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Note to Subscribers:

There will be no Crop and Pest Report next week, August 14th. The next scheduled issue of the Crop and Pest Report will be August 21, 2008.

Entomology

CORN ROOTWORM MANAGEMENT

Late July through late August is the time when growers should monitor for corn rootworm to determine the potential economic injury in next year's corn fields. This article reviews basic corn rootworm identification, biology, causes of injury, field scouting methods, and control methods for corn rootworm.

Two species of corn rootworm beetles affect corn in North Dakota: western corn rootworm (*Diabrotica virgifera virgifera*) and northern corn rootworm (*D. barberi*). Western corn rootworm adults are yellowish orange with three black stripes on the wing covers that do not extend all the way to the tips, while northern corn rootworm is a solid green in color (see photographs). Adults of both species are about 1/4 inch long. Larvae reach a mature length of about 1/4 inch and are creamy white in color (see photograph).

Western corn rootworm adult *(photo by Whitney Cranshaw, Colorado State University, Bugwood.org)*

Northern corn rootworm adult *(photo by Natasha Wright, Florida Dept. of Agriculture and Consumer Services, Bugwood.org)*

Western corn rootworm larva *(photo by Scott Bauer, USDA-ARS, Bugwood.org)*

One generation occurs each year and both species have similar life cycles. Both species overwinter as eggs, which hatch in June over a period of a few weeks. Larvae move to nearby corn roots where they begin feeding. Larvae pass through three instars and pupate in early to mid-July. Pupation lasts for five to ten days depending on soil temperature. Adults emerge in late July and begin to reproduce. Females lay 300 to 400 eggs in the upper two to eight inches of the soil.

Corn rootworm injury is caused mainly by larval feeding on the root system. Larvae feed on root hairs and later on main roots, which lessens the plant's ability to take up water and nutrients. This results in lower yield. In heavily infested fields, root injury may be so severe that the plants lodge at ground level. The plants are still alive and try to grow upright, which results in "gooseneck" plants. Goosenecked corn is difficult to combine and further yield loss results from not being able to harvest ears from these plants. Adults, particularly northern corn rootworm adults, may cause injury by feeding on silks before pollination is complete. This causes reduced seed set, which also lowers yield. However, silk feeding by adults is usually not a problem.

Sampling for corn rootworm adults should be conducted from late July (after pollination is complete) through late August once a week over a three-week period. This will allow the grower to determine the potential infestation in next year's corn. In continuous corn and first-year corn that will be planted to corn the next year, adult abundance can be determined by direct visual counts of corn rootworm adults on corn plants. For direct visual counts in corn, sample the field in a "W" pattern. Stop periodically and count the number of adults on the foliage and silks of two plants, and continue in this fashion until you have counted 40 sets of two plants per set. Corn rootworm adults may be concentrated in "hot spots" in a field, so be sure to cover a large portion of the field using the "W" pattern. After you have counted 40 sets of two plants per set, simply divide the total number of adults by 80 to obtain an average of adults per plant. **For continuous corn using the direct visual observation method, the economic threshold is 1 beetle per plant. For first-year corn using this method, the economic threshold is 0.5 beetle per plant. Be sure to sample fields once a week during August as peak adult emergence may not occur during the first sampling.** A common crop rotation in southeastern North Dakota is a corn/soybean rotation. Soybean fields that will be planted to corn the next year can be monitored for corn rootworm adults during August by using yellow sticky traps. Placement of sticky traps in soybean fields should be AT LEAST 100 feet away from any neighboring corn. A minimum of four trap stations should be used, but use more traps in large fields (up to 10 total trapping stations). At least two trap stations should be on a side of the field not adjacent to corn. Traps should be changed once every two weeks. The average number of beetles per trap per day over the entire monitoring period provides an estimate of potential economic injury to corn the next year. This monitoring method has not yet been studied in North Dakota. **Research from Illinois, Indiana, and Ohio suggests an economic threshold of 5 beetles per trap per day.** Sweep net sampling in soybean for corn rootworm adults is not recommended, as daily weather conditions and beetle flight periods are too variable to give accurate estimates of beetle abundance.

Control of corn rootworm can be achieved by crop rotation, soil insecticides, and by planting transgenic Bt corn labeled for rootworm control. Soil insecticides are typically applied at planting in a 7-inch T-band over the open furrow or directly in-furrow with the seed. Be sure to read and follow insecticide labels. Transgenic Bt corn is a convenient management tool in that it essentially contains a built-in insecticide that offers control of larvae. **Be sure to follow the refuge requirement to help prevent the development of Bt resistance in corn rootworm populations! The refuge requirement for corn rootworm is 20% non-Bt corn planted within or directly adjacent to Bt corn.**

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CORRECTION ON DATES FOR SECTION 24C FOR MUSTANG MAX AND GRASSHOPPER CONTROL IN FLAX

A Special Local Need (Section 24c) was registered for Mustang Max EC Insecticide® from FMC Corporation for control of grasshoppers and other insects in flax. Active dates are **July 24, 2008 through September 1, 2009**. The recommended use rate is 4 fl. oz. per acre. Do not apply within 7 days of flax harvest.

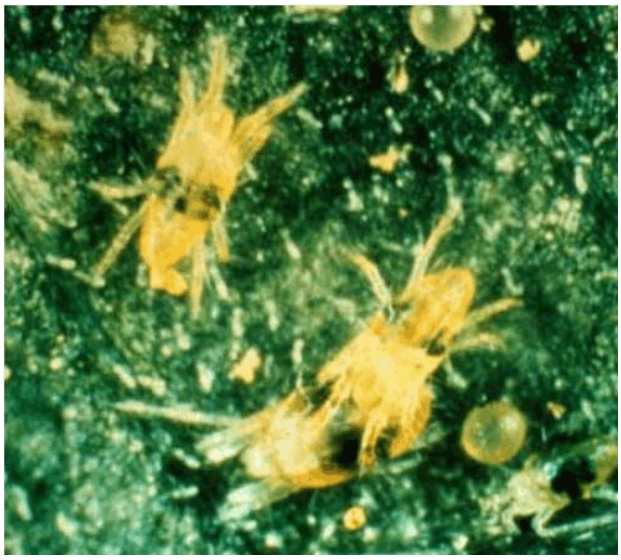
SCOUT FOR TWO-SPOTTED SPIDER MITES IN SOYBEANS AND DRY BEANS

Two-spotted spider mites have been observed in about 10% of soybean fields in hot, dry regions of production (Cando, Towner County). Overall, mite populations are low. Mites can be found on the underside of leaves of the lower half of plant. The life cycle of spider mites can be completed in only 5-14 days with fastest development rates occurring above 91F. Each female lives for 30 days and she produces about 300 eggs during her lifetime. In hot, dry weather, natural fungal diseases of mites are slowed and populations can increase from a few individuals to millions within a few generations. Remember, spider mites thrive on the stressed plants that are nutrient rich!

Leaf injury symptoms appear as stippling first and then progresses to yellowing, browning or bronzing as feeding injury increases, and eventually leaf drop (see photograph). Feeding injury causes water loss from the plant and reduces the photosynthetic ability of the plant. In severe cases, premature leaf senescence and pod shattering will occur and even plant death. When a severe mite infestations occur during late vegetative and early reproductive growth, a 40 to 60% yield loss between treated and untreated soybean has been demonstrated in other north central states. Spider mites can cause yield reduction as long as green pods are present.

Spider mite injury symptoms in field
(Source: Ken Ostlie - Entomology, UMN)

When scouting for spider mites, look on the underside of leaves and lower foliage for a tiny mite and fine spider-like webbing (see photograph).



Spider mites on leaves

Adult spider mites are small (< 0.2 inch), greenish-white to orange-red in color, and have 2 dorsal spots and 4 pairs of legs (see photograph). Nymphs are smaller than adults and have 3-4 pairs of legs. By shaking a leaf or plant over a white sheet of paper, you can see these tiny mites (yellow dots), which crawl slowly over paper. Predatory mites will move faster than the two-spotted spider mite. When spider mites need to move due to diminishing food supply, they climb to the tops of plants and are dispersed by the wind "ballooning", so they can spread quickly within a field or to adjacent fields.

Spider mite webbing and ballooning!

Source: D. Cappert, http://www.insectimages.org/

Be sure to scout during full pod (R4) through beginning seed (R5) stages since these crop stages are the most important contributors to soybean yield. If hot dry conditions exist, mites populations can quickly increase and sprays should not be delayed.

There is no specific threshold that has been developed for two-spotted spider mite in soybean. As a result, several guidelines are available from different states to determine economic infestation of spider mites in soybeans. One of the more commonly used economic threshold is based on different crop stages:

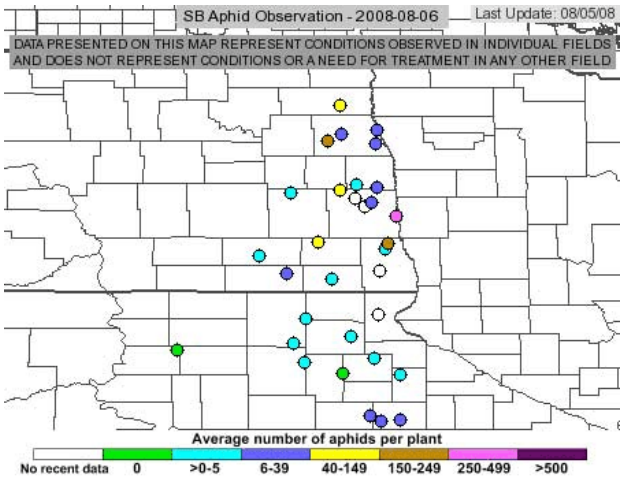
- before pod development = 20-50% of leaf area is discolored/stippling on plants
- between R3 (beginning pod) to R5 (beginning seed) = 10 to 15% of leaf area is discolored/stippling on plants
- R6 (full seed) to R7 (beginning maturity) = 25% of leaf area is discolored/stippling on plants

The discoloration is caused from the feeding injury (e.g., leaf stippling) of spider mites, and is difficult to estimate in the field.

Remember to use an organophosphate insecticide (e.g. Lorsban, Dimethoate) over a pyrethroid insecticide to avoid flaring mite populations. Reasons for the increase in mite populations include: disruption of the natural enemies that control spider mites (predatory mites); increased movement of mites out of fields, and increased reproductive rates of female mites. Early detection facilitates timely and effective rescue treatments. Current insecticides for soybeans provide short-term protection, maybe 7-10 days, from the pest. Fields will need to be re-monitored continually for resurging populations. The efficacy of an insecticide can be improved significantly with sufficient coverage (>10 GPA of water) and application at high pressure to penetrate foliage.

SOYBEAN APHIDS MOVE FURTHER WEST

Economic levels of soybean aphids have been reported from Barnes, Steele, Stutsman, Foster, Ramsey, and Towner Counties this past week. Recent southernly winds had been favorable for aphid migration into the more northern and central regions of North Dakota. Soybean aphid populations can rebound in later planted soybean fields in late August and early September. Continue scouting soybean fields for aphids until R6 or full seed!



Soybean aphids

TIME TO SCOUT FOR THE SECOND GENERATION BEAN LEAF BEETLE IN SOYBEANS

A few soybean fields in southeastern North Dakota have reported with low levels of bean leaf beetles (BLB) in soybeans. This is the 2nd generation of BLB, and the most important in terms of potential yield impact due to its pod feeding. This causes pod scarring, pod clipping and decreased seed quality. Fungal pathogens can also infect injured pods causing discolored, shrunken or moldy pods. Adult BLB (see photograph) are 5 mm long with yellow or red wing covers with four black spots and black margin around the edges of the wing covers. The main identification characteristic is the black triangle behind the head. Feeding injury symptoms include round holes between leaf veins (see photograph).

Adult Bean Leaf Beetle

It is a difficult insect to scout for, because it often hides or drops to soil when it sees you approaching. Sweep nets can also be used for monitoring or detecting beetles. **Treatment would be recommended when 3 to 7 beetles per sweep are found. Economic threshold is 25% defoliation from reproductive pod fill to maturity or 10% pod feeding (or the presence of clipped pods).**

BLISTER BEETLES OBSERVED IN CANOLA

Nuttall blister beetles (see photograph) have been observed feeding on canola pods in Burleigh County.

Blister beetle

Several species of blister beetle feed on canola including: *Lytta nuttalli* or Nuttall blister beetle, a large purplish green beetle; *Epicauta fabricii* or the Ash-gray blister beetle; and *Epicauta ferruginea*, a smaller rusty color, pubescent beetle. Most species of blister beetle have one generation a year. Adults become active in early to mid summer and lay eggs in the soil. Eggs hatch in about two weeks into a larvae called triungulins, which actively prey on grasshopper egg pods (genus *Epicauta*) and bee eggs, larvae, and stored food (genus *Lytta*). Larvae overwinter. Adult blister beetles are attracted to blooming canola fields, where they are ravenous feeders devouring leaves, stems, flowers, and pods. These beetles are mobile and often congregate in certain spots in a field from their gregarious behavior. In some instances, blister beetles feed for a short period of time and then migrate to other plants or fields.

The presence of large numbers of blister beetles in spots of a canola field has often concerned growers. However, adult feeding is generally not significant enough to warrant an insecticide treatment. The "High Plains Integrated Pest Management Guide" recommends treatment when there are 10 adult blister beetles per plant feeding on the flowers or pods. Spot treatment with foliar insecticides registered in North Dakota is usually recommended when populations are economic. Follow safe pesticides practices when spraying flowering canola to protect honey bees.

INSECT IDENTIFICATION QUIZ

Question: What is this hairy caterpillar? It has been observed feeding on sunflower leaves near Lawton, Ramsey County, North Dakota this year.

Answer: This is a larvae of the salt marsh caterpillar (*Estigmene acrea*). The salt marsh moth (Arctiidae) are medium-sized moths with broad wings. It is distributed from Canada to Florida and Texas. Caterpillars (larvae) are large about 2 inches long and can be yellow to black with long setae. Since larvae are hairy, they are often known as woolly bears. The salt marsh caterpillar feeds on a wide variety plants from field crops (sunflowers, clover, corn, peas, potatoes, cabbage) to trees (apples, walnuts). It is not an economic insect pest of sunflower. See Moth of North Dakota website:

http://www.ndsu.nodak.edu/ndsu/ndmoths/names/8131.htm

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plant science

CANOLA HARVEST

Canola fields may have some weeds or later maturing canola plants and a decision needs to be made about swathing the crop prior to harvest. To determine when the field is ready for swathing examine plants in different parts of the field. The crop is considered ripe and ready to swath when 30 percent to 40 percent of the seeds on the main stem have turned color. After swathing the canola seed should be allowed to ripen in the swath from 10 to 14 days before combining. The seed moisture and green seed count need to be checked before combining. The moisture content of the canola seed should be around 10 percent and the green seed count should be below 2 percent. Check combines, trucks and bins for areas that may leak seed during harvest and transportation. Gaps and holes should be repaired. The travel speed of the combine should be similar to the speed of the pickup so the swath will be lifted gently. The cylinder speed best used is half to two-thirds of the cylinder speed used for small grain harvest. The speed should be just fast enough to break open the seed pods. Make sure no over-threshing of the pods and stems and overloading of the sieves takes place. Fan speed should be low to avoid blowing canola seed out of the combine with the chaff. For more information on swathing and harvesting canola see http://www.ag.ndsu.edu/pubs/plantsci/crops/a1171w.htm.

SEEDING GREEN MANURE OR FORAGES INTO WHEAT STUBBLE

Wheat stubble can be an excellent seedbed for no-till planting green manure legumes, alfalfa, or grasses. With no-till, soil moisture is conserved, erosion is reduced, weed seeds remain buried and tillage expenses are eliminated. One of the bigger challenges is heavy residue that might interfere with proper drill operation and seed placement, seed contact with the soil or partly smother new seedlings. Residue can be especially troublesome right behind the combine even when using a good straw chopper and spreader. When planting legumes the best way to minimize this is to bale the straw and be sure to have a well-functioning drill. Of course there is a need for some soil moisture for the seed to germinate. In some areas in western North Dakota there may not be enough moisture to seed a crop into the wheat stubble. Late summer weeds, such as annual weeds that develop after harvest or volunteer wheat that sprouts later in the summer, provide another challenge. Control weeds that exist prior to planting with herbicides like glyphosate and be ready with post-emerge herbicides for weeds or volunteer wheat that emerge later. To ensure a good stand

consider cross-drilling or double-drilling. This means planting one-half of the seed while driving in one direction and the other half while driving (in the same field) at an angle to the first direction. This helps fill in any gaps and plants will develop a closed canopy quicker, which leads to improved weed control earlier in the season.

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BUGGY WHIP CORN

With the recent moderate weather, we have not been able to catch-up on the heat units needed for corn and in some cases we are now falling further behind the long-term average. Maturity issues aside, the corn crop looks respectable in regions of the state where drought has not been problematic. In the last couple of weeks, I have visited a number of fields where the upper-most leaf of the corn plants was curled so tightly that it looked like a buggy whip. Buggy whip corn is, in fact, a frequently used name to describe this phenomenon. Twisted whorls or buggy whipping is most commonly a problem of young corn plants (five to six leaf stage) and occasionally can be traced to a misapplied herbicide or a severe stress. This year, however, the twisted whorls are occurring much later in the development of the plant. In some plants these leaves are restricting the emergence of the tassel (see accompanying photographs). Given the fact that these plants are observed in fields with differing herbicide applications and with different hybrids, buggy whipped corn this year is most probably an environmentally induced plant response. Buggy whipping in corn that cannot be traced to an abiotic stress or to herbicide injury most commonly occurs when conditions favor rapid growth after a period of slow growth. The cool weather that persisted later into the season than normal most likely has predisposed plants to mid-season buggy whipping this year. These tightly curled leaves will generally unfurl with little impact on subsequent development and yield. In some fields this year, however, the whorls were so tightly wrapped that the tassels emerged through the side of the whorl. In some cases, the tassels emerged after pollen had been shed. Given that corn produces an abundance of pollen, buggy whipping that causes the loss of a few tassels will probably not impact yield. Buggy whip corn was not just a problem in North Dakota this year, as it was also reported to be common in Iowa (see http://www.extension.iastate.edu/CropNews/2008/0711elmorerobertson.htm).

Examples of the tops of buggy whipped corn plants.

Tasseling delayed by tightly curled leaves.

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plant pathology

NDSU IPM FIELD SCOUTS RESULTS

NDSU field scouts surveyed 81 wheat fields and 9 barley fields into the first week of August. Barley fields were located in the northeast, north central and northwest districts and were in the soft dough stage. Wheat fields were surveyed across the state, although the bulk of the remaining wheat or durum fields surveyed also were located in the northeast, north central and northwest districts of the state.

Because of the advanced maturity of fields surveyed, leaf diseases were more difficult to distinguish. The majority of fields (69.1%) had **tan spot** symptoms on the flag leaf , but only 3 fields were reported to have **leaf rust** on the flag leaf.

The frequency of detection of **Fusarium head blight (scab)** remained low in barley fields surveyed (only one of 9 fields) but increased in wheat/durum during the past week, with 39.5% of surveyed wheat fields showing some symptoms. Often a single floret or single spikelet of infection was observed (see figure).

Single spikelet infection of Fusarium head blight in wheat

The average field severity of scab across the symptomatic wheat fields was very low, less than 1%, but a few fields in the northeast district had field severities averaging 3.3%. Wheat fields in the northeast region may show additional symptoms of scab this week, because of recent rains that have gone through that region.

Fusarium head blight (scab) field severity is determined by multiplying the percent of tillers showing symptoms times the average severity on the grain heads. For example: 10% of tillers x 21% of head area with symptoms (on average in infected heads) = 2.1% field severity. Often, field severity is overestimated by quick glances at the field, because symptomatic heads are striking in appearance and stand out in an otherwise green field.

Also, fields that were treated with fungicides at flowering may show scab symptoms now. **Fungicides, if applied for scab control at flowering, were most likely applied three weeks ago and their suppressive activity in the plant has dissipated by now**. Unfortunately, the Fusarium fungus that causes scab is capable of colonizing wheat and barley heads until maturity. At maturity, moisture percentages in the grain drops to levels below which the fungus can continue growing. Fungicides in these situations still have reduced scab field severity generally by 50 to 75%, but disease ratings or harvest differences are needed to show these effects. *What we need now are dry, sunny days with low dew points, weather that will aid in crop maturation and retard further development of this fungus. Producers should do timely harvest once the crops have matured.*

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FOLICUR LABELED FOR MANAGEMENT OF SUNFLOWER RUST

Bayer CropScience has been granted a Section 3 – Full federal registration for the use of Folicur for the management of sunflower rust. This supersedes the ND Section 18 Crisis Exemption Issued on July 24th 2008. To use Folicur on sunflowers you must have the supplemental label in your procession, which is available at http://www.sunflowernsa.com/uploads/Folicur_Fungicide_36F_7-31-08.pdf

The active ingredient in Folicur is tebuconazole, a demethylation inhibitor (DMI), FRAC group 3 fungicide. The label states that Folicur can be applied at a rate of 4 – 6 oz. per acre with no more than 16 fl. oz. applied per season. An application cannot be made within 50 days of harvest. For more information, the supplemental label is available at the Bayer CropScience website.

Sunflower rust can cause economic losses to sunflower. The disease was first found between late June and early July in several locations in ND. The disease has been found in most regions of the state, although not in every field, and often at very low levels. Research conducted on sunflower rust in other countries suggested a fungicide application before severity on the upper four leaves reaches an average of 3% severity was an appropriate threshold. The same study found that an application 27 days after flowering was no longer beneficial, due to plant maturity. In our environment, I think that a threshold of 1-3% severity on the upper four leaves is probably appropriate. Headline (BASF) and Quadris (Syngenta) also are available for control of the disease. For a more detailed discussion of rust and its management, including pictures and severity diagrams, please refer to the July 17th issue of the Crop and Pest report at www.ag.ndsu.nodak.edu/aginfo/entomology/ndsucpr/index.htm, or a similar article published by the National Sunflower Association (which has a link the supplemental label for Folicur) at www.sunflowernsa.com/growers/default.asp?contentID=367.

BACTERIAL BLIGHT SHOWING UP ON DRY BEANS

In the last week, bacterial blights have shown up in dry beans. Three different bacterial blights are found on dry beans; common bacterial blight, halo blight, and bacterial brown spot. Each disease is spread by rain splash, and the diseases are frequently worse when the plants are injured by wind or hail. Several strong storms have moved through some of the state in the last two weeks, and this has contributed to the development of the diseases.

Although multiple diseases can occur at the same time and on the same plants, each disease has different symptoms.

Leaf symptoms: Halo blight appears as small water soaked lesions and often produces a large yellow-green halo. When temperatures are hot, the halo's may be smaller. Early symptoms of **bacterial brown spot** (see photograph on page 9) also appear as a small water soaked lesion but have a small yellow-green halo, often with a very defined border. As bacterial brown spot develops, the lesions turn brown and the centers fall out. Heavily infected plants look like they were shot by a shotgun. **Common bacterial blight** lesions begin on the edge of the leaf as a scalded area with water-soaked spots. Common bacterial blight lesions enlarge quickly and are bigger (up to an inch) than the other two bacterial diseases, and often have a narrow yellow border.

Pod Symptoms: Symptoms of **halo blight** and **common blight** are similar. Both diseases begin as water-soaked spots or streaks on the pod surface. As the lesions develop, they may be surrounded by a reddish-brown zone. Under humid conditions, a cream-colored exudate may be present in halo blight lesions, whereas a yellow exudate may be present in common bacterial blight lesions. **Bacterial brown spot** lesions begin as small water-soaked lesions, but become sunken brown spots. Pods with bacterial brown spot infections may be bent or twisted at the site of infection.

The biology and management of each disease is similar. Bacterial blights can survive in seed, bean residue, and sometimes weed hosts. Once the diseases are present, they can spread quickly if heavy rains and adverse weather conditions (high winds, hail, etc.) occur. Unfortunately, little can be done this season to manage bacterial diseases. Although copper fungicides are sometimes used in other regions of the country (dryer western states like Colorado), little success has been observed in North Dakota. Management for future years is important if you have bacterial blights in your fields. Clean seed, rotation, and good sanitation are all recommended. Although these practices are not a guarantee you will not have bacterial blights, they minimize the likelihood of getting the diseases. If you have bacterial blights in your field now, it is critical not to keep that seed for planting in the future.

Halo blight

Halo blight

Common bacterial blight

Common bacterial blight

Bacterial brown spot

Bacterial brown spot

(All photos courtesy Dr. Howard Schwartz, Colorado St.)

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CERCOSPORA LEAFSPOT IN SUGAR BEET

It is the season for Cercospora leafspot, the most damaging foliar disease of sugarbeet which reduces tonnage and sucrose content. The fungus *Cercospora beticola* causes Cercospora leafspot. The most common source of the Cercospora fungus is infected sugarbeet debris in the field. Cercospora leafspot develops rapidly in warm, humid, and rainy weather. The Cercospora spores are produced at temperatures of 68 to 79 F and relative humidities (RH) of 90-100 %. Spore release is effected by rain and dew. Optimal spore germination and infection occurs when the temperature is 75-77° F and the RH is 100 % for at least 8 hours. Day temperature of 80-90 F and night temperatures above 60 F favor disease development. Leafspot symptoms may occur about 5-21 days after infection depending on prevailing weather conditions. Cercospora infection produces circular spots about 1/8 of an inch in diameter with ash gray centers and dark brown or reddish-purple borders. As the disease progresses, individual spots coalesce and kill entire leaves, particularly on susceptible varieties. In humid conditions, the spots become gray and velvety with the production of spores. These spores further spread the disease, especially within fields, resulting in many infection cycles during the growing season.

As such, it is important to have early control of Cercospora leafspot. The best manner to control leafspot is by using an integrated approach that include cultural practices such as burying infected tops by tillage, planting tolerant varieties in fields with a minimum rotation interval of three years, and the timely and proper use of recommended fungicides.

There are a number of fungicides available for controlling Cercospora leaf spot. These fungicides are Inspire, Proline, Eminent, Enable, Headline, Gem, Super Tin, Agri Tin, and Topsin. Fungicides with different modes of action and which are most effective in research trials should be used in rotation. Always use recommended fungicide rates. Growers using ground rigs should apply fungicides in 15 to 20 gal of water per acre at 100 psi and aerial applicators should use 5 to 7 gallons of water per acre for best coverage. The benzimidazole (Topsin) should not be used as stand-alone application. Topsin can be used in a tank mix with a protectant such as Super Tin, but only once in a season.

At this time growers should scout fields for disease symptoms. Growers have done an excellent job of combining tolerant varieties, crop rotation and timely fungicide applications over the past years resulting in very, very low inoculum levels. As such, disease symptoms are now more difficult to find and appears later in the season compared to 10 years ago. First symptoms will be observed in fields with less tolerant varieties that are close to windbreaks, in sheltered areas, and those close to rivers. The first fungicide application should be made when symptoms are first observed. Growers who are not scouting should consult their agriculturists or consultants to determine when symptoms are observed in

their factory district. It is very important that the first fungicide application be applied in a timely manner or effective disease control will be difficult to achieve for the remainder of the season. Subsequent fungicide applications should be based on the presence of disease and favorable conditions for disease development. Please check the NDAWN website (http://ndawn.ndsu.nodak.edu/) for information on the favorability of environmental conditions for development of Cercospora leaf spot.

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around the state

South-Central ND

During the past week (July 30 through Aug 5), the region received rain ranging from 0.25 inches at Marion and Robinson to 2.2 inches at Oakes, based on NDAWN (North Dakota Agricultural Weather Network). Adequate soil moisture is needed to support yield potential of our row crops that currently are in critical reproductive stages.

Winter wheat, barley and field pea harvest is underway, with spring wheat soon to follow. Most of the region's corn is in the tassel to silking stages. The same story continues to exist … the crop continues to lag in development compared to previous years. Corn planted on May 1 at Carrington was at about 1200 growing degree day (gdd) units, Linton at 1340 gdd units, and Oakes at 1450 gdd units as of August 5, with these sites at minus 90 to 140 gdd units compared to the 5-year average. Soybean are in the pod-formation stages (R3-R4) of development, dry bean in the full-flower to early-pod formation stages, and sunflower in the late pre-flower to early-flower stages (R4-R5).

Soybean aphid populations are increasing - it is important to continue scouting during the next month but delay insecticide treatment until proper insect densities are reached. Other insects to be monitored include grasshoppers, leafhoppers in dry bean and bean leaf beetles in soybean. Continue scouting for sunflower rust, as well as head insects, during the next 1-2 weeks. Bacterial brown spot has been found in dry bean in the Oakes area.

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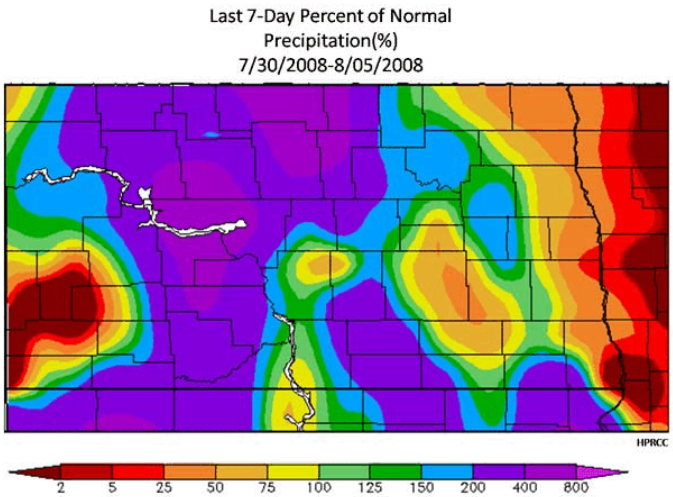
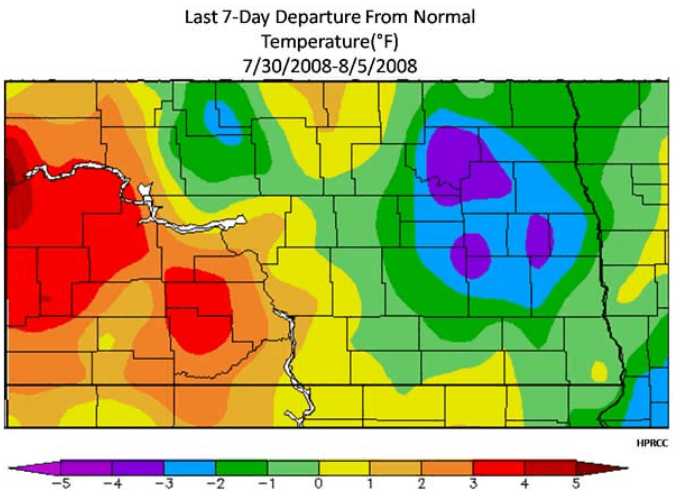
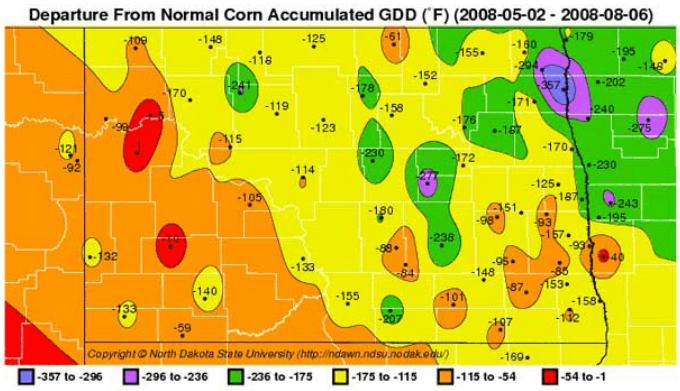
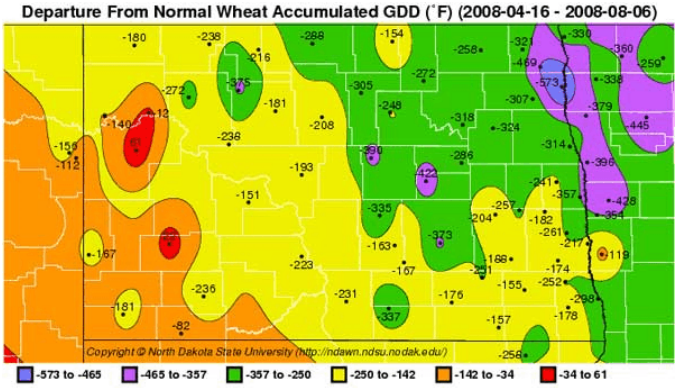
weather









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