

2004

Crop Watch No. 2004-6, April 23, 2004

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

UNIVERSITY OF
Nebraska
Lincoln

No. 2004-6, April 23, 2004

Dual control measures being studied

Major soybean viruses vectored by insects

In recent years soybean viruses have become common in many Nebraska soybean fields. This is due to increases in bean leaf beetle populations and the movement of soybean aphids into the Midwest. The two viruses which are vectored by these insects and considered a problem for Nebraska producers are *Bean pod mottle virus* (vectored by bean leaf beetles) and *Soybean mosaic virus* (vectored by soybean aphids). As the distribution and population of these vectors change, we will continue to see the virus situation change.

In recent years *Bean pod mottle virus* has been found in up to 91% of surveyed soybean fields. This disease tends to be more of a problem in early planted fields which attract overwintered bean leaf beetles. Resistance to this disease is not currently available,



Plant exhibiting symptoms of virus infection which could be due to *Bean pod mottle virus* or *Soybean mosaic virus*.

but varieties will respond differently. In yield comparisons for current commercial varieties, there is an average 18% reduction when plants are inoculated at the V2-3

growth stage. Your entire field will not be inoculated at this stage, and some spread will occur later in the year when F1 and F2 bean leaf beetle populations emerge. The impact of spread by the F1 and F2 beetles will not be as significant as early season infection. This is why our research efforts have focused on developing strategies for timing the initial applications of the insecticide early and/or the use of seed treatment insecticides. These experiments will be repeated again this year as the last two years have resulted in conflicting data.

In another project we are screening materials in the NU soybean breeding program to develop tolerant germplasm to bean pod mottle virus. Again, no resistance has been observed for this virus.

(Continued on page 51)

Focus on Soybeans II **Inside**

Grasshopper funding	50
Cattle on feed	51
Aphids spreading	53
Outlook for rust	54
Field and crop update	55
Alfalfa weevil alert	55
Diagnostic Clinic tips	56
WeedSOFT	57
Weed Science online	57
Hay use in a drought	58
Managing spring pastures	58
Tips for bales	58

Bean leaf beetle activity begins in April; seedlings first targets

Bean leaf beetles have not been a big problem the last couple of years, although each year there are some areas that report problems. In addition, early planted soybean fields always attract some beetles. Because the bean leaf beetle can be a pest of seedling soybean, I'll discuss it in some detail.

Bean leaf beetles have two generations a year in Nebraska. However, since they over-winter as adults, three periods of beetle activity are seen in the growing season: Overwintering colonizers, F1 generation (offspring of the colonizers, the true first generation) and the F2 generation.

(Continued on page 52)

UNIVERSITY OF NEBRASKA, COOPERATING WITH COUNTIES AND THE U.S. DEPARTMENT OF AGRICULTURE

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NDA: Assess need for grasshopper treatments now

Program applications accepted April 26 - May 14

Nebraska Department of Agriculture (NDA) officials are urging ranchers to begin thinking about potential grasshopper infestations and learn more about a cost-share treatment program. NDA Director Merlyn Carlson said state funding for a grasshopper cost-share treatment program will be limited this year, so owners of rangeland with potential for grasshopper infestation should begin to consider their options now.

"We realize it may be too early to tell the level of grasshopper infestation, but because funds are limited and because timing of the treatment is so important, we want producers to be ready," Carlson said April 12.

The United States Department of Agriculture's Animal and Plant Health Inspection Service/Plant Protection and Quarantine (USDA/APHIS/PPQ) and NDA have cost-share dollars available for the cooperative, rangeland treatment program, provided certain qualifications and deadlines are met. Generally, treatment program costs must be split in thirds between the Federal government, State government and ranchers. However, because State funds are low this year, the State may have to provide less than one-third of the cost, with the rancher participants making up the difference, in order to stretch the limited dollars as far as possible.

"We won't know until the signup period is over how much the State can contribute to each applicant's treatment costs, and that is why we need producers to sign up early if they think they may want to participate," Carlson said.

USDA/APHIS/PPQ rules require producers to organize and collectively have at least a 10,000-acre block of land for the treatment program to be enacted. The block may include up to 20% cropland but must total at least 10,000 acres of

rangeland or pasture. Cropland in the block will not be treated. Program participants must provide their portion of the treatment cost prior to the treatment action. Areas treated for grasshoppers under the 2003 suppression program will not be eligible for inclusion in the 2004 program.

Because state funds are limited, NDA and USDA/APHIS/PPQ officials have determined that applications for the program will be accepted on a first come, first served basis, with applications accepted April 26 to May 14.

Applications are not considered complete until the ranchers' share of the estimated treatment cost has been collected. If grasshopper populations do not develop to an extent necessary to qualify for treatment, no obligation for treatment will result and the application money will be refunded.

University of Nebraska Cooperative Extension educators will serve as contacts for the program, and rangeland owners are encouraged to call their local educator as soon as

possible for more information about the grasshopper program.

"As I noted last year, the keys to a successful grasshopper treatment program are organization and timing," Carlson said. "It is my hope that producers will work together to be prepared."

Detailed information about the USDA/APHIS/PPQ grasshopper suppression program and grasshopper management can be found at <http://entomology.unl.edu/grasshoppers/index.htm>. The Web site also can be accessed at <http://www.droughtcentral.org> under "Grasshopper Management Resources." A map showing areas with potential infestation, based on surveys conducted in 2003, can be found on the site.

"The 2004 Rangeland Grasshopper Hazard Map does indicate potential problems in central Nebraska. However, a great deal can change during the spring months, and we are hopeful that Mother Nature will eliminate some of the grasshopper potential," Carlson said.



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Lisa Jasa, Editor; Email: ljasa1@unl.edu

Soybean diseases (Continued from page 49)

The distribution of *Soybean mosaic virus* in Nebraska recently changed significantly. This disease was encountered only rarely prior to 2002 when it was observed in 30% of soybean fields surveyed. The increase in incidence is due to the presence of soybean aphids in the Midwest and the ability of *Soybean mosaic virus* to be transmitted in seed.

The level of seed transmission for *Soybean mosaic virus* is significantly higher than the level for *Bean pod mottle virus* and will result in *Soybean mosaic virus* being a long-term problem for soybean production across the Midwest. For *Soybean mosaic virus* there is resistance in some soybean varieties. As we do not know what soybean aphid populations will do this year, I have been recommending the use of varieties resistant to *Soybean mosaic virus*, assuming they contain good agronomic characteristics for your situation.

The current research literature suggests that one source of management for *Soybean mosaic virus* is to avoid late planting dates. In some areas of the United States late

planting dates have resulted in higher soybean aphid populations; however, this may not be true in Nebraska, based on observations in the last year. At this time we are not recommending later planting dates to avoid this virus. Seed lots infected with the virus will increase in the percentage of infected seed as that lot is continually used as a seed source. For this reason, producers who hold seed should definitely start out with new seed lots every three to four years or at least have the seed lot tested for *Soybean mosaic virus*.

Remember that viruses cannot be differentiated based on plant or seed symptoms. The only way to identify them is by Elisa testing. (Elisa testing is available from the Cooperative Extension Plant and Pest Diagnostic Clinic.) If you observe a significant level of distorted leaves which cannot be linked to a chemical misapplication or drift event, I would encourage you to send a sample to the diagnostic clinic for identification.

Loren J. Giesler
Extension Plant Pathologist

Differentiating *Bean pod mottle virus* and *Soybean mosaic virus*

Virus

Bean Pod Mottle
Bean pod mottle virus (BPMV)

Pathogen Epidemiology

Virus is insect transmitted mostly by bean leaf beetles; seed transmitted at $\leq 0.1\%$ level; host range limited to legumes, but may include several weedy legume species.

Soybean Mosaic
Soybean mosaic virus (SMV)

Virus is transmitted by soybean aphids and also seed-borne. (Seed transmission is less than 5% in most varieties, but can be as high as 75%.) Overwinters in some perennial weed species.

Nebraska cattle on feed up 1%

Nebraska feedlots, with capacities of 1,000 or more head, contained 2.21 million cattle on feed on April 1, according to USDA's Nebraska Agricultural Statistics Service. This inventory was up 1% from last year but 4% below April 1, 2002.

Feedlot placements in March totaled 295,000 head, down 8% from 2003 and 5% below March 2002. Marketings of fed cattle during March totaled 350,000, up 13% from last year and 17% above March two years ago. Other disappearance during March totaled 5,000 compared with 10,000 during March 2003 and 10,000 during March 2002.

National increase

Nationally, cattle and calves in feedlots with capacity of 1,000 or more head totaled 10.75 million head on April 1. The inventory was slightly above last year but 7% below April 1, 2002.

Feedlot placements during March totaled 1.80 million, 11% below 2003 and 8% below 2002.

Marketings of fed cattle during March totaled 1.97 million, 9% above 2003 and 8% above 2002. Other disappearance totaled 67,000 during March, 8% above 2003 but 3% below 2002.

Crop Scout Training

Don't forget the upcoming UNL Crop Scout Training workshop for entry level scouts. It will be held May 10 from 8:30 a.m. to 5 p.m. at the University's Agricultural Research and Development Center near Mead. For more information, see the April 16 *CropWatch*, page 48, or the ARDC Web page at <http://ardc.unl.edu/training.htm>.

Registration prior to May 3 is \$65; afterward it's \$75. For more information or to register, contact the ARDC at (402) 624-8030; fax (402) 624-8010 or email cdunbar2@unl.edu.

Bean leaf beetles *(Continued from page 49)*

Bean leaf beetles overwinter as adults in leaf litter (woodlots) and soybean residue. They become active fairly early in the year (April-May) and often can be found in alfalfa prior to soybean emergence.

As soybeans emerge, the beetles quickly move to seedling plants, feeding on cotyledons and expanding leaf tissue. These overwintered beetles, called colonizers, mate and begin laying eggs. Females live about 40 days and lay from 125 to 250 eggs. After egg-laying is complete, the colonizing population dwindles as the beetles die. A new generation of beetles (F1) will begin to emerge in late June to early July. The F1 beetles mate and produce a second generation of beetles (F2) that begin to emerge in mid August and feed on leaf and pod tissues. The pod-feeding F2 beetles are most likely to cause economic damage.

Early planted soybeans are most susceptible to bean leaf beetle damage.

Bean leaf beetles vary in color, but are usually reddish to yellowish-tan. They are about ¼ inch long and commonly have two black spots and a black border on the outside of each wing cover. These spots may be missing, but in all cases there is a small black triangle at the base of the wings near the thorax.

Because they move to soybean fields so soon after seedling emergence, early-planted fields will usually have more beetles and suffer the most injury. This has become more of a problem in recent years because planting dates seem to be getting earlier each year.

Although the defoliation the beetles cause can appear quite severe, research in Nebraska and elsewhere has shown that it usually does not result in economic damage. Soybean plants can compensate for



Bean leaf beetle

a large amount of early tissue loss, so it takes a considerable amount of beetle feeding to impact yield. Generally, unless insect populations are large enough to cause more than 50-60% defoliation of seedling soybeans, it is unlikely that treatment would be economically justified.

Tables 1 and 2 show economic thresholds for bean leaf beetle on seedling soybean. Be aware that these thresholds are for defoliation of beans at VC - V1. If beetles enter the field right at or during seedling emergence, the thresholds will likely be lower because the beetles do not have leaf tissue to eat and will feed on the growing point, stem, and cotyledons. We do not have a good research base for bean leaf beetle injury to newly emerging soybean, but the thresholds are probably about 1.5 beetles lower than the VC thresholds.

Remember that early-planted soybeans are the most susceptible. If economic thresholds are reached, many insecticides are available for bean leaf beetle control. All will do an adequate job if applied according to label directions.

Another reason some producers treat bean leaf beetle on seedling soybeans is to reduce the pod-damaging F2 generation that emerges in August; however, UNL Extension does not recommend this practice. Many environmental

factors can impact beetle populations throughout the growing season, making it impractical to use spring beetle numbers to accurately predict if beetle populations will reach economically damaging levels in August. Regular scouting and the use of the appropriate economic thresholds are the best means for managing late season bean leaf beetle in soybean. Late-season economic thresholds will be included in *CropWatch* later this summer.

Bean leaf beetles also vector bean pod mottle virus, which is discussed further on page 49.

Thomas Hunt, Extension Entomologist, Haskell Ag Lab
Keith Jarvi, Extension Assistant Integrated Pest Management
Northeast REC

Table 1. VC Economic thresholds (beetles per plant)

Crop value, \$/bu	Pest management cost, \$/acre			
	\$6	\$8	\$10	\$12
\$5	3	4	4	6
\$6	2	3	4	5
\$7	2	3	3	5
\$8	2	2	3	4
\$9	2	2	3	3
\$10	1	2	2	3

Table 2. V1 Economic thresholds (beetles per plant)

Crop value, \$/bu	Pest management cost, \$/acre			
	\$6	\$8	\$10	\$12
\$5	4	5	7	8
\$6	3	4	6	7
\$7	3	4	5	6
\$8	3	3	4	5
\$9	2	3	4	4
\$10	2	3	3	4

2003 conditions lead to increase in soybean aphids

The soybean aphid (*Aphis glycines*) is Nebraska's newest soybean insect pest, arriving in the United States in 2000 and in Nebraska in 2002. In 2003 yield losses of over 20% were documented in some fields in northeast Nebraska where there were high populations of aphids. While this is alarming, most fields had only low to moderate populations.

Soybean aphid description

The aphid is light green to pale yellow, less than 1/16 inch long, and has two black-tipped cornicles (cornicles look like tailpipes) on the rear of the abdomen. It has piercing-sucking mouthparts and typically feeds on new tissue near the top of soybean plants or on the undersides of mature leaves. Later in the season the aphids can be found on all parts of the plant. It is the only aphid in North America that forms colonies on soybean, so if you have aphid populations developing on soybeans, they are soybean aphids.

Nebraska observations from 2003

In June, extremely low numbers of aphids were found in Nemaha, Cass, Saunders, Douglas, and Burt counties. Aphids were found primarily in fields near wooded river bottoms along the eastern border of Nebraska. Buckthorn, an overwintering host of the aphid, was found in wooded river bottoms throughout the eastern half of Nebraska. In mid-July, soybean aphid infestations began to be reported from northeast Nebraska. By late July soybean aphids could be found in all soybean production areas of Nebraska (eastern half of Nebraska), with almost all economically damaging populations being in the northeast portion of the state. Populations peaked in mid-August. Peak populations in the northeast ranged from less than 100 aphids/plant to approximately 5000

aphids/plant (field averages). Most infested fields in the northeast had low to moderate populations.

The pattern of soybean aphid colonization in 2003 was similar to 2002. Very few aphids were found until mid-July, with more fields per county infested in the northeast corner of the state. Mid-July colonization coincided with summer storm patterns having high northeast winds. However, population levels were much higher in 2003. In 2002 there were only two

predator levels (primarily lady beetles). Late August treatments likely resulted in no benefit, as aphid populations naturally declined.

Looking to 2004

It's too early in the season and this insect pest is too new to Nebraska to predict its impact. We expect to see aphids in much of the Nebraska soybean production areas in 2004, probably starting in mid-summer (possibly some in June) in

In 2003 if aphid populations reached thresholds and farmers treated in late July or early August, they benefitted from treatment.

reports of fields being treated for soybean aphid. In 2003 many fields in northeast Nebraska were treated, although it is likely that many did not require treatment or were treated after economic damage had been done.

A possible explanation for higher numbers in 2003 may be that in 2003 temperatures in the second half of July through the first week of August were rather mild, which favors soybean aphid reproduction. In 2002 temperatures were high during this period.

Various studies were initiated to examine the effects of the aphid on soybean growth and yield, aphid ecology, etc. In general, if aphid populations reached thresholds and farmers treated in late July or early August, they benefitted from treatment. If treatment occurred in mid August, benefit was variable and depended on aphid population size, population dynamics, and

the northeast and eastern part of the state. Actual levels and impact will depend on weather and natural enemies.

While soybeans were found in most of the state's soybean production area in 2003, economic populations were generally limited to the northeast area of the state. This pattern is likely to continue with higher populations more often found in the northeast.

So far it appears the soybean aphid is not an early season pest in Nebraska. More information on soybean aphid biology, scouting, and management will be presented in subsequent issues of *Crop Watch* and at the UNL Entomology Website: <http://entomology.unl.edu>.

**Thomas Hunt, Extension Entomologist, Haskell Ag Lab
Keith Jarvi, Extension Assistant Integrated Pest Management
Both at the NEREC**

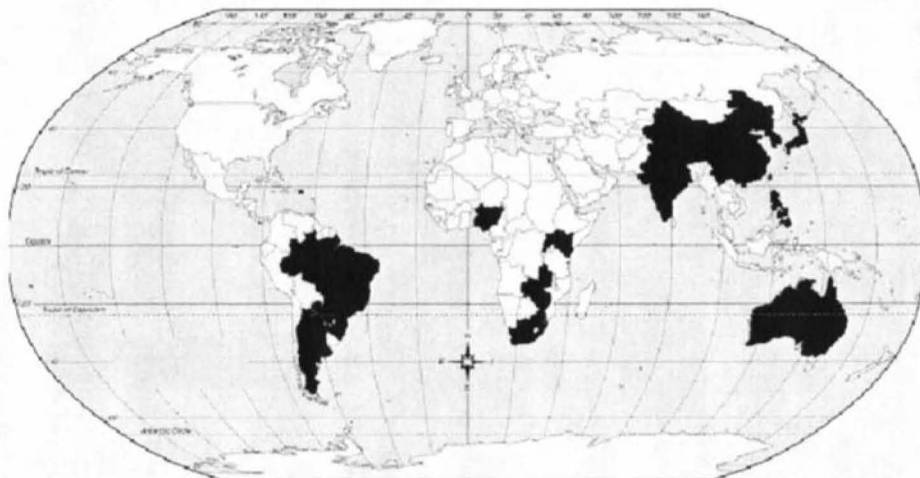
Daily GDD and ET updates for winter wheat are available at cropwatch.unl.edu/weather/gdd-et.html

Soybean rust is on our southern horizon

Are we ready for it?

After being in Brazil and seeing soybean rust first hand, I was amazed at how severely this disease impacts the soybean crop. Given that many breeding companies and government agencies are not sure when resistance to rust will occur, the main management option will be the use of fungicides. When it comes to fungicide use on soybeans in Nebraska, most producers have not ever given this a thought outside of use on seed for seedling disease problems. When soybean rust arrives, this scenario will definitely change given that we have a year with favorable environmental conditions.

Currently soybean rust is in South America and working its way north. The most logical way for this disease to get to the United States is via the land bridge through Central America. The other way would be through an inadvertent introduction by someone traveling to South America. Given that the Midwest could be the first place it would appear if it is inadvertently intro-



While soybean rust has not yet been identified in the United States, researchers say it's just a matter of time until it enters. The black areas of the map indicate countries where soybean rust has been identified.

duced, it is critical that we are all on the lookout for this disease.

Soybean rust development is favored by temperatures ranging from 59° to 84° F, with relative humidity above 90% for more than 12 hours. In order for spores to germinate and germ tubes to

develop and penetrate leaves, leaves must be wet for more than six hours. Environmental conditions in the Midwest are not as favorable as conditions in the southern United States for this disease, but it could still have a significant impact on soybean production in Nebraska.

Soybean rust symptoms

Lesions first appear as small yellow and irregularly shaped spots. Lesions appear most commonly on the leaves, but also can be found on petioles, pods and stems. As the disease progresses, lesions become polygonal in shape, and enlarge to 2 to 5 mm² (0.03 - 0.08 in²), and tan to red-brown in color. At this stage, symptoms can look like bacterial pustule, however, mature soybean rust pustules have a small opening at the top of the raised pustule for release of the urediniospores. Bacterial pustule lesions lack the opening on top and lack spores. These features can only be seen under magnification



Soybean rust pustules under a 20X magnification.

(Continued on page 55)

Soybean rust

(Continued from page 54)

(20 X recommended). As rust severity increases, plants prematurely lose their leaves and commonly mature early. The defoliation and initial symptoms can also be confused with Septoria brown spot which is common in our soybean fields. Septoria can also be differentiated from rust based on the lack of pustules and urediniospores.

When rust arrives in the United States, our main form of management will be foliar fungicide applications. Currently, Bravo, Echo and Quadris are labeled for soybean rust and a special request has been filed for emergency use (Section 18) of the following fungicides: Bumper, Folicur, Headline, Laredo, Pristine, PropiMax, Stratego, and Tilt. Based on data coming out of South America, the use of the currently labeled products (active ingredients of chlorothalonil or azoxystrobin) for soybean rust after it is established will not provide adequate control and the chemistry provided by the Section 18 products will be needed.

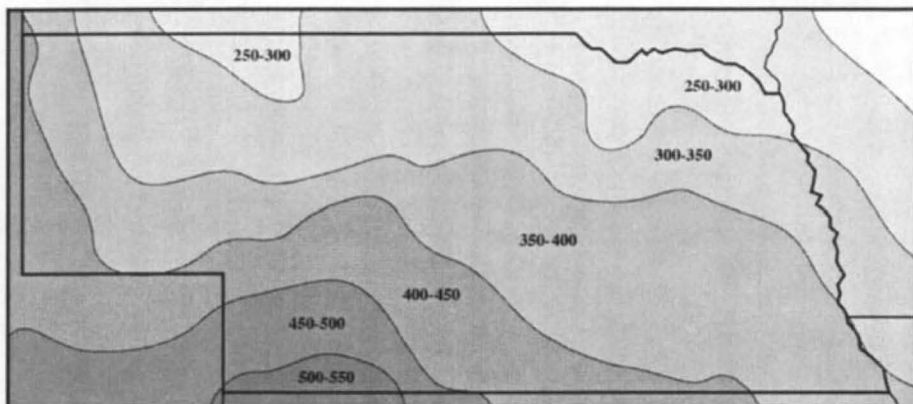
The Bottom Line: We are ready for this disease and should all be on the lookout for it. If we can detect it early enough, its impact can be significantly reduced.

Loren J. Giesler
Extension Plant Pathologist

For more information

... on the threat of soybean rust in the United States, visit these Web sites:

- USDA APHIS: http://www.aphis.usda.gov/ppq/ep/soybean_rust/
- American Pathological Society Features: June, 2003, Soybean Rust: Is the U.S. Soybean Crop At Risk? online at <http://www.apsnet.org/online/feature/rust/>



Be alert for alfalfa weevil activity

Growing degree day units as of Monday, April 19, indicate that alfalfa weevil feeding should be detectable southwest of a line roughly bisecting the state from the northwest to the southeast. Egg hatch of newly laid eggs usually takes place at about 300 GDDs. First and second instars are usually present between 300 and 450 GDDs. Areas with GDDs above 350 should see feeding on the newer alfalfa leaves at the top of the plant.

First and second instar feeding damage consists of small pinholes in the leaves. Feeding by the weevil increases as the larvae molt and grow. Maximum damage will occur from about 450-600 GDDs. The 450 level of GDDs has already occurred in the far southwest corner of Nebraska. Scouting for weevil feeding should be underway in all parts of Nebraska, with increased emphasis in the southwest and the Panhandle. (Map developed by Al Dutcher, state meteorologist, High Plains Climate Center)

Field and crop update

Producers focused on field preparations with corn planting underway in most of the state, according to USDA's Nebraska Agricultural Statistics Service report of the week ending April 18.

Subsoil moisture continued to rate very short to short in the western two-thirds of the state. Other producer activities included livestock care, spring fieldwork, and fertilizer application.

Temperatures averaged from normals to 7 degrees above normals for the week. Limited precipitation occurred over most of state with amounts generally 0.25 inch or less. Sunday evening brought rainfall of 0.50 inch or more to portions of the northeast.

Wheat condition rated 11% very poor, 17% poor, 38% fair, 33%

good, and 1% excellent, below last year and average. Fields were 15% jointed, ahead of last year at 10% and average at 8%.

Corn planting had made a start in most areas around the state with 7% seeded to date, ahead of last year and average at 3%.

Oat planting progressed to 84% seeded to date, ahead of last year and average at 68%. Twenty-nine percent of the acreage had emerged, ahead of last year at 23% but the same as average.

Sugar beet planting continued to make good progress with 57% completed to date. A year ago 20% had been planted.

Alfalfa conditions rated 3% very poor, 9% poor, 44% fair, 39% good, and 5% excellent.

Diagnostic Clinic helps you manage pests

If you have plant or insect problems, remember that the University of Nebraska Cooperative Extension Plant and Pest Diagnostic Clinic is here to help. The Clinic offers services related to the identification of plant diseases, insects, horticultural plants, weeds and herbicide injury. The charge for services is the same as last year.

Standard sample — \$10: The standard sample fee is applied to all samples that can be diagnosed with only visual and/or microscopic examination.

Additional charges for services: Culturing for pathogen identification costs an additional \$10. This fee helps cover the cost of media plates and the time involved in identifying the causal agent. Other additional costs include:

SCN Assay - \$10

Plant Parasitic Nematode Assay
- \$15

Goss's Culture - \$10

Stewart's Elisa - \$15

Misc. Elisa Test - \$15

Bacterial ID (Biolog System)
- \$20

Virus Screen (protein based)
- \$15

Rare Species ID - \$10

Insect Culture - \$10

Following the recommendations (*at right*) for sampling and sending samples can help ensure that samples arrive in good condition for an accurate diagnosis.

When you have a plant or pest problem, first consult your local Extension Educator. Often he or she can provide a diagnosis or will have copies of the specimen identification form for submitting samples. Send samples and forms to:

University of Nebraska-Lincoln
Plant & Pest Diagnostic Clinic
448 Plant Sciences
P.O. Box 830722
Lincoln, NE 68583-0722

**Jennifer Chaky, Plant and Pest
Diagnostic Clinic Coordinator**

Preparing samples

The Cooperative Extension Plant and Pest Diagnostic Clinic can provide the most diagnostic information when it receives samples that are in good condition. Following these recommendations can help ensure a representative sample.

Tips for sample collection

1. Collect a sample representative of symptoms and include healthy tissue for comparison. For turf samples, collect a portion that includes a margin between healthy and diseased areas.
2. Send as much of the sample as possible. This means send the entire plant including the root ball if feasible. Also send multiple plants or multiple branches from a tree or shrub showing a range from healthy to unhealthy.
3. Provide as much information about the sample as possible (age and variety of plant, moisture availability, soil type, disease history of site, chemical history of site, description of symptoms, plant part(s) affected, time of symptom development, distribution of symptoms, occurrence of severe weather, and any other information that may be helpful in diagnosing the problem).
4. Include a picture of the distribution of symptoms, as this can be very helpful.
5. Plants submitted for horticultural and weed identification should include flowers and/or fruit, leaves and roots.

Tips for sample submission

1. Keep samples cool before sending them.
2. Place sample in a plastic bag and include a dry towel if the sample is damp. If the roots are in soil, enclose them in a separate plastic bag with the soil intact. Place the sample into a sturdy box with packing material to take up excess space. A padded envelope can be used for relatively small and flat samples, such as some tree branches.
3. Do not mail samples late in the week, as the sample can deteriorate if the package sits in the post office over the weekend.
4. Include all sample information (*see No. 3, Tips for sample collection*), photographs if possible, and contact information such as phone numbers and mailing address.

Insect samples that are sent for identification are handled differently than plant samples. If you are sending an insect specimen, it should be sent in a rigid container. Soft-bodied insects, such as insect larvae and small insects should be placed into a tight sealing bottle with a liquid preservative such as alcohol or vinegar. Rubbing alcohol works well because it is 70% alcohol. Hard-bodied insects, such as beetles, ants and flies, should be wrapped in tissue and placed in a crush proof container. For living insects, place the host plant or damaged material along with some loose tissue into a ventilated container.

By following these guidelines, samples will arrive in good condition.

All of us at the Plant and Pest Diagnostic Clinic look forward to serving you this summer for your diagnostic needs. We hope that your plant and insect problems are minimal and your harvest is plentiful.

**Jennifer Chaky
Plant and Pest Diagnostic Clinic Coordinator**

WeedSOFT adds valuable features, drops price

WeedSOFT 2004 is now available. While there are plenty of new features, the biggest change for 2004 is the price. WeedSOFT is now only \$50 per copy -- a reduction of over 75%.

WeedSOFT is a decision support system designed to help growers, consultants, and extension educators make both proactive and reactive weed management decisions. WeedSOFT provides the treatment information you need based on your specific field conditions while factoring in economic and environmental principles. Whether you are considering early season soil applied treatments, control of mid-season infestations, or comparing treatments requiring additional costs for herbicide resistant crops, WeedSOFT is a powerful tool in your weed management arsenal. Each year a new version is released to update database information and provide new features.

WeedSOFT consists of four modules; Advisor, EnviroFX, MapView, and WeedView.

ADVISOR is the heart of the WeedSOFT suite of decision-support tools. ADVISOR provides a bioeconomical analysis based on weed biology, weed management efficacy, and production costs. Through information provided by the user, the program generates a list of allowable treatments from an extensive database of possible treatments and control practices. The net dollar gain in expected yield resulting from the application of a particular treatment is determined and becomes the criteria used to rank the allowable treatments. Treatments may be ranked by expectations of percent maximum yield or "net gain".

EnviroFX is intended to provide information on the potential environmental impact of specific herbicide treatments. EnviroFX estimates relative herbicide leaching and

potential for groundwater contamination based on soil and herbicide properties and water table depth.

MapVIEW is a first step in the process of evaluating the risk of groundwater contamination by herbicides. This module includes digitized Nebraska county maps that are color coded to display the vulnerability of certain sites to groundwater contamination with herbicides. Once vulnerability of a site is determined, EnviroFX may be used to determine the relative potential of a specific herbicide to reach groundwater. These tools allow the user to make informed management decisions based on soil properties and depth to ground water.

WeedVIEW is a visual library of color images and line drawings for each of 46 common weed species found in Nebraska. This module facilitates the correct identification of weed species.

The 2004 version of WeedSOFT 2004 includes several new features:

- **State-specific versions** of WeedSOFT® are available for: Illinois, Indiana, Kansas, Michigan, Missouri, Nebraska, and Wisconsin.
- A **Seed Calculator** has been developed which calculates the amount of seed you need for a field and the cost
- A **Herbicide Tank Mix Calculator** has been developed to provide you with the amount of selected herbicide to add to a tank mix. The module also allows you to print a load ticket for easy reference
- A **Record Keeping module** has been developed which allows you to track the ADVISOR-recommended herbicide treatments you have applied to your fields.
- Several **Learning Modules** have been developed to provide more information about the types of information ADVISOR uses to make recommendations. These are readily accessible within ADVISOR

- **ADVISOR** can now make recommendations selectively if a **Herbicide Resistant Crop** is planted

As mentioned before WeedSOFT costs only \$50. You can order it on-line or an order form can be printed off of the Web site. At this time we are not accepting phone orders. For more information visit the Web site at <http://weedsoft.unl.edu> or call (402) 472-1544.

Brady Kappler
Weed Science Educator

UNL Weed Science Web page online

The University of Nebraska weed science group has launched a new web page on weeds and related crop information.

Located at <http://weedscience.unl.edu>, the site includes links to the 2004 *Guide for Weed Management*, weed identification information, faculty and staff contacts, a preview of WeedSOFT 2004, weed science related new releases, information on weed control equipment, calendar of upcoming educational and training events, and much more.

When you're looking for weed science information or recommendations, this site should be your first stop. It not only includes research-based information from the University of Nebraska, but also links to the latest information at other university, government, and industry web sites. Be sure to visit the site regularly since new things are being added all the time.

Brady Kappler
Weed Science Educator

Check out the new UNL
Weed Science Web page at
weedscience.unl.edu

Pasture & hay management

Adjust hay use and forage planting for possible drought

In many areas of the state and especially western Nebraska, soil moisture reserves are still below average and the potential for drought conditions is very real.

Tips for managing spring pastures

Spring pastures are developing early this year. Usually grazing these cool-season grasses in spring should be easy. There's lots of grass and animals do well. In fact, most springs we have so much grass that much of it goes to seed and is wasted. To avoid this, I usually recommend early grazing to keep up with grass growth.

However, after a drought year, when plants have been weakened, early grazing must be done carefully to avoid lowering grass yields and yearlong carrying capacity.

If your pastures were in good shape last fall, you can carefully start grazing early this spring to avoid wasting good grass growth. However, make sure you don't graze too close, otherwise, if it turns dry again like last summer, grass growth will stop prematurely.

Most pastures, though, were not in good condition last fall. Delay grazing in these pastures at least until your usual turn out date. With this year's early spring, that should give pastures a strong start.

Once you start grazing, quickly move animals through all your spring pastures once, taking about two weeks to finish this rotation. When you start your second round, slow down so each paddock has at least six weeks to recover before the third pass. After that, let rainfall and grass growth be your guide.

Bruce Anderson
Extension Forage Specialist

Some of the effects of a drought on pastures can be minimized by adjusting practices this spring.

For starters, prepare a strategy for using leftover hay. One of the better options is to feed hay a bit longer this spring before turning cows out to permanent pasture. Usually, this would be the exact opposite of what I would recommend -- feeding less hay and grazing more. Allowing pastures to accumulate more growth before grazing will provide more total grazable forage if drought prevents later regrowth. Leftover hay also can be used later during the grazing season to give pastures more time to recover between grazings.

Another strategy is planting drought-tolerant forages for pasture or hay. Summer annual grasses like sudangrass, sorghum-sudan hybrids, and pearl millet are your best choices. Wait until soils are good and warm before planting these grasses. Late May or early June usually is best.

Reserve some ground for these drought-insurance grasses before you plant everything to corn, beans, and milo and who knows, maybe we'll have some good rains before then. If we don't, however, acting now to reduce potential forage losses can pay big dividends later this summer.

Bruce Anderson
Extension Forage Specialist

Weighing the options for bales

Q. Which is better for hay bales – net wrap or twine?

A. **Bruce Anderson, Extension Forage Specialist:** Net-wrapping can represent an investment -- equipment costs \$3,000-\$4,000 and plastic net is \$.75-\$1.00 more per bale than twine. While net wrapping isn't cheap, it does offer several advantages that can save money and time. Research from Wisconsin showed that net wrap reduces harvest losses about 1%. That's how much you lose while bales are spinning and being wrapped with twine.

Storage losses are quite a bit less with net wrap because net wrapped bales shed water better. Under Wisconsin conditions, twine wrapped bales lost 11% of their weight but net wrapped bales only lost 7% during five to twelve months of outdoor storage. That's an extra 4% feed from net wrapping and doesn't even count the better forage quality in net wrapped bales.

A couple percent here and there may not sound like much, but if you add the harvest and storage losses together to save 5% of your hay and it costs a dollar to wrap each bale, hay only needs to be worth about \$35 a ton to pay for the net wrapping material.

By far the biggest savings, though, may be time. Net wrapping only takes a couple turns of the bale compared to 15, 20 or even 30 turns for twine. Waiting to finish twine wrapping wastes time, burns fuel, and adds to tractor wear and tear. With net wrap, you can make 30% more bales per hour.

Little things *can* make big differences. How you wrap your bales is one of those things.

Bruce Anderson, Extension Forage Specialist