North Dakota State University
CROP & PEST REPORT
NDSU Extension Service

No. 1 May 15, 2008

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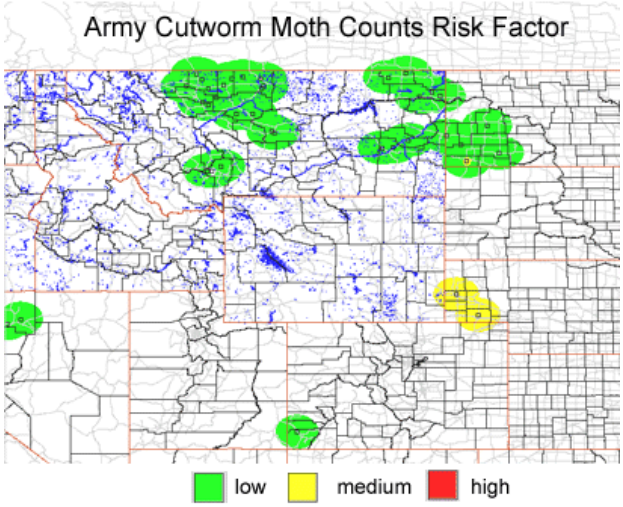
entomology

REPORTS OF EARLY SEASON CUTWORMS

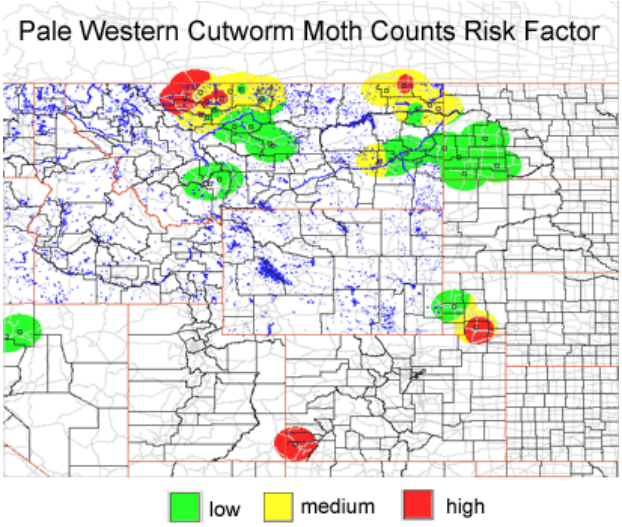
Cutworms have been reported in winter wheat in the southwestern region of North Dakota and central and western South Dakota, and in lentils in east central Montana. Most of the cutworm species being reported are Army cutworms and pale western cutworms. Maps of Army cutworm and pale western cutworm forecast can be found on the "Western Region Cutworm Risk Warning" website of Montana State University:

http://cutworm.org/

North Dakota is at low risk for army cutworm and at low to medium risk for pale western cutworm (see maps). The medium risk area for pale western cutworm is located in the northwestern corner of North Dakota.



Army Cutworm Moth Counts 3/24/08



Pale Western Cutworm Moth Counts 3/24/08

Cutworms become active when soil temperatures are above 40F. With the statewide cool soil temperatures in May, cutworms will develop slower and this could result in a prolonged feeding period this year. Cutworms injury plants by chewing and/or cutting the plant in the early stages of crop development (seedling stage = most susceptible). Generally, cutworms destroy more of the plant then they eat. Their numbers vary greatly from year to year and when numerous may destroy 50-75% of a crop! Cutworms feed at night and hide in soil during the day. Since there are early and late season cutworms, feeding activity usually extends from May through the end of June.

The key to successful cutworm control is early detection and knowing your plant population. Field scouts should look for cut or wilted plants, and dig around underneath freshly cut plants to find cutworms in the soil. A flashlight at night can also be used to find the night-feeding cutworms. If the plant population is below recommended, few or no plants can be lost to cutworm feeding. The greater the plant population the more damage can be tolerated without economic yield loss. When spraying insecticides for cutworm control, applications should be made in the evening when cutworms are actively feeding. Wet soil conditions will also improve insecticide efficacy, as cutworm feed near the soil surface in these conditions.

Treatment threshold vary depending on the field crop:

- Canola – 1 per square foot
- Small grains – 4 to 5 cutworms per square foot
- Corn – 3 to 6% of the plants cut and small larvae less than 1-inch present
- Soybeans / Dry beans – 1 or more larvae per three feet of row or 20% of plants cut
- Sunflower – 1 per square foot or 25-30% of plants cut
- Alfalfa – 4 to 5 or more per square foot (new or thin stands – only 2/sq ft)
- Lentils – 2 to 3 cutworms per square meter (Canada)
- Peas – 2 to 3 cutworms per square meter (Canada)

Please see "2008 North Dakota Field Crop Insect Management Guide" for list of insecticides available on different field crops.

SECTION 24(c) REGISTRATION FOR MUSTANG MAX IN SUGARBEETS IN 2008

Two different formulations of Mustang Max (FMC Corporation) have been issued a 24(c) registration for control of various insect pests in sugarbeets in North Dakota this year.

1) **Mustang Max**: The expiration date for SLN ND-030003 (previously issued) has been extended to allow the use of Mustang Max insecticide (EPA Reg. No. 279-3249) until to March 17, 2013. This registration allows use of Mustang Max insecticide on sugarbeets at plant for control of wireworms, white grubs, cutworms, and as a foliar application for control of cutworms, flea beetles and grasshoppers.

2) **Mustang Max EC**: SLN ND-0800001 was also issued to allow use of the new formulation of Mustang Max EC (EPA Reg. No. 279-3327) on sugarbeets at plant for control of wireworms, white grubs, cutworms, and as a foliar application for control of cutworms, flea beetles and grasshoppers. Expires December 31, 2013.

The pesticide SLN labels are posted on the NDSU Entomology Extension Resources website:

http://www.ndsu.nodak.edu/entomology/ext.htm

Note: Due to concerns with potential negative impacts to the pallid sturgeon in Williams and McKenzie Counties by the US FWS, these products may not be used on sugarbeets grown under flood irrigation in these two counties.

(Source: J. Gray, ND Department of Agriculture)

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plant science

SUNFLOWER ESTABLISHMENT

High sunflower yields require attention to detail. Sunflower prices are attractive and growers are looking to maximize the profit potential of the farm. Sunflower fits well into a small grain cropping rotation. Planting a broadleaf crop in rotation with small grains can provide a means to reduce certain diseases in wheat and durum including tan spot, septoria and certain root rots.

Selection of the sunflower hybrid should be based on test results showing high yield potential, disease resistance, and high percent oil content. Seed germination should be high and seed size uniform with no cracking. Timeliness is the key to all good crop management. Long term optimum planting dates for sunflower in ND have been from May 20 to June 5th although yields are generally higher with mid-May to late-May planting dates compared to June planting dates in most ND locations. The sunflower crop will mature in about 95-110 days after emergence.

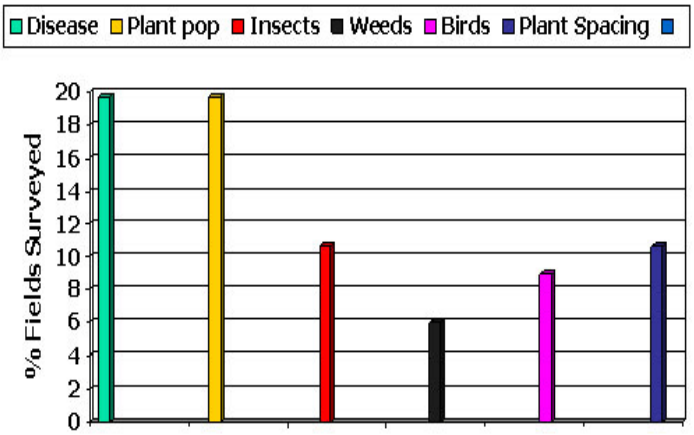
Special attention should be given when seeding the sunflower crop. Correct plant populations depend on soil type and moisture conditions. Oil sunflower plants per acre should be around 20,000-22,000 plants on heavy soils and 16,000-18,000 plants per acre on lighter soils and low rainfall areas. For confectionary sunflower, recommended populations are lower. For solid seeded sunflower the desired population at harvest is around 26,000 plants per acre. To obtain these recommended populations overplant by 15 percent.

Under dry conditions producers may want to reduce the plant populations because if a drought occurs during the growing season high sunflower populations may exhibit severe signs of moisture stress including small heads.

Plant to a depth of 1.5 to 2 inches if moisture is available in the top soil. Seeds can be placed deeper under dry conditions, but not more than three inches. Larger sized seed is best for deep seeding.

During the sunflower survey in the fall of 2007 plant stand and uneven distribution were identified as two reasons for lower production. Even seed distribution is critical. Therefore it is important to check the planting depth and seed drop at planting time. Driving too fast may cause skips and irregular seed placement. A good start to the season begins with attention paid to planting. It is also important to monitor the crop for insect problems from early emergence throughout the growing season.

Plants too close together will compete with each other. Proper distribution of plants is essential to achieve maximum yields. *(Photo by Hans Kandel)*



Major North Dakota Yield Limiting factors in sunflower-2007 *(National Sunflower Survey D. Berglund).*

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MANAGING POOR STANDS OF WINTER WHEAT

The cool spring weather has slowed the development of winter wheat this spring. Nevertheless, now is the time to access winter wheat stands and make decisions on what to do to when stands suboptimal. In the eastern part of the state where snow cover was excellent during the winter, winter wheat appears to have survived the winter well and many fields are showing excellent spring vigor. In parts of the state where fall establishment was limited by poor moisture and where there was little snow cover during the winter; reports of winter survival are more variable. The questions now are what constitutes a poor stand and how to manage fields that have sub-optimal stands.

Plant stands should be accurately assessed before determining an appropriate action. At first glance plant stands can look worse than it really are. When winter survival is not uniform, focus only on those parts of the field that will likely need replanting. Within these parts of the field count four or five randomly selected areas using a square yard quadrant or something similar with a known area. Winter wheat has the ability to tiller and fill-in gaps better than other classes of wheat, especially if the weather is cool and moisture is not constraining and fairly large reductions in the optimum plant density can be tolerated before it becomes more profitable to replant small grains. For winter wheat, consider replanting when stands are below 5-10 plants/ft^2. If you decide to replant the entire field with spring wheat, use a higher seeding rate to compensate for reduced tillering if planting occurs after May 20th. You should also consider using early maturing varieties (varieties from SD tend to be among the earliest adapted to ND) or a variety that is known to handle the heat (i.e. Steele-ND and Howard are NDSU releases that handle the heat well). For fields with small patches of poor stands the best option is probably to leave the field and do a good job of weed control. For fields with very large patches with few or no plants, planting something to reduce weed growth and soil erosion is recommended. Some farmers have reported good results form planting spring wheat to fill in such gaps. Nevertheless, spring wheat matures later than winter wheat so harvest can be problematic. Furthermore, mixing wheat classes can cause problems at the elevator. Planting winter wheat into large gaps can also be an option. Winter wheat planted in the spring will not vernalize so it will not produce a head, but will provide ground cover until harvest.

Remember that any tillage in the dry parts of the state will further dry out the soil, making the establishment of spring seeded crops difficult. Check with your crop insurance agent before destroying your wheat field.

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plant pathology

FUNGICIDES RECEIVE REGISTRATION FOR WHEAT AND BARLEY

Two fungicides, Folicur (tebuconazole, manufactured by Bayer CropScience) and Caramba (metconazole, manufactured by BASF), have recently received full federal registration from the Environmental Protection Agency for use on small grains in the US. Both fungicides are included in the class of systemic fungicides called triazoles. The availability of these fungicides will give growers increased management options during the growing season.

Folicur previously was available in ND for 11 years through one-year emergency exemptions, but full registration status was finally granted on May 2. The ND Dept. of Agriculture has posted the label through their web site, under their pesticide registration link found at:

http://www.kellysolutions.com/nd/pesticideindex.htm

The Folicur 3.6F label states that 4 fl oz/acre may be applied to wheat and barley, to control rust diseases and suppress Fusarium head blight. The pre-harvest interval for Folicur is 30 days. Grazing livestock or feeding of green forage is permitted 6 or more days after the last application. A spray surfactant is recommended to be used with Folicur. The ND pesticide registration base, as indicated in the link above, also indicates that **Orius,** MANA's version of tebuconazole, has received labeling, as well.

With Folicur available, Bayer CropScience has also developed a label for **Folicur + Proline** (prothioconazole) for use in 11 states, including ND, MN, SD, and MT. This label is for 3 fl oz of Folicur + 3 fl oz of Proline for the suppression of Fusarium head blight and control of leaf diseases, such as leaf rust Septoria, and tan spot. This combination was widely used in ND in 2007, under the emergency exemption for Folicur and the full registration for Proline.

Caramba is a new registration, also just received, and the label may be found at the above web link to the ND Dept. of Ag. pesticide registration information. Caramba is registered for wheat, barley, oats, rye and triticale. The use rate for Caramba is 10 fl oz/acre for leaf diseases and 14-17 fl oz/acre for suppression of Fusarium head blight. For applications of 5 gpa or more, an approved adjuvant is recommended at standard rates is recommended. The pre-harvest interval is 30 days, and no livestock feeding restrictions are indicated.

BASF has another new federal labeled product, called **Multiva,** a combination of Headline (pyraclostrobin) and Caramba (metconazole). As of May 9th, 2008, this label was not yet posted on the ND registration site. Multiva use will be aimed at leaf diseases of the small grain crops, at a 6-11 fl oz/acre rate, but indications from BASF are that it may not be marketed in this region, at least for 2008.

Complete information on pricing, availability, and strategies for use and specific disease control of these products should be obtained from the company representatives in the area. The good news for farmers is that all are excellent products and provide the means for good fungicide disease control strategies throughout the growing season.

CEREAL RUST UPDATE FROM ST. PAUL

Wheat leaf rust:

The USDA Cereal Disease Lab's latest *Cereal Rust Bulletin*, May 6th, indicates that wheat leaf rust is widespread and increasing rapidly throughout the southern US. Susceptible winter wheat cultivars, such as Jagalene and Jagger are showing severity levels of up to 65% on flag leaves in Oklahoma. The disease is also visible in Kansas on these cultivars, and at trace levels on the more resistant cultivars, Overley and Fuller. Repeated rains across the southern plains has favored rust development.

The occurrence of rust indicates a potential threat to our susceptible winter and spring wheats, if sufficient rainfall should occur for infection. It is too soon to know how big of threat we have, but the occurrences and spread bear watching. Information on susceptibility of winter wheat cultivars may be found at the web site:

http://www.ag.ndsu.edu/pubs/plantsci/smgrains/a1196.pdf
This is the web access to NDSU Circular A-1196
North Dakota Hard Red Winter Wheat
Variety Trial Results for 2007 and Selection Guide

Information on spring wheat variety response to leaf rust may be found at:

http://www.ag.ndsu.edu/pubs/plantsci/smgrains/a574.pdf
This is the web access to NDSU Circular A-574
North Dakota Hard Red Spring Wheat
Variety Trial Results for 2007 and Selection Guide

Wheat stem rust:

Wheat stem rust has been found in Texas, and levels are slightly higher than last year. The stem rust race so far identified is a common race in the US and is avirulent to most of the winter and spring wheats in the US.

An emerging, virulent stem rust race (commonly called UG99) was found in Uganda, Africa in 1999, and the scientists at the USDA lab in St. Paul, and others around the world are tracking the movement of this race and evaluating germplasm and existing cultivars for resistance. This race recently was found to have moved into Iran from Yemen. This stem rust race may attack many cultivars (including those grown in ND) and is particularly an immediate threat to vulnerable regions of the world with few resources. In early April, 2008, the

Bill and Melinda Gates Foundation announced a $26.8 million grant to Cornell University to produce a partnership for Durable Rust Resistance in Wheat, a partnership of 16 institutions in 13 countries, working together for the next 3 years to track the spread of the pathogen and screen genetic resources for resistance. This project will benefit all wheat breeding programs. More information about the new project can be found at http://www.wheatrust.cornell.edu.

***Oat crown rust*:**

This leaf rust of oats has been found in south and central Texas, and these southern locations may provide inoculum for the northern oat growing areas, as the season progresses. Variation in oat variety susceptibility exists, and information may be found at:

http://www.ag.ndsu.edu/pubs/plantsci/smgrains/a1049.pdf

This links to NDSU Circular A-1049, *North Dakota Barley, Oat, Rye and Flax Variety Trial Results for 2007 and Selection Guide*. Table 6 contains information on oat variety response to crown rust.

Barley rusts have not been reported yet this year.

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SUGARBEET CROP UPDATE

Late snow and cold conditions have delayed planting of sugarbeet in North Dakota and Minnesota.

As of May 13, American Crystal Sugar Company growers have completed planting 92% of their acreage. The Moorhead factory district was the furthest behind because of wet field conditions. Minn-Dak Farmers Cooperative growers have completed about 55% of their planting. Southern Minnesota Beet Sugar Cooperative growers have completed planting about 45% of their acres, with planting conditions slightly more favorable in the western part of the district.

The sugarbeet crop will be off to a slow start since soil temperature is below normal for this time of the year. Low soil temperature will delay germination and emergence. It would be particularly useful to have a cover crop to protect seedlings especially on soils that 'blows'. Oats and barley at three quarters to one bushel per acre are widely used as cover crops. The cover crop should be killed when sugarbeets are in the three to four leaf stages.

PLANT POPULATION FOR HIGH SUGAR BEET YIELD AND QUALITY

It is sugar beet planting time again! Our research shows that maximum recoverable sucrose per acre correlates well with plant population.

Research done at North Dakota State University and the University of Minnesota showed that a plant population of 175 to 200 plants per 100 foot of 22 inch wide rows was ideal for maximum recoverable sucrose per acre. It is important that the plants be evenly spaced within the rows.

At lower plant populations – say at 100 to 125 plants per 100 foot of row, roots tend to be somewhat larger but there is generally a reduction in yield because of the lower population, and sucrose concentration decreases resulting in higher processing costs. Lower plant populations take longer for the canopy to completely cover the soil resulting in a more costly weed control program.

Higher plant populations of 225 plants per 100 foot of row result in too much competition among the plants and consequently smaller sugarbeet roots and lower recoverable sucrose per acre compared to plant populations of 175 to 200 plants per 100 foot of row. Defoliation becomes very difficult at such high plant populations. Sugar beet fields with 225 plants per 100 foot of row planted at 22 inch row spacing should be thinned to about 175 to 200 plants per 100 foot of row.

Plan to have a good plant population of 175 to 200 plants evenly spaced per 100 foot of row for highest sugar beet yield and quality. Growers who use 30 inch row spacing should aim for about 215 to 225 plants per 100 foot of row to get highest yield and quality.

PROJECTIONS FOR 2008 SUGARBEET CROP

Total sugarbeet acreage in the US for 2008 was projected at about 1.247 million acres; a 4.3% reduction from the 2007 sugarbeet crop.

American Crystal Sugar Company will plant about 418,000 acres, Minn-Dak will plant 105,000 acres, and Southern Minnesota Beet Sugar Cooperative will plant 108,000 acres. Growers in Western North Dakota and eastern Montana will plant about 15,000 acres for the processing plant in Sidney, Montana. North Dakota and Minnesota will plant just over 50% of the total US sugarbeet acreage.

Growers can improve efficiency by properly preparing seed beds, using starter fertilizer where appropriate, using adequate seeding rate to start with a good plant stand and timely application of herbicides for effective weed control to give their crop a good foundation. Last year, growers had a good sugarbeet crop. The costs for inputs are increasing significantly. Growers need to strive for a 23 ton/acre crop with a high sugar concentration to remain economically viable.

SOIL TEMPERATURE AND SUGARBEET SEED EMERGENCE

Sugarbeet seeds germinate and emerge over a wide temperature range in the presence of adequate soil water. In most years, soil temperature at the 4-inch depth at planting time in mid-April is about 45°F. However, unusually low temperature in April and early May has resulted in growers planting into a colder seedbed. This means that the sugarbeet crop and all its weeds will emerge slower than usual. The following table gives approximate days to emergence at different soil temperature ranges.

Soil Temperature (°F)	Days to Emergence
38-45	21 days or more
45-52	10-21 days
52-60	7-12 days
60-70	5-7 days

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CERTIFIED SEED AN IMPORTANT STEP TO MANAGING BACTERIAL BLIGHTS OF DRY BEANS

Bacterial blights can damage yield and quality of dry edible beans in North Dakota. Because these disease can be seedborne, the most important prevention technique is to plant certified, disease-free seed. Planting certified seed may be particularly important this year due to the favorable environment for bacterial blights in North Dakota last summer. With bacterial blights, it is much easier to try and prevent infection rather than to treat it later. Crop rotation is also an important management step, and streptomycin sulfate is labeled as a seed treatment but cannot cure internal infection. As grandmother always said, an ounce of prevention is worth a pound of cure, and certified seed is a critical step in prevention.

CONSIDERING A FUNGICIDE SEED TREATMENT ON SOYBEANS?

Predicting whether a seed treatment will pay on any given field, in any given year, is pretty tough to do. But we can discuss a few risk factors, which may indicate whether a seed treatment will be beneficial to you.

Temperature. When soils are cool (less than 60 F) soybeans germinate more slowly, this increases their exposure to numerous pathogens that are lurking in the soil; including *Phytophthora*, *Pythium*, *Fusarium* and *Rhizoctonia*. This year, our soils temps have generally been below average.

Water. Wet soils are more likely to provide a favorable environment for root rot pathogens. Some of these pathogens *need* water to cause infections and disease; some just cause *more* disease in a wet environment. Sometimes parts of the field appearing to have water damage may actually have been damaged by root rot pathogens. Standing water in moderation may hurt the plants some, but they also provide an extremely favorable environment for the pathogens. We have had lots of variation in rainfall statewide, but if you are in an area with wet soils, you may be at greater risk.

Disease History. If you have had stand establishment/root rot problems in the past, you may be at greater risk for root rot damage Spots in the fields with thin plant stands, or plants that appear drought stressed when there is adequate moisture and unthrifty looking could indicate symptoms of root rots.

Crop Rotations. Tight crop rotations give the pathogens an opportunity to build up in the soil, while longer crop rotations can reduce the numbers of some pathogens. High populations of plant pathogens are more likely to do damage.

Even if you don't have all the risk factors, seed treatments may be a good option. In a two-year study done at seven different locations in ND, the average return on seed treatments across all those environments was $10-20/acre. This was assuming the price of $5.45, which is not the case anymore.

When choosing a fungicide treatment, it is best to apply a product with activity against *Pythium* and *Phytophthora* (mefenoxam or metylaxyl for example) and *Fusarium* and *Rhizoctonia* (azoxystrobin or fludioxonil for example). A good synopsis of fungicide protection against different pathogens was published by the University of Nebraska Extension Service (University of Nebraska NebFact NF411), and is available at:

http://www.ianrpubs.unl.edu/epublic/pages/publicationD.jsp?publicationId=377

For current seed treatment products in North Dakota, check the 2008 North Dakota Field Crop Fungicide Guide (PP-622) available at:

http://www.ag.ndsu.nodak.edu/extplantpath/.
Always read and follow the manufactures label.

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NDSU POTATO BLIGHTLINE TO OPERATE IN 2008

The Plant Pathology Department at North Dakota State University will again be providing the potato blightline service at no charge to the potato industry of North Dakota and western Minnesota in 2008. This will be the fourteenth year that this service has been provided and sponsored by Syngenta Crop Protection. The hotline uses local weather data collected from weather stations throughout our area to forecast the occurrence and spread of late blight in fifteen non-irrigated and twelve irrigated production areas in ND and western MN. The data is processed by the North Dakota Agricultural Weather Network (NDAWN) and analyzed by a computer program (WISDOM) to forecast when conditions are favorable for late blight to occur.

The forecast information is used by plant pathologists Gary Secor and Neil Gudmestad to make late blight management and fungicide recommendations. The recommendations are made Monday, Wednesday and Friday of each week during the growing season. The first late blight hotline will be Monday June 2nd, and it is anticipated that the hotline will continue through mid September depending on disease pressure. The hotline will also be used to confirm reported late blight sightings and serve as clearing house for national late blight information. In addition to late blight forecasting, the hotline also provides cumulative P-values for early blight disease forecasting and management recommendations. Finally, it serves to alert growers of other disease and insect news, as well as posting messages of general interest such as potato field day dates.

The hotline recommendations can be accessed by phone or website. The toll free phone number is 888.482.7286

The NDAWN website for potato disease forecasting contains colored maps of ND to pictorially illustrate the late blight severity values (both two day and seasonal), favorable day values and P-day values for early blight throughout ND. That site is:

www.ndawn.ndsu.nodak.edu

Go to applications and then click the potatoes drop down box.

Growers and scouts are encouraged to send suspect late blight samples to us for positive identification. Late blight is a community disease and proper identification and prompt notification is important. Leaf samples should be placed in a slightly inflated zip-lock plastic bag **without** a wet towel and sent to:

Gary Secor, Plant Pathology, Walster Hall 306, NDSU, Fargo, ND 58105. Our phone number is 701.231.8362 and email address is gary.secor@ndsu.edu. We look forward to a successful potato year.

Gary Secor
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soils

SO NOW WHAT?

Although many gritted their teeth and felt a churning in their gut when they did it, those growers that prepaid for N and P last fall made a good decision. Those that did not are now faced with N prices about double those of fall, and P prices at least triple the fall price. Feedback from the field so far has indicated that in the east and in areas with decent subsoil moisture, N and P rates for small grains and corn are similar to those in the past. In the drier areas (and it's as dry as I have seen it in parts of the west and north since coming to NDSU in 1994) N and P rates have been reduced, and often the N application has been delayed to see if anything will come up.

As we now enter soybean, sunflower and other warm-season crop planting, a review of N and P rates with an economic slant is appropriate. Our work with wheat and corn so far has shown that N rate should be modified somewhat due to N price and crop price. In reviewing our sunflower response data, it appears that even with a doubling in sunflower price within the last year, the increase in N costs would suggest that reducing the total available N rate by at least 10% on most soils, and perhaps 20% on higher organic matter fields (greater than 3% OM) would be justified. With $1,200/ton 11-52-0, the return on P is greatly reduced from what it has been in past years.

A good yield increase in sunflower on a low testing soil is seldom more than 20%. That means that in a ton crop, a 400 lb/acre increase might be realized on a low testing soil. The return from that increase at 25 cent flowers would be about $100/acre. Our chart rates for P show a recommendation of 40 lb/acre P2O5, or about 80 lb/a 11-52-0. The cost of that application would be $48/acre plus application, which is still profitable. As the soil test P increases, the likelihood of a profitable response decreases. In past years, it would still be profitable to apply P at medium soil test levels. However, an increase of 100 lb/acre flowers ($25/acre) that one would see on a medium-testing soil from P application would not profitably support the P application (20 lb P2O5, or $24/acre + application) on a medium-testing soil. Basically, in our warmer season broadleaf crops, medium-P-testing soils do not support the profitability to apply P at current prices.

ALTERNATIVES TO 10-34-0

Due to the general scarcity of P fertilizers this year, 10-34-0 is generally unavailable in the area. Alternatives to 10-34-0 are the various normally high-priced in comparison, but maybe not this year, slate of specialty liquid fertilizers, such as 9-18-9, made from white phosphoric acid. When using these products, pay close attention to the maximum rate recommended to be used with the seed. Most of these products contain urea, so they are generally more harmful to the seed at higher rates than what you may be used to. Do not push the rate beyond label recommendations.

APPLICATION OF AMMONIA TO DRY SOILS

Many soils in our drier areas are the consistency of ash. However, even these soils contain a thin water film around soil particles. I would still consider application of anhydrous on these soils, however, the ammonia will move more initially in these soils laterally and vertically than normal. Application down to 6 inches would be my best recommendation. Shallow applications (3 inches or more shallow) will lose at least 10% of product soon after application. Application using larger hoses/tubes (½ inch instead of 3/8) may reduce the ammonia expansion initially. Make sure that there is at least 3 inch lateral distance between seed and ammonia application point. If the only ammonia application method alternative is shallow application, considering the lost efficiency, perhaps urea application would be a better choice in these soils if it is applied beneath the soil surface.

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Weeds

ND SECTION 18 FOR SPARTAN IN FLAX

The U.S. Environmental Protection Agency has issued a Section 18 specific exemption for Spartan 4F, allowing North Dakota flax producers to use the herbicide to control kochia and ALS resistant kochia.

The exemption allows a single ground application of 3 to 8 fluid ounces of Spartan 4F per acre, depending on soil type. The application must be made up to 30 days before and three days after planting.

Applicators must follow all directions, restrictions and precautions on both the Section 18 use directions and the EPA registered product label. They must have a copy of the Section 18 use directions in their possession during application.

Users of Spartan 4F under this exemption are required to comply with both the full product labeling and the exemption use directions. Copies of the exemption use directions can be obtained from the ND DOA homepage (http://www.agdepartment.com/Programs/Plant/Section18 Exemptions.html) or from the homepage of the NDSU Pesticide Training and Certification Program (http://www.ag.ndsu.nodak.edu/aginfo/pesticid/pesticid.htm).

A special thanks goes out to Dr. Brian Jenks the North Central Research Extension Center for this one. If you recall, we did not have this exemption available in 2007 due to a lack of data to the economic loss arguments for the pest situation being an emergency. Brian initiated field experiments last year to fill these data gaps, and results from these experiments were critical to make our case and complete the Section 18 exemption request document this year.

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horticulture

WINTER INJURY ON EVERGREEN TREES

Winter injury on evergreen trees has been reported in many areas of the state this spring (Fig. 1 and 2). It is most often seen on Colorado spruce and on certain pines, though junipers and arborvitaes are sometimes affected. The term "winter injury" actually encompasses a variety of needle-discoloration problems. Whole needles or portions of needles often turn brown or an orange-rust color, though spruce needles may get a purplish caste on their way to becoming rust-colored. Spruce trees are sometimes mistakenly diagnosed with Rhizosphaera needlecast, based on the needle coloration.

The cause that is most-often cited is having warm, sunny and windy winter days that allow the trees to begin photosynthesis and transpiration, while the ground is still frozen. The trees lose moisture from their needles and are unable to replace it. Other potential causes include de-hardening of needle tissue during warm winter days followed by plummeting temperatures. In those cases, trees can't re-harden their tissues and needle damage results. Trees that have been stressed by insects, diseases or drought may be more susceptible to injury. Recently-transplanted trees, as well those growing in areas without snow cover are also prone to damage.

What can be done about winter injury? At this point, not a whole lot. The injury has already occurred. However, damage is usually (but not always) just aesthetic. If the buds are unharmed, then the trees will send out a flush of healthy new growth in 2-3 weeks. If the buds were damaged or killed, though, the tree will have a hard time recovering and will likely die. There are several steps that can be taken throughout the growing season to minimize this problem.

- In late summer – mid-August to mid-September – allow the trees to become slightly drought stressed. This will start the winter hardening process earlier.

- Following this stress period, keep trees well-watered right until freeze-up. This may help increase the hydration status of trees going into winter.

- Anti-transpirants have been used in North Dakota with mixed results. Once applied, these products prevent water loss for about 3 months, and must therefore be applied some time in December.

Winter injury of evergreen trees
(photos by Sam Markell)

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diagnostic lab

UPDATE FROM THE NDSU PLANT DIAGNOSTIC LAB

Another season has begun at the NDSU Plant Diagnostic Lab. Familiar faces include Kasia Kinzer (plant diagnostician), Montgomary 'Monty' Botschner (lab technician), and Aimee Thapa (summer office assistant).

From January 1 to May 13, 2008, the NDSU Plant Diagnostic Lab has received 483 samples. The table below summarizes the types of samples processed during this period:

Sample Category	Number
Seed Health/Phytosanitary	379
Other	50
Woody ornamental (evergreen)	18
Field Crop	13
Soil - Aphanomyces bioassay	6
Vegetable	3
Mold ID	3
Annual ornamental	2
Turf	2
Woody ornamental (deciduous)	2
Insect ID	1
Plant ID	1
Food substrate	1
Perennial ornamental	1
Fruit	1
Total	483

Among the woody ornamental evergreens, winter injury or other environmental stress was the most common diagnosis, followed by possible root or lower trunk injury (root girdling, mechanical injury, or improper cultural practice). No needle cast diseases have been diagnosed yet this season.

Cytospora canker was suspected on one spruce samples this year, based on symptoms alone (dead limbs, excessive sap production, no obvious mechanical wounds). A diagnosis for Cytospora canker is much more reliable if the fungal fruiting bodies are detected, but this usually requires submission of the entire limb (all the way back to the trunk of the tree).

SUBMITTING SAMPLES TO THE NDSU PLANT DIAGNOSTIC LAB

The NDSU Plant Diagnostic Lab generally examines samples on a 'first-come-first-serve' basis, but certain samples (such as suspected high risk pests or pathogens, and samples where a timely diagnosis is required for appropriate treatment) must take priority. A good sample usually includes different stages of symptoms, but completely dead plants or twigs seldom yield any useful information. In general, wrap a sample in dry paper towels before placing in a plastic bag and sealing the bag. Place the bag in a sturdy shipping box to avoid damage to the sample. When tree samples are submitted, include several images (photographs or digital images) showing the entire tree, the lower trunk, the ground area around the lower trunk, and close-up images of symptoms of interest.

For more information on how to submit samples to the NDSU Plant Diagnostic Lab, please see the following website, http://www.ag.ndsu.nodak.edu/diaglab/, where you can obtain a lab form and tips on submitting good quality samples.

Before submitting a sample to the NDSU Plant Diagnostic Lab, please first consider using your local county extension agent or other local expertise. A nominal fee of $15 for North Dakota residents ($25 for non-residents) helps offset the cost of running the lab.

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around the state

South-Central ND

The geographic area covered by this report includes a northern border of Eddy County to Sheridan County southward to Emmons County and east to Sargent County. The region generally is short on subsoil and topsoil moisture. The exception is counties near the South Dakota border that currently have adequate topsoil moisture. The combination of dry and cool soils will challenge the establishment of uniform plant stands, especially corn and small-seed crops. An inch or more of rain throughout the region would be welcome!

Stands of winter wheat are variable, ranging from fields being replanted to spring crops to excellent stands that are actively tillering. Growers with the later situation should be preparing to apply a foliar fungicide to suppress early-season leafspot disease. Small grain seeding is completed and corn planting should be completed by May 17. Soybean planting also is in progress. Small grain fields seeded in mid April are in the 1-leaf stage of growth. Weed growth has been slow like crops, but weeds are now emerging.

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