North Dakota State University
# CROP & PEST REPORT
NDSU Extension Service

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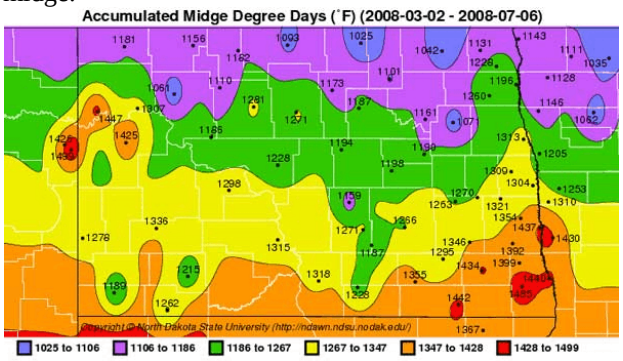
## entomology

### WHEAT MIDGE SCOUTING AND THRESHOLDS

The updated wheat midge degree day (DD) maps for North Dakota indicate that wheat midge should be starting to emerge (1,100 for male and 1,300 for female wheat midge DD) in the northern tier this week (see wheat midge DD map). Wheat in the heading to early flowering stages will be susceptible to infestation by wheat midge. After 50% flowering is reached, wheat is no longer susceptible to egg laying by female wheat midge and insecticide applications should be avoided to prevent killing parasitoid wasps that attack and kill the wheat midge.




Scout for adult wheat midge at night (after 9:00 PM) during warm temperatures(≤60 degrees F) and light winds (≤6 mph). The adult wheat midge (see photograph) is an orange colored, fragile, very small insect approximately half the size of a mosquito. It is about 0.08-0.12 inch (2-3 mm) long with three pairs of long legs. There is one pair of wings, which are oval in shape, transparent and fringed with fine hairs. The eyes are conspicuous and black in color. Typically, the most significant flight period for the entire wheat midge population extends over a 14 to 18 day window within a region. Individual adult midge may survive from 3 to 7 days, depending on favorable conditions (warm, calm, humid weather).

**Adult wheat midge**

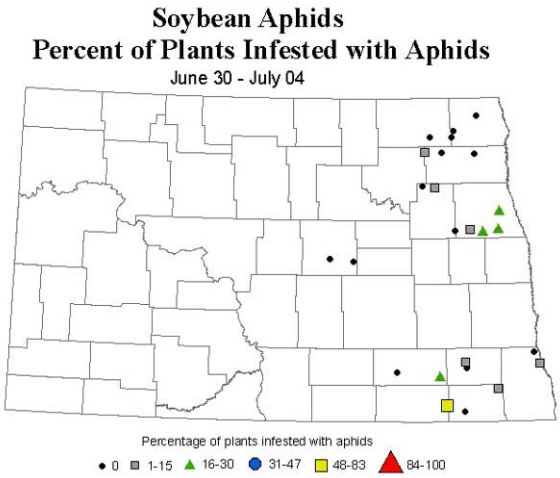
Economic thresholds are:

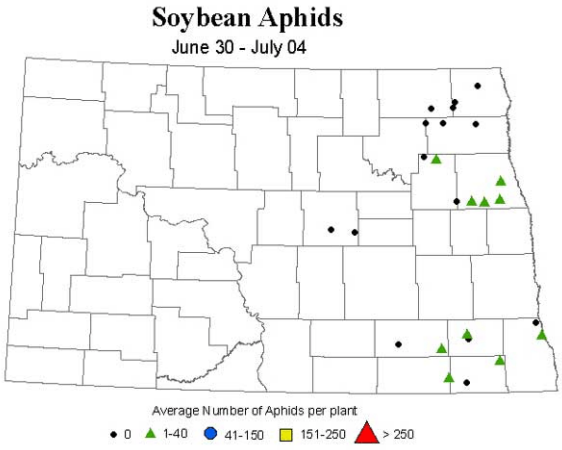
- **Hard Red Spring Wheat (HRSW) = one wheat midge per 4-5 heads**
- **Durum = one wheat midge per 8-10 heads**

The economic threshold for adult wheat midge is a 'nominal' threshold, which means it is based on entomologists' experiences and not on research data describing the relationship between adult wheat midge infestations and wheat yield / grade. As a result, it is difficult to adjust for the high wheat prices. **However, entomologists recommend that producers use the lower wheat midge threshold for both HRSW and durum this year - one wheat midge per 8-10 heads**.

**TIME TO SCOUT FOR SOYBEAN APHIDS**

Soybean aphid populations have been low and below economic threshold levels so far (see NDSU Extension IPM Survey maps). However, aphid populations will continue to increase and soybean fields should be scouted. The current recommended threshold for late vegetative through R5 stages is **250 aphids per plant (field average) on 80% of the plants and increasing aphid populations**. Scout 20-30 plants per field and cover at least 80% of the field. To determine if populations are actively increasing, check field over several visits. This threshold provides a 7-day lead time between scouting and insecticide treatment. Research from numerous trials in the upper Midwest, including North Dakota, indicates there is no yield loss at 250 aphids per plant. With higher commodity values, the threshold remains the same. However, response interval time will decrease to only 5 days. It is important to remember that there still is no yield loss at this threshold. Spraying early (below 250 aphids per plants or tank-mixing insecticide with glyphosate applications) is not recommended in North Dakota. Early insecticide or below threshold treatments simply remove any natural enemies in the field, resulting in a field that is open to re-infestation by immigrating aphids. This could lead to the necessity of re-spraying later in the season (source: Ian MacRae, UMN).




Two sources of weekly soybean aphid reports from multiple locations in North Dakota are available:
- the NDSU IPM website
  *http://www.ag.ndsu.nodak.edu/aginfo/ndipm/index.htm*
- the Pest Information Platform for Extension and Education (PIPE).
  *http://www.sbrusa.net/*

In PIPE, sentinel plots are monitored throughout the U.S. for soybean rust and soybean aphid. State commentaries are also provided.

**POTATO LEAFHOPPERS HAVE ARRIVED**

Low populations of potato leafhopper have been observed in alfalfa, dry beans, soybeans, and potatoes in eastern North Dakota. This year, migrating potato leafhopper invaded North Dakota in late June from southern states where they overwinter. The adults, which are quite mobile and move from field to field, may migrate from freshly cut alfalfa fields.

The small (⅛ inch), pale green, wedge-shaped adults move rapidly by jumping (see photograph). Nymphs are paler green, lack wings (see photograph) and exhibit a characteristic sideways walk when disturbed. Nymphs can be found on the undersides of leaves. Nymphs are generally more damaging than adults, since they feed for several weeks on the leaves where they hatched.

**Adult potato leafhopper** *(photo courtesy S. Brow, Univ. of Georgia, Bugwood.org)*

**Potato leafhopper nymph** *(photo courtesy F. Peairs, Colorado State Univ., Bugwood.org)*

Sweep nets are useful for confirming potato leafhopper presence in a field. Fields should be scouted to determine whether economic populations are present. Follow these economic thresholds to help make insecticide spray decisions:

**Dry bean** = 1 leafhopper per trifoliate leaf
**Alfalfa** = 1-2 leafhoppers per sweep when alfalfa is 8-14 inches high
**Soybean** = 5 leafhoppers per plant in vegetative stage and 9 leafhoppers per plant in early bloom stages
**Potato** = 10-20 adults per 20 sweeps, or 1 nymph per 10 leaves

**BARLEY THRIPS HIGH IN CENTRAL NORTH DAKOTA**

High numbers of barley thrips (>10 thrips per stem) have been reported in the central regions of North Dakota near Harvey and McClusky. Sampling for thrips should begin when the flag leaf is first visible and continue until the head is completely emerged from the boot. Most thrips can be found under the top two leaf sheaths. The dark brown to black thrips can be found by unrolling the leaf sheaths away from the stem. Direct feeding on reproductive tissues also may result in reduced seed weight. With the high market value of barley, the economic threshold is lower in 2008 than in previous years. Using a cost of control of $8.00 per acre and value per bushel of $8.00, the current threshold is only 2.5 thrips per stem. **Insecticide treatments are recommended before heading is complete.** Methyl parathion (8 - 12 fl oz per acre) is the only insecticide registered for control of barley thrips in North Dakota. The pre-harvest interval is 15 days. Do not enter treated field within 48 hours after methyl parathion application.

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# plant science

**SUNFLOWER RESPONDING TO IRRIGATION**

In North Dakota sunflower is commonly grown as a dryland crop. University research and farmer experience has shown that sunflower will respond positively to irrigation with yield increases over dryland yields common on droughty soils and in dry years. Sunflower can be grown on a wide range of soils and under different climatic conditions. Low sunflower yields may be caused by any of the following or their interaction: incorrect plant population, poor soil fertility, excess moisture, drought conditions, insufficient weed control, diseases, insect damage, bird depredation, plant lodging, late planting and harvesting losses. It is important to manage all the factors listed and if possible, supply irrigation water to the crop if needed.

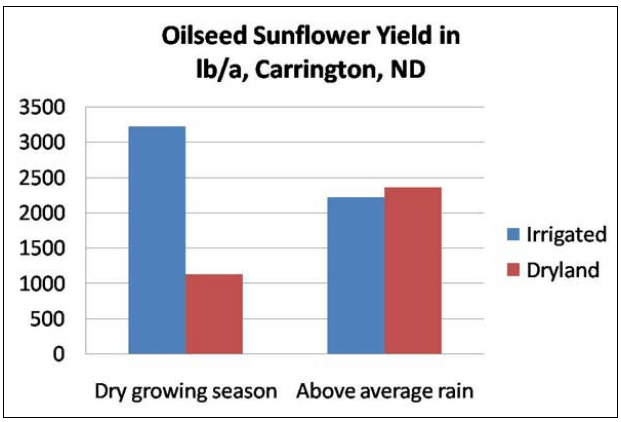


Figure 1. Average yields of 26 sunflower hybrids during the dry growing season and average yield of 31 hybrids in a season with above average rainfall.

Figure 1 indicates that there was a very large yield response to irrigation during a dry growing season, however during the season with above average rain the yields between irrigated and dryland sunflower were similar. White mold in the irrigated sunflower reduced the yield potential during the wetter year. Under irrigation some lodging was observed especially in the taller varieties. Sunflower plants were leaning because the heavy heads pulled the plants over as the roots were not able to anchor the plant in the wet soil. Some neck breakage occurred in the irrigated trials but few heads were completely lost. The recommended plant population for irrigated sunflower in our region is 24,000 to 28,000 plants per acre planted in 30 inch rows.

Water utilization by sunflower depends on the sunflower hybrid, date of planting, timing of irrigation, soil types, soil fertility and plant populations. Optimum

utilization of water occurs if N, P and K levels are sufficient for high yields.

Water deficiency between flowering and maturity negatively impacts yield more than at other times in the development of the plant. Irrigation management becomes much more critical from early flowering until maturity. Irrigation should maintain soil moisture at 80% of field capacity at flowering stages and at 70% of field capacity at other times. The exact timing and number of irrigations depend on rainfall distribution and stored soil moisture. Typical of all high value irrigated crops, monitoring of the crop and top level management practices are vital in order to obtain high economic returns.

Resources:
A site-specific irrigation scheduler can be accessed on the NDAWN Web site http://ndawn.ndsu.nodak.edu/ To use the irrigation scheduler, you need to log in to the NDAWN Web site and create a user name and password.

Information about irrigation can be found at the following NDSU web site:
http://www.ag.ndsu.nodak.edu/abeng/irrigation.htm#irrigationwatermanagement

Crop water use tables can be created for different crops and locations:
http://ndawn.ndsu.nodak.edu/crop-water-use-table-form.html

Soil, Water and Plant Characteristics Important to Irrigation:
http://www.ag.ndsu.edu/pubs/ageng/irrigate/eb66w.htm

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**USING GLYPHOSATE AND OTHER HERBICIDES PRE-HARVEST IN SMALL-GRAINS**

With winter wheat in the middle of grain-filling and other small grains not that far behind, it is now time to think about harvesting. If green weeds in the crop will hinder the harvesting process there are several herbicides labeled for pre-harvest weed control (refer to the 2008 Weed Control Guide and the labels of approved products for additional details). Weed control with pre-harvest herbicides, however, is generally disappointing as weeds at this time are tall, nearing maturity and slow growing. Furthermore, green weeds can take a week or more to dry down even with an effective treatment.

Glyphosate, in addition to controlling weeds, is labeled for use in aiding the dry down of the crop itself (as opposed to controlling and drying down weeds in the crop). Glyphosate is a systemic herbicide and takes from 7 to 10 days to effectively kill the growing parts of the crop, consequently an increased rate in dry down is not immediately visible. Traditionally, fields that had excessive green material were swathed. Swathing enables faster dry down than pre-harvest glyphosate if significant levels of green material are present in the crop. A standing crop that has been treated with glyphosate, however, will dry faster than a swathed field after a rain.

When using glyphosate pre-harvest observe the following guidelines:

1. Apply glyphosate only after the crop has reached physiological maturity. For most varieties this occurs at a grain moisture content of about 30%. At this moisture content the grain is in the hard dough stage; if you run your thumb nail across the kernel, the indentation will remain. Applying glyphosate before physiological maturity can reduce yield, test weight and seed germination.
2. Because germination can be affected when applied too early, glyphosate should not be used in fields that will be used for seed or on barley intended for malt.
3. Pre-harvest applications of glyphosate must be made at least 7 days before harvest.

As with all agricultural chemicals, read and follow the label when using herbicides pre-harvest in small grains.

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# plant pathology

**FINAL STAGES FOR FUNGICIDE APPLICATION TO WHEAT AND BARLEY**

The wheat and barley crops advanced considerably over the warm 4th of July weekend, and many wheat crops flowered over that weekend. For some producers, fungicide decisions have already been made, and attention will be turned to the later planted fields.

For those later planted fields, applications of fungicides to control head scab at flowering stage also provide excellent control of leaf rust. And the products available for head scab control also give excellent control of leaf rust and leaf spot diseases.

*Example of leaf rust control:* In 2003 at the Carrington Research Extension Center, Blaine Schatz, superintendent of the Center, applied Folicur fungicide (4 fl oz/acre) to four varieties of spring wheat, at two growth stages: Feekes 10 (boot stage), and early flowering (Feekes 10.51).

On varieties 2375 (S), Reeder (MS), and Alsen (MR), the application at flowering gave much better control of leaf rust than applications at boot (from 10 to 45% better control). On the most rust resistant cultivar of the four tested (Briggs), the flag leaf and flowering application gave equal control of leaf rust. In ND on spring wheats, the development of leaf rust and Septoria fungal leaf spot generally gets going later in the season than in states to our south. Application at fungicides at flowering often provides the 21 days of protection needed to get the crop through grain fill.

**PLETHORA OF TEBUCONAZOLES**

The federal registration of Folicur (tebuconazole) in May opened the door for other federal registrations as well, because the patent on Bayer Crop Science's tebuconazole had expired. Jim Gray, Pesticide, Feed, and Fertilizer Team Leader at the ND Dept. of Agriculture, has quickly acted upon requests by various companies for supplemental labeling allowing the use of other tebuconazoles on wheat and barley. *As of July 3, 2008, Mr. Gray announced that supplemental labels for seven tebuconazoles are now posted on the ND pesticide registration database* (http://www.kellysolution.com/nd/pesticideindext.htm)

The names of the tebuconazoles and their manufacturer are:

| | |
|---|---|
| Folicur | (Bayer) |
| Orius | (MANA) |
| Monsoon | (Loveland) |
| Emboss | (Winfield Solutions) |
| Embrace | (Winfield Solutions/Agrilliance) |
| Tegrol | (Luxembourg-Pamol) |
| TebuStar | (Albaugh) |

The use pattern of all the products is the same, but an applicator MUST have the supplemental label of the appropriate product in hand, when application is made.

**NDSU IPM SCOUTS FIND MORE WHEAT LEAF RUST**

**Wheat:** Detection of **leaf rust** picked up during the 4th of July week, with 11.3% of the 168 wheat fields scouted showing some level of leaf rust. *These detections were all in counties in the southeast quadrant of the state.* The average severity of leaf rust in infected winter wheat fields was 9.2%, while average severity in positive spring wheat fields was 1.9%.

**Tan spot** remained the most common wheat disease observed, in 60% of the fields, with the northeast region showing the least amount of disease. **Loose smut** was increasingly observed, in 15% of the surveyed fields, and the average percent incidence of tillers with symptoms was 5.8%, but as high as 20% in one field. Loose smut is controlled with systemic seed treatments.

**Loose smut in wheat**

Other wheat diseases observed included **Septoria leaf blotch, bacterial leaf blight, black chaff, and some powdery mildew,** all generally infrequently, although Septoria levels are increasing now that the crops are headed out.

**Barley:** The NDSU field scouts looked at 20 barley fields last week. Fungal leaf spots, including net blotch and those caused by Septoria species, were generally the only diseases observed in barley.

**PRE-HARVEST INTERVALS FOR SMALL GRAIN FUNGICIDES *cont.***

Last week's NDSU Crop and Pest Report contained a table indicating the pre-harvest interval required for common small grain foliar fungicides. This table related to pre-harvest intervals for wheat or barley used for grain. *Different limitations may apply if the crop is used for forage or silage, grazed or used for bedding. Individual labels must be consulted for these additional restrictions.*

Inadvertently, last week's table on pre-harvest intervals did not include the mancozeb products such as Dithane, Manzate, and Penncozeb, nor were the copper containing products, such as Champ, Cuprofix and Kocide, included. The pre-harvest interval for mancozeb products is 26 days, and the copper product labels say "the first application may be made at early heading, and may be followed with another application 10 days later".

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**FUNGICIDES, FUNGICIDE RESISTANCE, AND LOW-RATE RECOMMENDATIONS**

I have had several questions about applying multiple applications of reduced rate fungicides. The questions have been raised in part to the high value of commodities and the high value of inputs resulting in a lower breakeven point, and due to success with early-season low-rate applications on wheat. I understand why the questions are being asked, but to explain this well, I need to discuss a few things about fungicides first.

Fungicide applications have the potential to increase your profit margin. However, fungicide applications are not without risk. If disease pressure is low, you may not increase your yield enough to breakeven, which is why we encourage you to scout for disease and/or use one of the forecasting models (if available) to help make spray decisions. However, the greater concern over the long-term is related to the development of fungicide resistance.

To describe how fungicide resistance develops, we will use a human example. Turn on the T.V. and you will see people of all shapes and sizes, but we are all humans. This is just natural variation in the human population. Humans are also variable in ways that we can't see. Imagine that you have a stress on the human population, like the flu. We all know people that don't ever seem to get sick when everyone around them does. They are just a little better at fighting off illness.

Pathogen populations have a lot of natural variation too. Instead of the flu however, we apply stress to the pathogen by applying fungicides. Most of the time, the disease is significantly reduced after an application, however, there may be an individual pathogen in that population that is not affected by that fungicide, just like your neighbor that never gets sick. The pathogen that is able to survive in the presence of the fungicide is called -resistant. If all the other individuals are sick or killed, resistant individuals will multiple and spread very easily because they have no competition from other pathogens. If the fungicide is applied repeatedly, the resistant individual's offspring can become predominant in the population, and the fungicide is no longer effective.

There are some factors that influence the development of fungicide resistance. First, some pathogens are more variable than others, and have a proven track record for developing fungicide resistance. Second, some fungicides are more likely to lose effectiveness than others (this is because of the biochemical mode-of-action they have on the pathogens). Third, the frequency and rate that the pathogen is exposed to the fungicide will influence the development of fungicide resistance.

We can't control the variability of the pathogens, or the inherent risk of the fungicide itself, but we can control the exposure. Anytime the pathogen is exposed to a fungicide, there is a chance that a resistant member of the population will survive and become predominant. This is most true when the fungicide is applied at a reduced-rate. If the fungicide is effectively 'weak', there is a greater chance to select for some individuals that have a lower level of resistance (a greater likelihood that a more people will be able to fight off a weak strain of the flu, while they may not be able to fight off a stronger strain). Over time, the odds of fungicide resistance developing may increase with reduced rates. Consequently, we do not recommend using a below-label rate.

The one low-rate exception to this is a recommendation that NDSU has made on wheat. The recommendation is for a low-rate fungicide application to control tan spot of wheat, but only when a susceptible cultivar is planted on wheat ground. NDSU has accumulated years of data that show this reduced-rate is able to effectively kill the pathogen and control diseases when applied early. Additionally, there is good evidence to suggest that the tan spot fungus is unlikely or very slow to develop fungicide-resistance. Only in recent years has the Septoria fungus, another similar leaf spot pathogen, showed some level of resistance to continued strobilurin fungicide use in Europe.

In most broadleaf crops however, we don't have nearly the amount of fungicide data that we do on wheat. We simply don't know if reduced rates will actually control the diseases in many of the broadleaf crops. Furthermore, we know that some pathogens on broadleaf crops are prone to developing fungicide resistance quickly. Fungicide resistance has been observed in pathogens of potato, sugarbeet, and chickpea in North Dakota. Many related pathogens cause disease on other broadleaf crops in the state, making fungicide resistance a real concern for us.

Consequently, we recommend that you use a fungicide application only when you need it to control disease, and use the recommended rate.

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**TAKE NOTE OF DOWNY MILDEW OF SUNFLOWER**

Downy mildew of sunflower has recently been observed in North Dakota. Although control of the disease at this point in the season is not possible, the observation of downy mildew is important for future years.

Downy mildew generally causes a systemic infection, which results in a severely stunted plant and death in the seedling stage. Although it can also cause a secondary infection, which occurs later and causes limited damage to plants. When plants are systemically-infected with downy mildew they will often be stunted and their growth will be distorted.

The leaves may appear 'crinkly' with yellowing on the top sides of the leaves (particularly along the leaf veins) with a white cottony growth on the underside. Secondary infections appear as small chlorotic (yellowed) spots on the leaves and do not result in a systemic infection or stunting.

Sunflower with a systemic downy mildew infection next to a healthy sunflower. Note: plant stunting with deformed and yellowing leaves.

Yield losses to downy mildew are generally low because systemically infected plants often die, and adjacent sunflowers are able to compensate by producing larger heads. In general, yield loss is not usually observed if less than 5% of the plants are infected. However, when infected plants are in clusters or in rows the compensatory ability of sunflowers is reduced, and yield loss in that part of the field may be significant.

Secondary infection usually causes no yield loss. Once downy mildew occurs there are no tools to control it, thus, prevention of downy mildew is the best management strategy. The pathogen produces spores that may remain in the soil for many years, and when the environment is favorable, may germinate and cause infection for up to five years after downy mildew was first observed in the field. For this reason, it is important to take note of any downy mildew occurring in your fields. Several years of rotation, downy mildew resistant varieties, and seed treatments are recommended when returning to a field with a history of downy mildew.

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# weeds

**SOYBEAN WEED MANAGEMENT: A MID-SEASON VIEW**

Evaluating weed control studies makes the benefits of preemergence herbicides in managing early-season weed competition and herbicide application timing in soybean clearly visible. In several field trials, we applied an array of preemergence broadleaf herbicides, which were followed by postemergence applications of glyphosate. The intent of these preemergence herbicides was to provide initial suppression of broadleaf weeds so that glyphosate applications could be delayed. The delayed glyphosate applications would then be closer to soybean canopy closure and we hope this will avoid the need for a second glyphosate application. Several of the preemergence herbicides were at reduced rates to keep the treatment costs affordable. The degree of weed control or suppression varied among the herbicides in this trial as expected because some herbicides were inherently more effective on different weeds. Still, the tested herbicides such as acetochlor, Permit, Authority First or Sonic, Authority MTZ, Authority Assist, Gangster, Spartan, Valor, etc. all provided significant weed suppression and allowed glyphosate applications to be delayed. The overall level of weed management will be greater than a single application of glyphosate. In your fields, you should be able fine tune management systems by selecting herbicides to match the weed species in the field. The benefits of this approach may be greater for crops planted in rows as compare to drilled, which canopy sooner.

Beyond the benefit of these two pass programs for improved weed management for this year, this approach should also hold longer-term benefits. Consider your current status of glyphosate-resistant weed development. Expression of weed resistance is a "numbers game", which means that the greater number of weeds sprayed with glyphosate increases the probability that a resistant weed might be found. In terms of our RR corn, soybean, canola, and sugarbeet fields and the high levels of common lambsquarters, common ragweed, and kochia, it is clear that a greater number of these weeds will be sprayed with glyphosate. Therefore, the risk of selecting a glyphosate-resistant biotype (examples of glyphosate-resistant weeds exist in other states) is greatly reduced where the effective preemergence herbicides were used.

Although the option to use preemergence herbicides in soybeans is long gone for this season, it may be worth considering if or where it may have a fit in your management for next season as glyphosate applications are soon to be completed.

**DEALING WITH LATE WEED ESCAPES IN CORN**

While herbicide advertising often talks about full-season weed control, for most weeds we only need herbicides to control weeds until the canopy has developed sufficiently to suppress any late-emerging flushes. Weed survival rates can be greater at earlier emergence dates but biomass and seed production of weeds emerging at mid-season can be suppressed more than 90% compared to weeds emerging with the crop.

Many fields are likely to have greater problems with late-emerging weeds than normal. There are two primary causes for these infestations: 1) dry and cold conditions in May will suppress activation of soil-applied and excess rain in June will reduce the length of control provided by residual herbicides, and 2) poor canopy development due to cool temperatures, saturated soils and reduced stands will provide a favorable environment for weed growth.

Fields should be carefully evaluated prior to spraying weeds in large crops. Weeds that emerge significantly later than the crop are at a competitive disadvantage with the crop due to the crop's head start. While these weeds may survive and produce seed, their impact on the yield should be minimal unless they are thick enough to create a sod. For example, if you have 3 to 4 inch weeds in 30 inch corn it probably doesn't warrant an additional weed control trip. Spraying late season crop may cause more damage to the crop than would be gained by eliminating late-emerging weeds. Most importantly, the majority of herbicide labels prohibit application to larger crop due to problems with crop tolerance or efficacy. Glyphosate has restrictions in RR crops also.

Everyone expects weed-free field at harvest, sometimes it is best simply to live with the hand that's been dealt. While late-emerging weeds in most fields are unlikely to impact yield, the seed produced by these plants will increase weed densities the following year. This increase in weed populations should be taken into account when developing weed management plans for 2009.

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# forestry

**ASH RUST**

I've begun to receive calls on ash rust, a common disease of ash trees. This fungus is often noticed as small patches of orange lesions on the leaves. Sometimes the disease attacks the petiole or twig, occurring as a large misshapen mass. The lesions contain two types of disease spores. If the infection is severe enough, leaves will fall off the tree prematurely.

**Ash rust fruiting bodies on the underside of the leaves.** *Photo by Joe Zeleznik.*

**Ash rust on the twig of a green ash tree, Logan County N.D.** *Photo by Shelley Feist, Logan County Soil Conservation District.*

Like many other rust diseases, ash rust has two hosts – ash trees and several cordgrass (*Spartina*) species. The disease is most serious near areas where the cordgrass is abundant, such as wet or saline soils. There are several types of rust diseases on cordgrass and they are difficult to distinguish from one another. Therefore, the presence of rust on cordgrass does not necessarily mean that ash trees in the area are threatened.

Most infection occurs in the spring, but new infections can still occur in early summer if conditions are right – wet weather with warm temperatures, about 55 to 75 F. The best way to control ash rust is to eliminate nearby cordgrass. If this is not possible, fungicides that contain the active ingredient myclobutanil may be used as a protectant fungicide on the trees whenever conditions for severe infection are high.

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# around the state

**South-Central ND**

During the past week (July 2-8), the region received rain ranging from less than 0.1 inch at Edgeley and Oakes to 1.5 inch at Dazey, based on NDAWN (North Dakota Agricultural Weather Network). Most areas received at least one-half inch of rain, which will help preserve potential for good seed yield and quality in small grain.

The region's corn is rapidly gaining height but continues be to behind in development. Corn planted on May 1 at Carrington was at 710 growing degree day (gdd) units, Linton at about 740 gdd units, and Oakes at 860 gdd units as of July 8, with all sites minus 90 to 130 gdd units compared to the 5-year average. Soybeans are near or at flowering and sunflower are nearing the reproductive stage (R1). Many dry bean fields are in poor condition due to plant establishment challenges (e.g. dry and cool soils at planting time, soil herbicide injury, and root disease).

Wheat foliar diseases are present but continue to be at low incidence. NDSU's disease forecasting models indicate continued risk for tan spot in wheat. For example, at Carrington, the model indicated risk of tan spot infection each day from July 1 to 7. Scab risk continues to be low. Small grain aphids are present but are not an economic concern due to low densities and advanced crop stages. Wheat stem maggot injury is now appearing in the crop. Soybean aphids have been found at low levels in the region including Barnes, Dickey and LaMoure counties.

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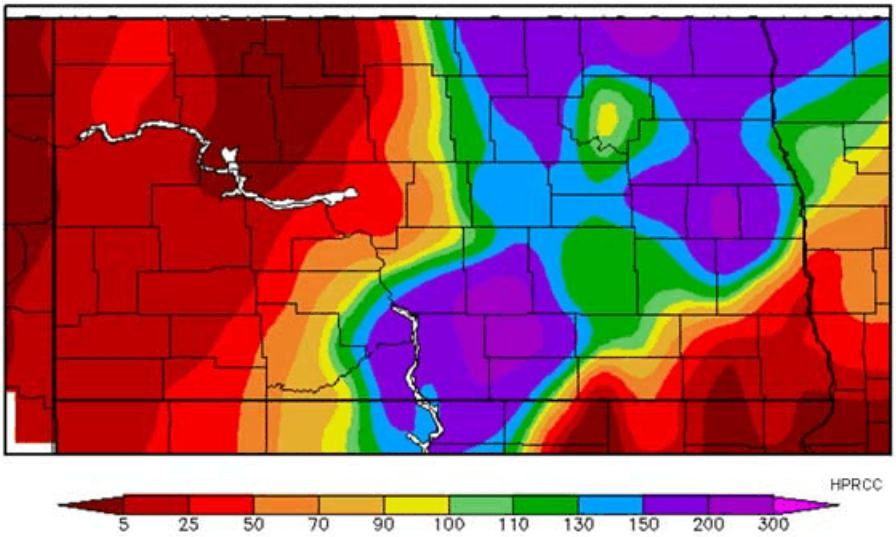
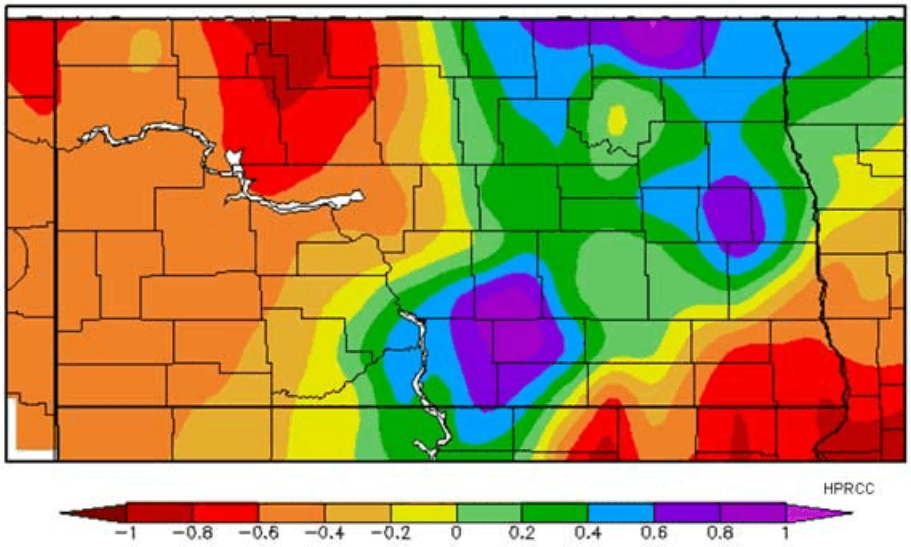
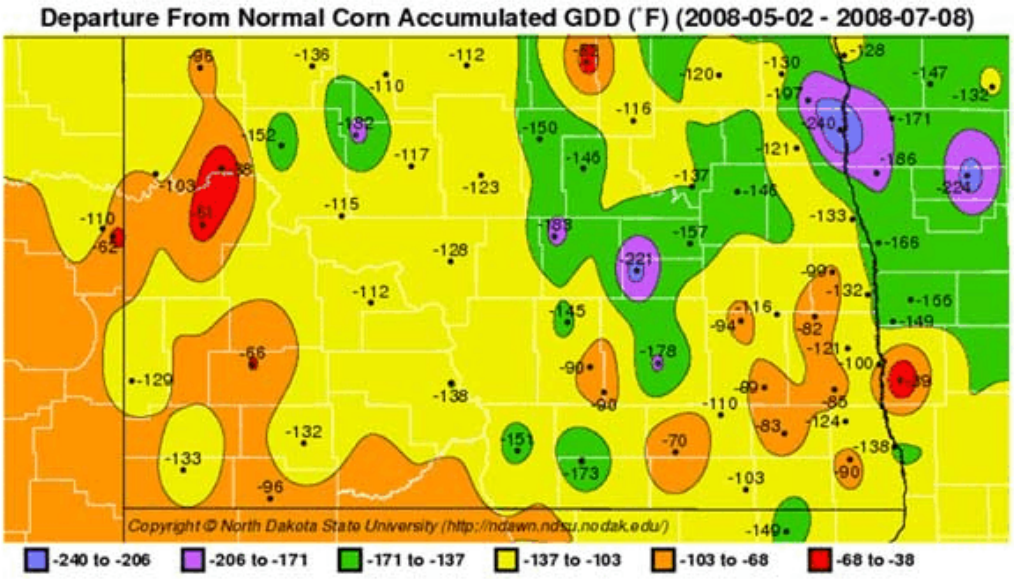
# weather

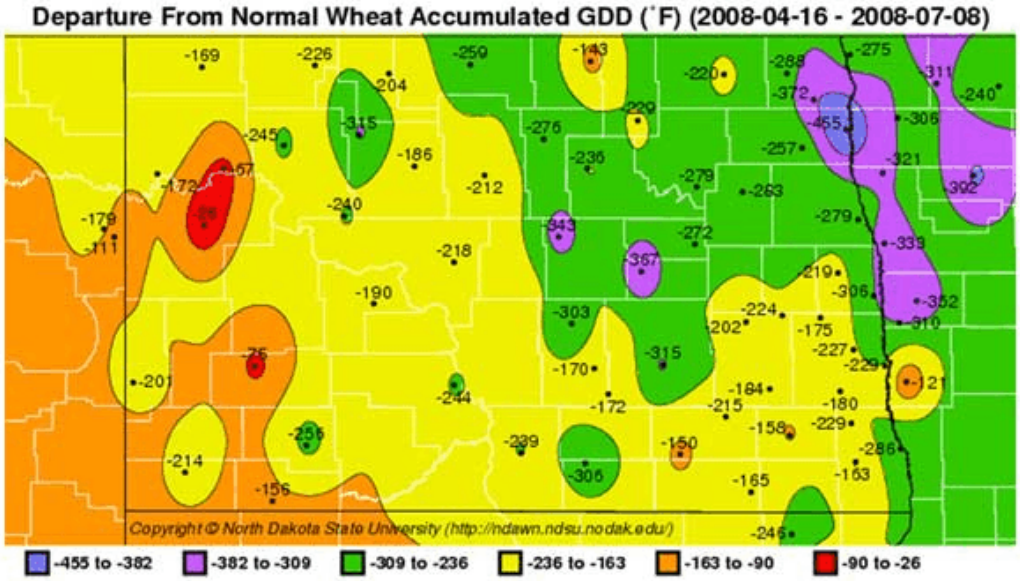
Last 7-Day Percent of Normal
Precipitation(%)
7/2/2008-7/8/2008




Last 7-Day Departure From Normal
Temperature (°F)
7/2/2008-7/8/2008



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