Southwest MN IPM STUFF

All the pestilence that’s fit to print

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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.

I do not often repost material from other newsletters but when I do...

If you have not signed up for the University of Minnesota Extension’s Minnesota Crop News you can do so here: http://blog.lib.umn.edu/efans/cropnews/. Jeff Coulter just posted a corn planting date article there. On the upper left of the page is the spot to click to enlist.

Crop weather

Rainfall, air and soil temperatures, degree-days, soil moistures, frost depths 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.

Data for additional University of Minnesota Research and Outreach Centers with weather stations can be found at:
Northwest ROC, Crookston - http://nwroc.umn.edu/Weather/index.htm

As of 4/28/14, there was still a narrow band of frost from 39-49 inches in some spots. Many areas are frost free and with the rain, all will be soon.

Warm days have been scarce this March and April. There has been some planting at the SWROC and in other SW Minnesota fields but planting activity varies greatly with geography. Some soils here had worked up well before last week’s rain. Many areas in
western Minnesota were below average in soil moisture until the past weekend. Fields have been absorbing the rain...for now. Other areas in Minnesota are much wetter this spring. It is still much too early to be “mudding in” a corn in but we did one just for “experimental” purposes on April 26.

The winter wheat and alfalfa I have looked at wintered well in spite of the low temperatures.

For those interested in soybean aphids, and who isn’t, buckthorn buds at the SWROC started to open on 4/25. Soybean aphid eggs winter at the base of buckthorn buds and their hatch coincides with bud break.

I’ve also noticed that I have recently become attractive to wood ticks; more precisely *Dermacentor variabilis* or the American dog tick, so it must be spring. Really!

**A new crop weather site is being developed** with funding from a USDA - National Institute of Food and Agriculture (NIFA) grant and involves several organizations ([https://drinet.hubzero.org/groups/u2u/decision_resources](https://drinet.hubzero.org/groups/u2u/decision_resources)).

I like to check regional weather patterns during the growing season. On this site several climate and weather predictive models are housed at one location. I don’t have the experience to vouch for any of the fertilizer and crop predictive models but they have some potential.

The University of Minnesota/University of Wisconsin pest development website is linked to here. It has good models for several crop pests. The alfalfa weevil model is helpful in timing scouting efforts. The seed corn maggot model will be helpful for timing planting into fields with animal manure or green manure (including heavy weed pressure) [http://agwx.soils.wisc.edu/uwex_agwx/thermal_models](http://agwx.soils.wisc.edu/uwex_agwx/thermal_models). The generic calculator allows you to “roll your own” degree day models for a location.

**Climate.umn.edu**

Finally, before you head out for a cup of coffee or other form of liquid refreshment and a lively discussion on the weather, arm yourself with knowledge from the Minnesota climatology working group [http://climate.umn.edu/](http://climate.umn.edu/). This is where the “Weekly crop weather” and other statics from across Minnesota reside. If you can’t beat the weather you might as well talk about it, I suppose. I predict a continued uptick in beverage sales until folks can get back in the field.

**Winter slowly winds down – Was it cold enough?**

Cold temperatures drove frost into the ground much deeper than typical. Under sod and winter-long snow cover at the SWROC, the frost depth reached 14 inches, with relatively moderate temperatures (Figure1). However, fields with open ground are
much colder and frost depths were driven to 54 inches under fall tilled bare ground. Some areas in western Minnesota had little snow cover in fields.

Soil temperatures within fields were highly variable (Figure 2) by soil type, soil moisture, residue, snow cover and topography. This variability makes any utterances of general statements on winter soil temperatures and insect survival risky.

We don’t have a complete historical data set but the SWROC’s intrepid Lee “Mr. Freeze” Klossner discovered some archived frost depth data. Previously, a SWROC frost depth to 48 inches was recorded under sod during the open winter of 1976-1977. This frost had disappeared by late March. In the winter of 1977-1978 the frost depth reached 38 inches but some frost persisted until late April.

As mentioned in a previous IPM Stuff issue, 1977 is the time-line when Western corn rootworm populations declined in most of Minnesota. Cold soil temperatures were suspected as a possible cause.

*Does this mean the winter of 2013-2014 killed a lot of southwest Minnesota western corn rootworm eggs?*

Probably, the soil temperatures in two of the three locations in the field in Figure 2 were cold enough to cause some mortality. In addition to cold temperatures, another potential cause of mortality is the late emergence and egg lay of many western corn rootworm beetles. They may have had poorer food quality with which to develop eggs or were otherwise less fit. For a final bit of good news - In many areas, western corn rootworm populations were already lower in 2013.

*Does this mean you don’t have to worry about western corn rootworms?*

Probably not, although the optimist in me says populations should have been partially reduced. The insulation from corn residue and snow should have protected eggs in portions of many fields. Corn fields that were droughty last summer probably had some eggs laid deeper than normal and as a result, more protected. Then there are the more cold tolerant northern corn rootworms which seem to be making a comeback. If anyone is involved in a corn rootworm management program that requires record cold winter temperatures for success, they probably should be seeking the help of a trained professional.

I would be most worried about any fields with high 2013 rootworm beetle populations if planted back to corn in 2014. Within-field rootworm populations will probably be more variable than usual. This may complicate 2014 adult scouting efforts.

*What about other insects that overwintered in Minnesota?*

While some increased mortality is probable, many insects are well adapted to MN conditions. Some of these survivors have started to show up. I have seen a few morning cloak butterflies that survived the winter here. Near the Minnesota River, a delicate mosquito made it through the 6 months of winter but then made the mistake of
trying to breakfast on my arm. Her accidental but severe injuries prevented a species ID.

Most insects under snow cover should be just fine, soybean aphid eggs in low buckthorn stems, for example. Some unfortunate insects that broke hibernation during the short March warm spell, err...relatively warm anyhow... may have succumbed to following cold temperatures.

The recent weather systems will bring in migratory insect pests. Aster leafhoppers, potato leafhoppers, grain aphid species, black cutworm and true armyworm are a few examples of crop pests that arrive on southerly winds each year. The cold winter in the plains means that these species may not have been able to overwinter as far north as in many years. However, any bouts of optimism with respect to crop pests are usually short-lived. Good 2014 growing season scouting will reveal which fields, if any, need an insect control intervention.

Happy trails,

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Figure 1. Winter average daily air and soil temperatures at the University of Minnesota SWROC Lamberton, MN (1976-77, 2012-13, 213-14).
Figure 2. Winter 2013-14 soil temperatures. Hicks Farm, Tracy, MN  Source: J. Strock