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PEA LEAF WEEVIL – NEW PEST OF FIELD PEA AND FABA BEAN IN WESTERN ND

A new NDSU Extension publication E1879 Integrated Pest Management of Pea Leaf Weevil in North Dakota was printed this April. It summarizes the distribution, biology, scouting & E.T., and pest management strategies for pea leaf weevil for pulse crop growers. Since the adult is difficult to scout for and foliar applied insecticides have limited control of pea leaf weevil, systemic insecticide seed treatments are currently one of the better strategies to reduce adult defoliation, egg laying and larval feeding on the root nodules. There are two active ingredients registered in field peas: thiamethoxam (Cruiser 5F, Cruiser Maxx) and imidacloprid (Attendant 600, Dyna-Shield imidacloprid 5, Gauch 600, Senator 600FS, other generics). Some producers / crop consultants have called wondering what the best rate of insecticide seed treatment is for control of pea leaf weevil in field peas.

Canadian researcher, Dr. Hector Cárcamo, has studied different rates of thiamethoxam for control of pea leaf weevil in greenhouses grown field peas [Cárcamo et al. 2012. J. Insect Science 12: 151. 12pp. (http://www.insectscience.org/12.151)].
During seedling stages (2nd-5th nodes), they found that adult foliage damage was reduced in the plants with a 30 and 50 g a.i. per 100 kg seed dose compared to the untreated check (see graph). The 50 g a.i. per 100 kg seed dose is equivalent to the labeled rate of Cruiser 5F (1.28 fl. oz. per cwt). However, adult mortality was only 15-30%. Egg laying and egg viability were also lower in females that feed on pea foliage treated with thiamethoxam. Larval survival and larval feeding on root nodules were lower only at the 2nd node stage and no effect was observed at the 5th node stage suggesting that the toxic residual declined at later crop stages. The bottom line is to use the highest labeled rate of the insecticide seed treatment to provide the most efficacious treatment for management of pea leaf weevil. Even with a high rate of insecticide seed treatments, it is important to know that there could be some damage to the nodules and yield loss, especially with high weevil populations.

(Note: Mention of any products are giving as examples only and do not imply an endorsement nor discrimination against any products not mentioned by the author or university.)

Janet J. Knodel
Extension Entomologist

plant science

DOES DELAYED PLANTING OF SPRING WHEAT MEAN LOWER YIELDS?

Spring wheat planting is off to a slow start, with only three percent of the area planted compared to 22% for the 5-year average. Research has repeatedly shown that delayed planting can have a detrimental effect on the yield of small grains. Planting date is one way we can partially “manage” the weather environment in which the small grain crop grows. Earlier planting usually means that temperatures are more favorable during tillering and spike formation. Cooler temperatures during this early vegetative period promote more tillering and larger spikes. This is the time that the crop establishes its foundation for its potential yield. Additionally, when compared to later planting dates, earlier planting usually means that grain-filling will take place when temperatures are relatively cooler. Warmer than optimal temperature during grain-filling reduces the amount of photosynthate available to the developing kernels. Hence the recommendation that one should plant early in order to improve the chances of higher yield. Nevertheless, there are a lot of other factors that can ultimately impact grain yield, regardless of planting date. Nitrogen availability (N losses due to leaching and denitrification), drought, diseases, and lodging are examples of factors that can impact yield even when the weather might otherwise be favorable.

The intent of this article is to examine the relationship between planting date and final yield on a statewide basis (rather than results from small-plot research) using planting progress data and final yield that is available from USDA-NASS. In the graph below, I summarize data from the past 10 years, relating the estimated date when 50% of the spring wheat area had been planted and the yield that was achieved later that season. For the purposes of this article, to fix a 50% planted date, I extrapolated between the NASS reporting dates when there was less than 50% planted and when there was more than 50% planted. The yield values were those reported for the state as a whole. I used information for spring wheat only.

Used with permission from Dr. Hector Cárcamo, Lethbridge Research Centre, Lethbridge, Alberta, Canada.
During the last 10 seasons the date at which 50% of the spring wheat was planted ranged from April 23 to May 27, with an average date of May 10. Given our very slow planting progress to date, it seems likely that much of the planting will be later than optimal, but with the current planting capabilities in the state, it is still feasible that 50% of the acres could be planted by the average date of May 10th if field conditions are favorable.

It is interesting to note from the graph below that there was little relationship between date to 50% planting and yield. In fact, three of the highest yielding seasons (2009, 2013 and 2014) occurred when most of the planting occurred after May 15. Moreover, in 2008 which was the third earliest date to achieve 50% planted, it was second lowest yielding of the group. The lowest yielding year (2011) in this dataset was the latest planted, suggesting that perhaps after that date, yield reductions will be significant even if the rest of the growing season remains favorable for wheat development and yield.

Though these data seem to suggest, when considering the state as a whole, that planting date may not be an important determinant of yield, I think that other research strongly suggests planting as early as is practical is critical to achieving the best chance of producing high yields in a given season.

SOYBEAN PRODUCER SURVEY

Conclusions based on the 2017 grower survey data (360 soybean fields)

1. Planting soybean before mid-May, if conditions are favorable, may provide the highest soybean yields. Delaying planting in 2017 resulted in an average reduction of 0.4 bushel per acre per day.
2. Selecting the latest maturing soybean variety for the growing region, when planting early, may increase yields.
3. Growing soybean after corn resulted in about 5 bushel higher yields compared to growing soybean after soybean. Rotation is important.
4. Fungicide seed treatments resulted in higher yields in 2017.
5. Fields with iron deficiency chlorosis (IDC) issues had 0.8 bushel per acre lower yield than fields without IDC. It is critical to pick the right varieties (tolerant to chlorosis) for fields with IDC issues.

Planting date

Averaged across the state of North Dakota in 2017, planting prior to May 15 resulted in higher yields. This trend was consistent with observations from 2014 to 2016. In those years planting the first week in May (1-6) yielded 46.2 bushel
per acre, seeding the 2nd week in May (7-12) averaged 43.4 bushel per acre, and planting later than May 19 yielded less than 39.0 bushel per acre. Producers will need to consider soil and weather conditions before starting soybean planting. Normally in the northern part of the state planting soybean will start later than in the southern region. However, the trends in all regions of the state indicate a higher soybean yield potential with early planting when conditions are favorable.

![Figure 1. Average soybean yield in bushel per acre by planting date (day of the year) for 2017 based on 287 fields.](image)

Seed treatments
Averaged across 2014-2017 (Table 1), 76% of growers used seed treatments and on average had a yield of 40.7 bushels per acre. The growers who did not use seed treatments and on average had a significantly (P<0.10) lower yield of 39.2 bushels per acre.

Table 1. Seed treatment use and soybean yield in bushels per acre.

<table>
<thead>
<tr>
<th>Seed Treatment Use</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40.2</td>
<td>40.9</td>
<td>40.6</td>
<td>41.1</td>
</tr>
<tr>
<td>No</td>
<td>37.1</td>
<td>39.7</td>
<td>40.4</td>
<td>39.6</td>
</tr>
</tbody>
</table>

1\(^1\)Yield based on 2014-2017 soybean survey data.
Iron Deficiency Chlorosis (IDC)

The best management practice to reduce IDC in the field is variety selection (see NDSU Variety Trial results).

Resources

- Preliminary Results Soybean Survey 2015
- Results from 2014-2016
- Sifting and Winnowing: Analysis of Farmer Field Data for Soybean in the US North Central Region (including ND)
- Key Management Practices That Explain Soybean Yield Gaps Across the North Central US (including ND)

Peder Schmitz
ND Soybean Survey Coordinator

Hans Kandel
Extension Agronomist Broadleaf Crops

ESTIMATED SUGARBEET ACREAGE FOR 2018

It is estimated that sugarbeet growers in the United States will plant 1.113 million acres of sugarbeet in 2018 which is about 2% lower than the acreage planted in 2017. American Crystal Sugar Company will plant about 390,000 acres, Minn-Dak will plant 90,000 acres, and Southern Minnesota Beet Sugar Cooperative will plant about 125,000 acres. Growers in western North Dakota and eastern Montana will produce 33,000 acres of sugarbeet which will be processed in Sidney, Montana. This means that North Dakota and Minnesota will plant an estimated 638,000 acres of sugarbeet; this represents about 57% of the total US sugarbeet acreage.

Growers need to continue their efforts at improving efficiency and productivity by ensuring that planting is done in properly prepared and weed free seed beds, by using recommended rates of fertilizer, and using adequate seeding rate to start with a good plant population to give their crop a solid foundation. Seeds should be planted at 1.00 to 1.25 inch depth and at about 4.5 inches apart in 22-inch rows. Planting speed using traditional planters should be about 4 miles per hour.

The minimum temperature for sugarbeet seed germination in the presence of adequate moisture is 38 degrees Fahrenheit; most of our soils at the 4-inch soil depth are currently at 32 F or less as of April 16. Warmer weather is forecasted, starting April 20, with day and night temperatures above 32 F. Most of the snow cover is gone, except...
probably for southern Minnesota. Higher daily temperature will quickly increase soil temperature of our dark soils. I hope that planting can be started in another week or two.

Please continue to adopt best management practices to have a profitable sugarbeet crop, and as always, practice safety in all your operations. Let us all work together to have another sweet and record producing sugarbeet crop in 2018.

**HOW SOON WILL SUGARBEET EMERGE AFTER PLANTING?**

Sugarbeet seeds germinate and emerge over a wide temperature range in the presence of adequate moisture and oxygen.

In Minnesota and North Dakota, snow cover and wet fields prevented planting in early to the end of April in most areas. There is no need for sugarbeet growers to panic. The soil has been warming up rather rapidly during the past week. During the week of April 24 through 30, average bare soil temperature at the 4 inch soil depth increased by about 8 to 10° F, from 40 to 48° F to 48 to 58° F. This warming trend is expected to continue with day temperatures of 68 to 75° F forecasted for the next week. This will mean that although beets will be planted later than last year in most areas, they will emerge more rapidly and uniformly because of warmer soils with adequate moisture required for germination.

The following table gives approximate days to emergence of sugarbeet seeds planted at different soil temperature ranges with adequate moisture.

<table>
<thead>
<tr>
<th>Soil Temperature (°F)</th>
<th>Days to Emergence</th>
</tr>
</thead>
<tbody>
<tr>
<td>38-45</td>
<td>21 days or more</td>
</tr>
<tr>
<td>45-52</td>
<td>10-21 days</td>
</tr>
<tr>
<td>52-60</td>
<td>7-12 days</td>
</tr>
<tr>
<td>60-70</td>
<td>5-7 days</td>
</tr>
</tbody>
</table>

You can easily obtain soil temperature by downloading and using the “Sugarbeet App” available for free download on Apple devices (only – Android version will be available later) at:


Best wishes for a safe planting season.

Mohamed Khan
Professor & Extension Sugarbeet Specialist
NDSU & U of MN
701-231-8596

**UPDATES TO THE NDSU EXTENSION PEST MANAGEMENT APP**

Two new features will soon be available in the NDSU Extension Pest Management App. Efficacy tables for fungicides and insecticides have been compiled for problematic pests and will be incorporated into the app. These tables will help select an appropriate plant protection product after a pest has been identified. The other feature that has been added to the app is an image library. Both typical and atypical images of diseases, insects and weeds will be available in the image library to help pest diagnosis in the field. The app is available for both iOS and Droid based smart devices.
NEW PLANT PATHOLOGY PUBLICATIONS

Soybean Disease Diagnostic Series – PP1867

The Soybean Disease Diagnostic Series is designed to help growers identify 23 different soybean diseases (Figure 1). Each card details a different disease, with high quality images on the front of the card and a description of key symptoms and other important information on the back. Each card is printed on a high quality synthetic material that is resistant to water, creasing, tearing and light reflection. The set consists of 24, 3½” x 8” cards bound by a single ring. The pdf version is free for download and sets of cards are available for purchase at https://www.ag.ndsu.edu/publications/crops/soybean-disease-diagnostic-series/

The Soybean Disease Diagnostic Series is a joint effort by NDSU and the University of Minnesota. We thank the North Dakota Soybean Council and the Minnesota Research and Promotion Council for supporting the development and funding this publication.

Figure 1. Front cover, Index, and the front and back of an example card (in this case, Brown stem rot).
Deoxynivalenol (DON) in Small Grains – PP1302

An updated publication designed to answer commonly asked questions about DON/vomitoxin in small grains was created last summer (Figure 2). The publication provides a general overview of the pathogen responsible for Fusarium head blight, handling of DON infested seed and management tools that can be used to help suppress the disease and mycotoxin. PP1302 is two page (front & back) full size (8½” x 11”) publication available at https://www.ag.ndsu.edu/publications/crops/plant-disease-management-deoxynivalenol-don-in-small-grains-1

We thank the North Dakota Wheat Commission for supporting the development and funding this publication.

Figure 2. Front page of PP1302
NORTH DAKOTA FERTILIZER RECOMMENDATIONS HAVE BEEN OVERHAULED AND REVISED

Those who attended Extension meetings this winter are already aware of the revisions of all North Dakota fertilizer recommendations. For those who are still unaware, here are the links to the circular revisions for the following crops:

- Alfalfa  
- Clovers  
- Barley  
- Buckwheat  
  https://www.ndsu.edu/fileadmin/soils/pdfs/Soil_Fertility_Considerations_for_Buckwheat_sf724.pdf
- Canola  
- Dry Bean  
- Corn  
  https://www.ag.ndsu.edu/publications/crops/soil-fertility-recommendations-for-corn
- Flax  
- Field Pea, Lentil, Chickpea  
- Potato  
- Soybean  
- Sugarbeet  
  https://www.ndsu.edu/fileadmin/soils/pdfs/Fertilizing_Sugarbeet_In_North_Dakota.pdf
- Spring Wheat/Durum  
- Winter Wheat  
  https://www.ndsu.edu/fileadmin/soils/pdfs/Fertilizing_Winter_Wheat_SF1448.pdf
- Every crop  

The new features in the revisions are the elimination of the yield goal-based formula, and consideration of clay chemistry for potassium recommendations for those crops that are particularly responsive.

Thanks to NDSU Ag Communications for their excellent and timely work to produce these revisions during the past several months.

Dave Franzen  
NDSU Extension Soil Specialist  
701-799-2565

DON'T NEGLECT PHOSPHORUS FOR WHEAT IN 2018

As spring wheat planting gets underway, a soil scientist reminds farmers not to cut back on an important nutrient….phosphorus. "The yield of wheat, even at very high yield levels, comes almost entirely from three types of stems, the main stem, the T1 tiller, and the T2 tiller," says R. Jay Goos, Professor of Soil Science at NDSU. Goos explains, "The T1 tiller begins to grow when the main stem is between the 2 and 3 leaf stage, and the T2 tiller begins to grow
about a week later. If plants are short of phosphorus at these early stages, the T1 and T2 tiller may not be formed, and significant yield potential will be lost very early in the growing season."

Although farmers have been applying phosphorus for decades, Goos is still concerned for several reasons. "There has been a trend for declining soil test levels for phosphorus in the region, largely due to the expansion of soybean acres," Goos says, "Soybeans are not as responsive to phosphorus fertilization as wheat, and farmers often do not apply as much phosphorus as the soybean seed is removing from the field. This ultimately leads to declining soil test values for phosphorus."

The other reason why Goos is concerned about phosphorus fertilization of wheat, is that spring wheat varieties can differ significantly in how much phosphorus is required. A study conducted by Goos and his graduate student Jessica Paler (née Christianson) showed large differences in the amount of phosphorus needed for normal T1 and T2 tillering. "The amount of P needed for normal tillering can differ dramatically from variety to variety. In general, the fastest-developing varieties, the ones that require the fewest growing degree days to produce a leaf on the main stem, tend to be the varieties that require the most P for normal development." Examples of varieties Goos and Paler identified as having higher than average P requirements are: LCS-Breakaway, Bolles, TCG-Wildfire, HRS-3530, Barlow, ND VitPro, Steele-ND, ND901CL, Prosper, Faller, and Brick.

Because wheat begins tillering very early in the growing season, Goos is a strong proponent of starter fertilization. "I've concluded, after 40 years of studying wheat fertilization, that the old practice of putting a starter fertilizer of P with the seed of wheat is still the best practice. Application of the projected crop removal as a low-toxicity
material like monoammonium phosphate will assure that there is adequate phosphorus for normal tillering. A 60 bu/A wheat crop removes about 30 pounds of phosphate per acre, and a starter fertilizer at about that rate will be very helpful in providing the phosphate the young plants need,” Goos says. The research performed by Goos and Paler was funded by the North Dakota Wheat Commission.

R. Jay Goos
NDSU Soil Science Professor

GEARING UP FOR THE USE OF DICAMBA TOLERANT SOYBEAN TECHNOLOGY IN 2018

In 35 plus years in my professional agricultural career, I have never observed so much attention placed on a new pesticide technology. I think Larry Steckel, Weed Scientist with the University of Tennessee put it best when he remarked, "I think everyone can now safely stop comparing the Xtend technology to anything else we have previously experienced. We've never had a label like this to follow." The reason is simple, when you have 3.6 million acres of off-target movement of a herbicide, that’s serious.

Everyone, from weed scientists at the universities, to industry, to applicators, agree, we do not want a repeat of this past year. Thus an extraordinary training effort has been coupled with unprecedented scrutiny of every conceivable management practice, label phrase, and weather topic you can imagine. So, let’s look at a handful of concerns and gear up for them:

Time is short—Just looking at the calendar at the time of this writing, applicators in North Dakota have about 58 days to get post applications of the new dicamba formulations applied to soybeans. (June 30th cutoff based on the label, even less if you go with the June 20th based on NDSU’s recommendation.) In Minnesota it will be less by, 10 days. (June 20th label cutoff.) Compounding this will be the compressed nature of our application window due to the late spring. Most crops will be planted in a two-three week window and everything will need spraying about the same time. We also know with respect to the new dicamba formulations, night spraying is out and in North Dakota it means leaving another hour on the table minimum in the morning and evening to deal with inversions. Further, experienced applicators know that finding good weather is difficult in any year, with any pesticide, but the wind speed minimum is 3 mph and the maximum is 10 mph. Finally, rain. Hopefully we will get timely rains, but not too much to keep us out of the fields for too long. Regardless, from a practical perspective, time will be very short, especially in June, when most post applications will be made.

New restrictions take time—Obviously pesticide handling/spray equipment hygiene will take much longer to comply with than more conventional products and that includes documenting in a check list that you have followed all the necessary steps before and after the application. In North Dakota people will need to shuttle more water into the field, 15 gallons per acre instead of last year’s 10. (Minnesota applicators will have a bit more flexibility with the Engenia label, but they would be wise to also stick with 15 gallons.) Then there is the documentation of ALL the additional application record keeping requirements, which again is unprecedented. Finally, there is the travel speed limitation in North Dakota. 12 mph is the maximum travel speed.

Maximize your time in the field spraying—When everything is a go to spray, spray. Do not be doing those tasks that can be done ahead of time, like checking sensitive crops registries, or consulting the manufacturer’s tank-mixing and nozzle options, or trying to figure out an app or a new hand held anemometer. Plan ahead and use every precious moment you have to maximize your time spraying when conditions are right.

Prioritize your spray jobs—since this technology is time intensive, consider off-loading some of your other spray work to those who may be more efficient in covering acres. In some situations hiring an airplane might make good sense. Be aware, while these people are open to opportunities, they aren’t looking to increase headaches with new customers that have unrealistic expectations or do not have payment logistics lined out. Most have clients they have
been working with for years. They will have priority over new business and especially business that expects them to respond like a house is burning down. If you have not worked with a custom applicator in a while, whether by ground or air, it would be best to start having conversations with them sooner, rather than later.

Andrew A. Thostenson
Pesticide Program Specialist

THE WAIT IS OVER – THE RUSH IS ON

Field work is off to a slow start this season with seeding progress definitely lagging behind a typical pace for the region. Now that soil conditions have improved, there is a scramble to get several crops seeded at once. Weeds are also scrambling to catch up to seasonal norms so you might see more species and higher populations during preplant burndown or early postemergence herbicide applications.

Dense weed mats created by this rapid flush of germinating weeds can lead to incomplete control because of poor coverage. An increase of spray volume from 8-10 gal/A to 15 gal/A can help to provide sufficient spray solution to cover multiple layers of vegetation. Many could be using higher volumes already because of practices with pre-emergence herbicides in the tank.

Another consideration is tip selection for droplet size. We have all heard the chorus of larger droplets to avoid drift. But in this situation, spray pattern in the medium-sized droplet category has given better control with a number of contact and translocated herbicides. The balance between drift mitigation and optimum weed control is of increasing importance.

When there is a crop canopy around the weeds, fast travel speed can reduce weed control. We do not know if this also can apply to preplant applications, and given the season, a comment to slow down might not be considered or even heard.

Apparent lack of control, even when weeds are more spread out, also could result from germinated weeds that are not fully exposed to herbicides for residual control. Very young seedlings that are shielded from spray by other plant foliage will be beyond the size for control with herbicides such as Prowl, Dual, or Harness by the time weeds intercept herbicide in the soil. With these herbicides, control of all germinated weeds by other products is very important. However, herbicides such as Spartan or Valor are more available to weed roots in low moisture environments. Weeds in cotyledon or first leaf stage can still encounter enough of these herbicides through their root systems to be controlled if sufficient moisture is present or precipitation occurs.

Kirk Howatt
NDSU Weed Scientist

NEW S-METOLACHLOR PRODUCTS FOR WEED CONTROL IN SUGARBEET

There are two new S-metolachlor products for use in sugarbeet in 2018.

1.  Moccasin herbicide, UPI, is a post-patent S-metolachlor product for control of grasses and selected small seeded broadleaves in sugarbeet. Apply Moccasin at 1 to 1.6 pt/A depending on soil type once sugarbeet have reached the 2-leaf stage. More than one application may be made but the total amount of product applied must not exceed 2.6 pt/A per year. Do not harvest within 60 days of last application. Moccasin can be applied alone or in tank-mixes including glyphosate.

2.  EverpreX herbicide, Corteva Agriscience, active ingredient S-metolachlor, for control of grasses and selected small seeded broadleaf weeds in sugarbeet. Apply EverpreX (pronounced ever-PRE-ex) at 1 to 1.6 pt/A depending on soil type after sugarbeet have reached the 2-leaf stage. More than one postemergence application may be made but the total amount of product applied must not exceed 2.6 pt/A per year. Do not harvest within 60 days of last application. EverpreX can be applied alone or in tank-mixes including glyphosate.
**SUGARBEET PLANTING DELAY MEANS A CHANGE IN STRATEGY FOR WATERHEMP CONTROL**

Delay in start to sugarbeet planting means growers targeting waterhemp as their most important weed control challenge need to reevaluate their weed control strategy. Waterhemp germinates and emerges at approximately 350 cumulative growing degree days, base 48 or approximately May 10 in west central Minnesota and May 15 in the southern Red River Valley. Sugarbeet planted on April 30 will not reach the 2-leaf stage until May 16 or after waterhemp has begun to emerge.

It means we must use a preemergence herbicide. Which one? There are three herbicide options. Strengths and weaknesses of each option included.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate (pt/A)</th>
<th>Strengths</th>
<th>Weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ro-Neet SB</td>
<td>4 to 5.3 pt/A</td>
<td>Sugarbeet safety</td>
<td>Fair to good waterhemp control</td>
</tr>
<tr>
<td>Ethofumesate</td>
<td>6 to 7.5 pt/A</td>
<td>Sugarbeet safety, good waterhemp control, especially in high OM soils, 8-10 weeks waterhemp control</td>
<td>Nurse crops will be severely damaged by ethofumesate at full rates</td>
</tr>
<tr>
<td>Ethofumesate</td>
<td>2 to 3 pt/A</td>
<td>4 weeks waterhemp control</td>
<td>Damage to wheat and barley nurse crop</td>
</tr>
<tr>
<td>Dual Magnum</td>
<td>0.5 pt</td>
<td>2-3 weeks waterhemp control</td>
<td>Generally safe to nurse crops</td>
</tr>
</tbody>
</table>

Dual Magnum can be applied preemergence using the indemnified 24c supplemental registration available at the Syngenta website [https://www.syngenta-us.com/labels/indemnified-label-search](https://www.syngenta-us.com/labels/indemnified-label-search)

Planting has been delayed due to wintry weather. Has the later spring delayed waterhemp emergence? Eighty percent of growing degree days for waterhemp emergence accumulate in May. There might be a 2- or 3-day delay, but that is all.

Chloroacetamide herbicides (S-metolachlor, acetochlor and dimethenamid-P) applied early post to sugarbeet and preemergence to later emerging waterhemp will follow PRE herbicides for a layer approach for weed management.

**HOW DO DICAMBA PRODUCTS FIT YOUR WEED MANAGEMENT STRATEGY IN SOYBEAN?**

Most Producers purchase soybean seed containing a herbicide trait. Perhaps you elected to use the Roundup Ready 2 Xtend crop system (glyphosate and dicamba) in soybean. 2018 will be ‘year two’ for this system. I have a question for you. Why did you select these herbicide traits and the Xtend system?

A component of my winter meeting presentations is what I call the weed management strategy. The strategy starts with scouting and positive identification of weeds in your fields on your farm. Next, identify herbicides effective against weeds and try to develop a system that includes multiple modes of action both within the crop and across crops in the field. Effective herbicides can be a combination of soil-applied or postemergence herbicides. For some, that is a weed management program for two, three, four…. maybe five different weeds. While you want to control all weeds in the field, it’s difficult or near impossible to use multiple effective herbicides against five or six weeds. However, you can prioritize and identify difficult to control weeds or weeds where resistance is occurring in other parts of the county for multiple effective herbicides. My challenge to you is what are the two or at most, three most important weeds in every field and these are the weeds around which one builds a weed management strategy. Finally, consider how to control these weeds not only in 2018 in soybean but in future years in other crops planted in sequence in your fields on your farm.

Summer annual weeds that germinate and emerge early in the season might be your greatest challenge and might be the best reason to select the Xtend weed control system. For example, dicamba applied early POST for kochia, common ragweed, lambsquarters control. There are herbicide resistant biotypes of kochia and common ragweed in North Dakota and lambsquarters can be a difficult to control weed, especially under dry conditions. The 2018 North Dakota Weed Control Guide indicates dicamba at 8 oz ia/A provides excellent (90 to 99%) control of kochia, ragweed and lambsquarters.
Final question, when do you intend to apply dicamba in soybean? There has been plenty of conversation this past winter about off-target movement and some agriculturalists have suggested applying dicamba preemergence. I disagree. There are other soil-applied herbicide options that deliver much longer residual control than dicamba if preemergence weed control is important to you. I suggest dicamba application early POST, targeting weeds less than four inches tall. An early postemergence dicamba application may occur in early June and likely will occur before temperatures increase or neighboring susceptible soybeans begin their reproductive phase. Finally, complement PREs and EPOST application with a POST application to provide a second effective mode of action on weeds that are a primary concern in your field or on your farm.

Tom Peters
Extension Sugarbeet Agronomist
NDSU & U of MN

INSECTS IN MY HOME

Homeowners are starting to notice insects that spent the winter in their attics or wall voids of homes. Some of these insects include the multi-colored Asian lady beetles, picture-winged flies, attic flies, boxelder bugs, stinkbugs and others. Homeowners often notice them congregating in windows or corners. Insects are attracted to the sunlight and heat of windows. Most of these insects are nuisance pests and they do not bite or sting. However, the multi-colored Asian lady beetles and stinkbugs can bite if disturbed, so avoid handling them with your fingers. Some insects also excrete fecal material leaving an unpleasant spots on curtains or walls. An easy way to get rid of these insects is to vacuum them into a wet-dry vacuum with a ½ inch of soapy water in the bottom. The soapy water will drown the insects. There are also different type of window traps that are commercially available: 1) Window Bug Catcher™ Trap – clear, no-mess adhesive™ sticky window traps that attaches to the bottom of windows (Alpha Scents, www.alphascents.com) or 2) window traps that attract and capture insects. Some of these traps have mixed reviews on how well they work. So, you'll need to find the best trap for your purposes. To reduce the overall numbers on insects invading homes in the fall, remember to fix holes in window or attic screens, and chalk any cracks in the foundation of home to prevent insects from getting into the home. (Note: Mention of any products are giving as examples only and do not imply an endorsement nor discrimination against any products not mentioned by the author or university.)

Janet J. Knodel
Extension Entomologist
EMERALD ASH BORER A GIANT LEAP CLOSER TO NORTH DAKOTA

The Canadian Food Inspection Agency (CFIA) confirmed emerald ash borer (EAB) in Winnipeg, Manitoba in December 2017. Only sixty miles north along a well-travelled highway, it is the closest known EAB infestation to North Dakota. The insect appears to have arrived at least five years before its discovery. In that time, EAB spread to adjacent street trees and to park trees 1,500 feet away. Surveyors discovered that the best indicator of an EAB infestation is observing light colored bark caused by woodpeckers foraging on ash trees for EAB larvae.

North Dakota Cities Within 100 Miles of EAB *

Emerald Ash Borer is 60 miles north of Pembina, North Dakota (Lezlee Johnson, NDFS)

EAB is a small metallic green beetle. Adult beetles lay eggs on ash tree bark during the growing season. When the eggs hatch, the larvae chew tunnels under the bark, cutting off the flow of water and nutrients and stressing ash trees. The stressed tree attracts more beetles which continue the attack until they kill the tree. North Dakota is
particularly vulnerable to EAB because green ash is our most abundant tree in forests, in windbreaks, in conservation plantings, and in communities.

EAB cold-hardiness research, cross-referenced with a study of actual temperatures of ash tree inner bark, accurately predicted that EAB would survive these conditions. EAB survival in Winnipeg’s cold winters is associated with thick trunks, south sides of trees, and being below the snow line. It is reasonable to expect that EAB will be able to survive North Dakota winters as well.

Based on cold-hardiness research, EAB is likely to spread more slowly in Winnipeg (and in North Dakota once it arrives) than it has elsewhere. Once detected, EAB cannot be eradicated, so Winnipeg is adopting the “Slowing Ash Mortality” (SLAM) approach to municipal tree management. This approach is based on a good tree inventory and involves selectively removing large ash trees, removing most ash trees as they die, treating some ash trees with pesticide to delay their death, and intensively surveying and monitoring the infestation.

Lessons learned from Winnipeg: Cold will not protect North Dakota from EAB. Managing EAB is expensive. Do not plant ash. Plant a variety of trees. Update or begin a tree inventory. Remove poor quality ash trees. Develop an EAB management plan. Survey for EAB and infested trees. Learn more about emerald ash borer

Green ash trees all across the state already show symptoms of stress from many causes. This makes it very difficult to monitor them for EAB. In order to identify an infestation as early as possible, be alert to woodpecker feeding in ash trees – especially on the south sides of ash trunks and branches. Learn more about EAB at:

www.emeraldashborerinfo.org
www.ndinvasives.org
www.nd.gov/ndda.

Lezlee Johnson
North Dakota Forest Service
Forest Health Manager
AROUND THE STATE

NORTH CENTRAL ND

Spring-like temperatures have arrived across the North Central region of North Dakota over the last week or two. Since the start of the 2018 calendar year, about 3.33 inches of (liquid) precipitation has been observed at the North Central Research Extension Center south of Minot.

Due to the late winter, farmers seem to be beginning many of their activities over the last week. Soil temperatures (bare) range from the low 40s to around 50 degrees (NCREC/Minot - 47°F, Bottineau - 40°F; Crosby - 48°F; Garrison - 47°F; Rugby - 40 °F). At the current moment, it’s probably been too cool to worry about some springtime insect pests, but monitoring of canola flea beetle (E1234) and pea leaf weevil (E1879) should begin as crops begin to emerge in the coming weeks and as temperatures begin to consistently reach the upper 50s and 60s in degrees Fahrenheit.

TJ Prochaska
Area Extension Specialist/Crop Protection
NDSU North Central Research Extension Center

NORTHWEST ND

Sunny weather last week and warm temperatures over the weekend allowed a few early birds to get seeding started before thunderstorms moved through the area on Sunday night. The Williston REC received 0.43” of rain. Cooler and cloudy weather early this week will mean that planting will likely start again later in the week and over the weekend of the 5th as warmer weather returns. This has been a long, cold winter for NW ND and planting is roughly 2 weeks behind where it was in 2017. Decent snowfall over the winter has restored some moisture to the soil after last summer’s drought, however deeper subsoil moisture is likely lacking compared to last spring. Best wishes for a safe start to planting!

Clair Keene
Area Extension Specialist/Cropping Systems
NDSU Williston Research Extension Center

NORTHEAST ND

Like the rest of ND, it has been a slow start to perform spring work. Last week, I saw my first field activity on April 26. With the cool weather and frost still coming out the ground, the Langdon area field activity is extremely scattered. The LREC was able to seed their small grain plot at Cando on Monday under dry soil bed conditions. Optimum timing for spring grain seeding above Hwy 2 to the Canadian border is the first week of May. If you haven’t switched to using actual plants per acre population to figure out your seeding rates, consider doing it this year. With the slow recovery in farm prices, perhaps there is some savings that can be found with this step. NDSU recommends 1.3 to 1.4 million plants/acre for spring wheat. When planting beyond the optimal timing, seeding rates can increase by 1% for each day up to 1.6 million plants/acre. If you are interested in a more detailed discussion of seeding rates by variety, check out this past Crop and Pest article: https://tinyurl.com/y9quowqg

Lesley Lubenow
Area Extension Specialist/Agronomy
NDSU Langdon Research Extension Center
SOUTH-CENTRAL

The geographic area (16 counties) covered by this report includes a northern border of Sheridan County to Griggs County southward to Sargent County and west to Emmons County.

According to NDAWN, on April 30 the region’s soil temperatures at 4-inch depth on bare ground were in the low- to mid-50s F while turf-covered soil temperatures ranged from mid-30s to low 50s. At Carrington on May 1, soil depth of 24 inches was needed to reach a low of 32 degrees.

Alfalfa regrowth is at 2- to 4-inches in height. Winter cereals are in the seedling to early tillering stages. Quackgrass, dandelion, and winter annual weeds are showing the most spring growth but annuals including wild oat, kochia, common lambsquarters, and wild buckwheat are also emerging.

Planting of small grain and corn in the region generally has begun this week. The Carrington REC’s first research trials (barley) were planted on April 27.

Alfalfa regrowth in Carrington REC variety trial on May 1

SOUTHWEST ND

Mother Nature has been very indecisive this spring. Due to snowfall events and cool temperatures, spraying and planting were delayed until recently in most of the southwestern part of the state. On Friday April 27th soil moisture and wind speed were finally at a point where many farmers in the region could begin spraying. There were some in the Mott and Regent area that had a significant amount planted earlier in the month.

On April 12th and 13th, many in the region received snowfall. NDAWN shows that the bare soil temperatures in Dickinson, Beach, and Mott did not reach 40 degrees until April 19th, and Bowman didn’t reach 40 until April 21st. Rainfall events on April 23rd and April 29th brought some much needed moisture to the region, but the April 23rd system brought snow instead of rain to some. You can still see some snow on the buttes in the New England area as of May 1st. Soil moisture is adequate as of now for most in the region, however even though there is much that needs to be planted, no one would complain if we received more rain.

Small grains, peas, and canola acres have been going in the past week. Corn will most likely begin to be planted within the next week. The extended cool temperatures delayed weed growth so many have waited longer than in the past to begin planting to ensure a good pre-plant application of herbicides.

With the shortage of forages last year, many are planning to put in some annual forages this year. Producers should also be sure to check on their alfalfa stands and soil fertility levels to ensure they are getting an optimum amount
of forage per acre. Be sure to check the NDSU Extension Publication SF1863, Alfalfa Soil Fertility Requirements in North Dakota Soils https://www.ag.ndsu.edu/publications/crops/alfalfa-soil-fertility-requirements-in-north-dakota-soils and other Extension resources to ensure the alfalfa stand is bringing in its full potential.

Ryan Buetow
Area Extension Specialist/Cropping Systems
NDSU Dickinson Research Extension Center

NDSU agronomy research specialist, Glenn Martin, planting a wheat trial at the DREC on May 2nd 2018
WEATHER FORECAST
The May 3 through May 9, 2018 Weather Summary/Outlook

All of the North Dakota Agricultural Weather Network (NDAWN) stations finish the month of April well below average for temperatures. Last month started as one of the coldest Aprils on record, but the warmer air toward the end of the month kept last month from being one of the top five coldest Aprils on record. Instead, April 2018 finished as the 6th coldest on record in Fargo, the 8th coldest on record in both Grand Forks and Williston and the 9th coldest on record in Bismarck.

From March to October, cold months tends to be wet months as the cloudiness associated with the extra precipitation tends to keep the temperatures cooler. Last month, many areas recorded below average precipitation, even with the temperatures being well below normal. Because much of the precipitation during the first half of April was snowfall, the NDAWN stations were not able to accurately measure it. Below is the rain totals from April 1 through May 1 but many areas received much more than is indicated because of the early April snowfall. Even with some missing precipitation, the western portion of the NDAWN network did record above average rain / melted snow during the past few weeks.
After the dryness of 2017, there is some concern over the lack of rain / snow for parts of the region over the past few weeks. As a reminder, this time of year the Sun is as high in the sky as early August, but with far less average precipitation. In other words, if you take into account the potential evaporation in combination with the average amount of precipitation, mid-April into early May could be considered the driest time of the year. Therefore, our current dryness that some are concerned with, is a very common occurrence this time of year. This is and has been historically our fire season that will last until spring green up. May is often our second rainiest month of the year, but a high percentage of that wetness comes during the second half of the month. Therefore, concerns over a repeat of 2017 is premature at this point and there are hints of a weather pattern change coming later this month.

In the short term, little precipitation is foreseen through next Monday with air temperatures expected to be a bit above average for the next several days. Those two factors should allow the soil temperatures to continue to slowly warm up over the next week. Currently, soil temperatures are in the 40s, but should rise into the 50s or even the low 60s by next week. Of course, soil temperatures rise each sunny day quite a bit, but taking a daily average from the NDAWN website tends to give a more accurate representation of soil temperatures. Below is the daily average bare soil temperatures at a 4 inch depth on May 1.
Daryl Ritchison  
Meteorologist  
Interim Director of the North Dakota Agricultural Weather Network
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