Waterhemp and Palmer Amaranth in Wisconsin: an update on locations and call to report new infestations.
Mark Renz, UW Madison Associate Professor and Extension Specialist

We have been observing the continued spread of waterhemp and Palmer amaranth in Wisconsin. These species are a concern as they are more competitive, can germinate later into the season (requiring additional management), and have a high potential to develop herbicide resistance. This is a recent picture from western Wisconsin highlighting what herbicide resistant waterhemp can look like (Photo taken by Katie Wantoch).

While waterhemp has been in Wisconsin since before 1860 it has spread throughout the state with populations now in over 80% of counties (a 20% jump compared to 2009). In contrast Palmer amaranth has only been identified in fourteen locations throughout the state. See below for maps of each species of current known infestations. You will notice that some counties are shaded even though a point is not present. These are from observations did not provide a specific location.
We require active monitoring and reporting by YOU! Active monitoring has allowed us to better understand distribution of waterhemp and Palmer in Wisconsin. While our knowledge has improved greatly (over 350 known locations of waterhemp) please submit additional reports. We are most interested in new infestations in counties or parts of counties where infestations have not previous been reported. If would like to share a new observation we have several methods for doing so.

The easiest is to download the Great Lakes Early Detection Network App (apple or android). This app allows you to select the species you are reporting, take multiple pictures to allow us to confirm the identification, and it automatically takes GPS coordinates. Once uploaded the reports are automatically sent to us for verification. This App is free, but does take some time to learn how to operate. A brief tutorial can be found here.

Another option is to send an email to reportapigweed@gmail.com. Detailed instructions are available here, but in brief we are asking that you include these items in your email

- Location of the pigweed: GPS coordinates or an address/road intersection
- The habitat where the pigweed is growing: agricultural field (indicate what type of field, e.g. corn, soybean, etc.), home garden, roadside, or other (please describe).
- Do you think it is herbicide resistant? if so, what herbicide has been applied.

- Identifying pictures of the pigweed, including a picture of the whole plant, a picture of the plant stem, and a picture of the leaf and petiole (leaf stem) also are helpful to verify populations.

The final option is to contact a local county agent and ask for assistance.

It is our hope that this information in combination with other efforts will assist in early detection of new populations in Wisconsin and encourage management. This information will also help us to better understand what factors are driving spread. We have several videos and fact sheets that highlight how to identify waterhemp and palmer amaranth.

Helpful links to factsheets:


http://ipcm.wisc.edu/download/weeds/Waterhemp-Fact-Sheet-Final-Draft.1_2.pdf

ID video: https://www.youtube.com/watch?v=LwE8zLKhkLI

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Integrated Pest Management of Soybean Aphids

Bryan Jensen, Department of Entomology and Integrated Pest Management (IPM) Program

It seems like soybean aphid populations have been creeping up and I understand a few fields have been sprayed. When we get to this time of year economical soybean aphid management is not easy. For every “no brainer” decision we get there are 100 “head scratchers”. Several factors to consider are crop stage, aphid numbers, how long they have been feeding, wheel track injury, cost of production, beneficial insects and pathogens… the list goes on.

Economics: The economic threshold (250 aphids/plant on 80% of the plants from R1-R5) is a conservative estimate. You will not have yield loss at that point solely as a result of aphid feeding. When crop prices were high several people were asking about lowering the economic threshold. The same answer holds true now. The economic threshold is an arbitrary number. It doesn’t change. Its intent is to provide a cushion for crop advisors to use to prevent aphid populations from reaching the Economic Injury Levels (EIL, approx. 600-700 aphids/plant) which is the point where economic loss can occur. What does slightly change with crop prices is the EIL.
With low crop prices that number goes up. Frankly, continuing to use the current Economic Threshold gives you even more cushion and perhaps more time to observe populations trends before a spray decision is reached.

Crop stage also has an impact on our decision. I like to think in terms of “preventable yield loss”. That is the amount of yield my decision can impact. I can’t resurrect what has happened in the past but more to the point, for this article, is how much yield is “in the bank” and how much is unprotected. The amount of unprotected yield decreases each day/week as the crop advances. In other terms, the later the growing season gets the less likely we are to make good economic spray decisions on marginal aphid populations.

White dwarf aphids on soybean leaf, shown in red circles.

“White dwarf” soybean aphids are important to look for at this stage in time. White dwarfs should be included in all counts. However, they can have an important negative impact on future aphid populations. White dwarves are cream-colored, smaller in size and can be found on the lower soybean foliage. However, they do not live as long (50%) and their reproductive is about 70%. Both important impacts on soybean aphid reproductive rates as well as your recommendation.

Beneficial insects: Later during the growing season, you are more likely to get help from beneficial insects and insect pathogens. Make sure you have some handle on their role (if not potential role). Insect pathogens can be hard to predict but beneficial insects are more visible.

Pest population: An important concept regarding the use of Economical Thresholds is that the pest population is increasing. Beneficial organisms can certainly impact the population curve. An extreme example would be if we sprayed an aphid population that reached the Economic Threshold today, but the aphid population would have naturally crashed in 5 days, would we have gotten a return on investment from that insecticide application? Likely not.

As I mentioned in last week’s article, a spray decision can impact spider mite populations. Especially if the insecticide used is weak on mites. In that situation the beneficial insects are killed and you could potentially have a resurgence in both aphids and mites. Also, insecticide resistance can be a result of increased insecticide use. I am not aware of any soybean aphid resistance issues in our state but if you have a concern please contact the DATCP Pest Survey Program (krista.hamilton@wi.gov) to have aphids sampled and tested.

Bt Trait Performance Concerns

Bryan Jensen, Department of Entomology and IPM Program

Perhaps not all that surprising was a phone call I recently received regarding poor performance of the Herculex RW (CRY34/35ab1) trait. Although resistance has been documented in other states it was the first time that I had a very reliable source indicate performance issues for that trait in Wisconsin. It is not a widespread problem, as far as I know, but certainly is an issue we need to identify, respect and manage for years to come.

As a result of this report all 4 CRW Bt traits have had performance issues somewhere in the state. The first step is documentation that the problem exists (or doesn’t). Both are important to know. For background information on digging/rating roots please go to a past WI Crop Manager Article on monitoring corn roots for guidance.

It is not too late to dig roots although you will see more root regeneration now than in July which can mask rootworm damage. You cannot and should not assume fields which do not show symptoms of lodging will not have significant rootworm feeding. Furthermore, do not assume that all lodging is a result of rootworm feeding. You will have to do the legwork. Use of an unmanned aerial vehicle could be of assistance to identify field areas which are lodged. Once those areas are identified good boots, time, a shovel and a power washer are necessary for verification.

Expect to see some root feeding even on pyramid hybrids. They are not immune to feeding. However, if you have average root ratings greater than 1.0 on single traits and 0.5 on pyramids it would typically be considered higher than damage which you typically expect. If so, future mitigation practices should be implemented and include practices such rotation (preferred), use of alternate CRW traits (if reliable), use of soil applied insecticides on conventional corn or the use of the rootworm rate of seed treatments if population are verified to be
low through beetle scouting. Strongly consider contacting your seed sales representative to initiate reporting of this unexpected damage or at least to verify the Bt trait was present in that hybrid.

Although this information is not good to hear. It is important that we understand the potential, appreciate its significance and recognize that changes in control practices are going to be important for durability of all management practices.

Harvest timing of winter wheat to maximize yield and minimize elevator discounts

Shawn Conley, State Soybean and Small Grains Specialist
John Gaska, Senior Outreach Specialist, Adam Roth, Program Manager

A research trial was initiated in the fall of 2017 at the Arlington Agricultural Research Station, Arlington, WI to assess the impact of delayed grain harvest on yield and test weight in soft red winter wheat. Here is the report.

- Wheat yields varied across harvest dates with no apparent trend
- We noted lower test weights in later harvest dates, but it was not a linear trend
- The difference in total pricing discount between the early harvest and late harvest date was negligible
- Elevator discounts were affected mainly by moisture on the first date and solely on test weight on the last date
- By the second harvest date, moisture discounts were very low or zero and any further discounts came from lower test weights

Click here to read the 4 page report.

Response of 4 Oat Varieties to a Plant Growth Regulator and Foliar Fungicide Combination

Shawn Conley, State Soybean and Small Grains Specialist

In an Oat Shock:

- Trivapro fungicide increased oat yield in Badger, Esker and Shelby 427 oat varieties
- Trivapro fungicide plus Palisade PGR reduced lodging in all four varieties tested
- The application of Trivapro reduced crown rust incidence
- Growers should explore expected ROI and apply BMP's prior to adding any additional inputs

A research trial was initiated in the spring of 2018 at the Arlington Agricultural Research Station, Arlington, WI to assess the impact of a plant growth regulator (PGR) (Palisade, trinexapac-ethyl, Syngenta) and a foliar fungicide (Trivapro, benzovindiflupyr+azoxystrobin+propiconazole, Syngenta) in oats to offset the negative effects of lodging and protect against stem rust. Four high yielding varieties were selected for this trial: 1) Antigo is a high yielding, early maturing oat with excellent test weight, medium lodging, and moderate resistance to crown rust. 2) Badger is an early season yellow seeded oat variety with medium plant height. Badger has high yield potential and excellent test weights. It has good straw strength and lodging resistance. Badger is resistant to crown rust and has good tolerance to barley yellow dwarf virus. 3) Esker is a mid-season oat which has had consistently high grain yields. BYDV tolerance is comparable to that of Ogle. Crown rust resistance is good. 4) Shelby 427 has a high yield potential, test weight, and groat percentage. It is resistant to smut, crown rust, and BYDV, and has moderate resistance to stem rust. Shelby 427 also has excellent lodging resistance, a medium plant height, and
an early maturity. Palisade PGR was chosen because of its potential to mitigate lodging caused by high nitrogen fertilization levels. It acts by shortening the internodes and strengthening the stem through inhibition of cell elongation. It was applied at 12 fl oz/a at the Feekes 4 stage (23-May). Trivapro was chosen as a broadspectrum, preventative fungicide against many leaf diseases including rusts. It was applied at 13.7 fl oz/a at the Feekes 9 stage (4-Jun). Normal, UWEX recommended nitrogen and corrective fertilization practices were used in this trial.

To view the results, click here.

Starter Fertilizer for Winter Wheat – Two Year Results

Shawn Conley, State Soybean and Small Grains Specialist

Research trials were initiated in the fall of 2016 and 2017 at four locations (Arlington, Sharon, Chilton and Fond du Lac) to assess the impact of starter fertilizer on early season growth, grain yield, and grain quality of soft red winter wheat. Dry granular starter fertilizer was applied in-furrow with the seed at planting time. Treatments were selected based on common availability of dry starter fertilizers and previous research using these rates. No early growth, vigor, or phytotoxicity differences were noted in any of the fertilizer treatments compared to the nontreated control. Normal, UWEX recommended corrective and nitrogen fertilization practices were used at each location in addition to the individual fertilizer treatments.

To view the rest of the results, click here.

Wisconsin UWEX Vegetable Crop Update Issue 18

Amanda Gevens, Associate Professor & Extension Specialist, Potato & Vegetable Pathology, UW-Madison Plant Pathology Department

Click here >>> Vegetable Crop Updates Newsletter #18

- potato and vegetable disease updates
- production updates

Wisconsin Pest Bulletin, Issue No. 14, August 2

Krista Hamilton, Entomologist, Bureau of Plant Industry/Division of Agricultural Resource Management, Wisconsin Department of Agriculture, Trade and Consumer Protection

Volume 63 Issue No. 14 of the Wisconsin Pest Bulletin is available at: https://datcpservices.wisconsin.gov/pb/pdf/08-02-18.pdf

LOOKING AHEAD: Second flight of European corn borer moths has peaked

FORAGES & GRAINS: Potato leafhopper below-threshold in most fields

CORN: Western bean cutworm flight 75% complete

SOYBEAN: Annual soybean aphid survey now underway

FRUITS: Large summer codling moth flights continue

VEGETABLES: No significant corn earworm migrations reported

UW/UWEX Plant Disease Diagnostic Clinic (PDDC) Update August 3

Brian Hudelson, Sue Lueloff, John Lake and Ann Joy

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from July 28, 2018 through August 3, 2018.

The 8/3/18 PDDC Wisconsin Disease Almanac (i.e., weekly disease summary) is now available at:


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