating winged aphids. Heck, even I can spot the light green replanted soybeans from a distance!

Watch late planted or full maturity beans closely as the season progresses. This season will be chaotic because of our late, wet spring.

Look for nights in the low 40s to begin the sexual cycle for aphids to move back to buckthorn. This can happen from now until soybean leaf drop.

Walk away from fields where lower leaves are naturally senescing or you start seeing yellow pods. Beware of Pre-Harvest Intervals (PHI) for insecticides.
Soybean maturity and insecticide PHIs will start to pull soybeans off the scouting schedule soon.

We cobbled together a short scouting video on late season aphid scouting. It's temporary home is http://youtu.be/VidX3KZEPnl. Would be better with a couple teleprompters and a better speaker.

Reminder - SCN tour next Monday!
The Southwest Research and Outreach Center in Lamberton, MN, will host a Soybean Cyst Nematode (SCN) Tour from 1:00-4:00 p.m. on Monday, August 18. See http://swroc.cfans.umn.edu/ResearchandOutreach/PestManagement/scnfieldtour/index.htm for more details.

Happy trails,

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