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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

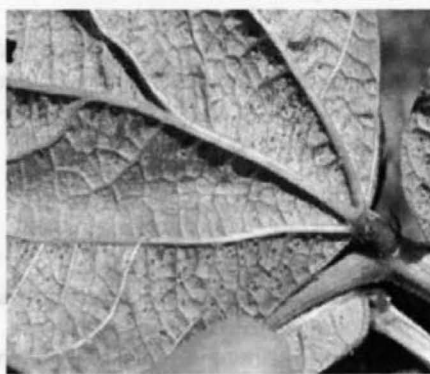
No. 2002-17
July 19, 2002

Scout corn and soybeans for spider mites

Reports of spider mites in corn and soybeans have begun to come in from across Nebraska, although we haven't heard of any economically damaging infestations to date. Current and projected weather conditions favor an increase in spider mite populations, so farmers and field scouts should keep a close eye on fields.

Two species of spider mites, the Banks grass mite and twospotted spider mite, commonly feed on Nebraska corn. Banks grass mites feed almost exclusively on grasses, including corn and sorghum. Twospotted spider mites not only feed on many species of grasses, but also on soybeans, fruit trees and a variety of vegetables and ornamental plants. Although these two species are somewhat similar in appearance, they differ in several biological characteristics and in their susceptibility to pesticides.

Banks grass mites usually appear earlier in the season, feed



Spider mites on the underside of a soybean leaf.

mostly on the lower leaves of the corn plant, and in Nebraska are moderately susceptible to many of the commonly used miticides. On the other hand, twospotted spider mites tend to appear in mid to late season, increase rapidly, feed over the entire plant, and often are not consistently controlled by available pesticides.

The most useful characteristics for identification are the overall shape of the body and the pattern of pigmentation spots on the back (*see figure*). The dark green spots on both species are caused by food particles that accumulate in their gut. Because of differences in gut structure, these pigment spots accumulate in slightly different patterns. In Banks grass mites the pigments accumulate along both edges of the body near the rear and along the sides of the body. In twospotted spider mites, the pigments accumulate along the sides of the body in two distinct spots and do not extend back more than halfway on the body. The Banks grass mite is also slightly less robust than the twospotted spider mite and is slightly flatter from top to bottom.

Mites damage crops by piercing plant cells with their mouthparts and sucking the plant juices. The

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Soybean aphid found in eastern Nebraska

The soybean aphid, *Aphis glycines*, has been found in Cedar, Dixon, Dakota, Thurston, and Burt counties in northeast Nebraska.

As reported in the April 19, 2002 issue of *CropWatch*, this insect originated in Asia and was first reported in North America in 2000. It quickly spread to 13 states and Canada, so soybean aphid movement into Nebraska was not unexpected. NU researchers and specialists had been surveying specifically for the pest this summer.

Extremely low numbers of aphids were found by entomologists Tom Hunt, Leon Higley, and Steve Spomer. It seems unlikely that economic problems will occur this season; however, fields will be monitored and surveys will continue throughout the growing season.

This small, yellow aphid has black cornicles ("tail-pipes") and

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<http://cropwatch.unl.edu>

Updates

Management tips July 19 - Aug. 2

◆ **Now is a good time to research and select the wheat varieties you'd like to plant next year.** Be sure to check the latest results from wheat variety trials online at an NU Department of Agronomy web site at <http://varietytest.unl.edu/whtst/2002/index.htm>. New trial results will be added as yields become available.

◆ **This also may be a good time to tuneup your sprayer to be ready for post-harvest herbicide treatments.** Check your nozzle tips and consider replacing worn tips with some of the new products that provide improved efficacy.

◆ **When you're applying post-emergence herbicides or scouting your fields, be sure to take notes on the locations of perennial weed patches.** To make returning to the sites simpler, use a handheld GPS unit with WAAS (wide area augmentation system) to pinpoint their location. Some of these GPS units start at slightly over \$100 and can be a significant tool in your weed control strategy. They can help you relocate the site for treatment and later to evaluate control.

◆ **Eliminating some patches of perennial weeds like shattercane before harvest** can curtail the combine from spreading weed seeds throughout your field, complicating your weed control strategy for next year.

◆ **As sunflowers begin to bloom, be sure to scout for insects such as the head moth and seed weevil.**

Field updates

Noel Mues, Extension Educator in Furnas County: Crop conditions are deteriorating rapidly. We've received about 4.5 inches of rain since early March. About 1.3 inches were recorded in June with none so far in July. Temperatures in the upper 90's and 100's, along with high winds,

have added to the severity of the drought.

According to last week's USDA Agricultural Statistics Crop-Weather report for Nebraska, top soil moisture for south central Nebraska rated 73% very short, 22% short, and 7% adequate while subsoil moisture rated 64% very short, 31% short, and 5% adequate. Irrigators haven't been able to keep up and there is tremendous concern as we enter the "hot" part of the summer. It is almost a given that surface water irrigators won't be able to stretch their water supplies beyond mid-August.

Ecofallow corn and sorghum that was planted into wheat stubble are starting to show evidence of drought. Many livestock producers are considering early-weaning their calves, heavy culling of cows, and using alternative feed sources, such as grazing standing corn.

Ralph Kulm, Extension Educator in Holt County: Crop producers with center pivot irrigation were very glad to receive a few cool days last week. Most systems have been running at full capacity the last few weeks trying to keep up. Producers with marginal wells and systems are in trouble.

Dryland corn is tasseling at 3-4 feet. Some producers are getting ready to harvest or graze their dryland corn before it totally dries up. Most of the wheat and oats were cut for hay. And as their food supply is removed, the grasshoppers are becoming a bigger problem for the remaining crops.

Correction

In the last issue of *CropWatch* (July 12, 2002) we discussed grasshopper control in field corn, grain sorghum, and soybean and the grazing restrictions associated with some common insecticides. It was noted that there were "no restrictions listed" for the insecticide Capture on soybeans.

While this is true for some varieties of soybean that are harvested prior to seed maturity and used for human consumption, it does not apply to the vast majority of soybeans grown in Nebraska. Capture is not registered for field soybeans grown in Nebraska. This emphasizes one of the key messages of last week's article, namely, "Read the label."

**Tom Hunt, Extension Entomologist
Northeast REC**



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

Mites (Continued from page 157)

first evidence of mite feeding, which can usually be seen on the top of the leaf, is a yellow or whitish spotting of the leaf tissues in areas where the mites are feeding on the lower leaf surface. Because many other things can cause similar discoloration, it is important to check leaves closely to make sure mites are actually causing the damage. Leaf discoloration caused by mite feeding can be easily identified by checking the undersurface of leaves for the presence of mites, eggs and webbing. Both Banks grass mites and twospotted spider mites produce webbing, and a fine network of silken webs will likely be associated with mite colonies. A magnifying glass or 10X hand lens is helpful in examining plants for mites.

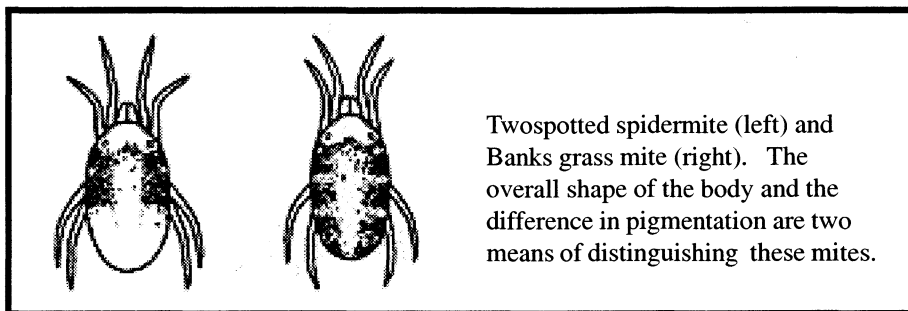
Table of economic thresholds for treatment of mites on corn

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The economic injury level indicated in the table provides a method for deciding when to treat, taking into account the value of corn. This table works for both twospotted spider mites and Banks grass mites.

The first row refers to the expected value of the crop (\$/acre), determined by multiplying the expected yield (bu/acre), by the expected crop price (\$/bu). For example, if the expected yield is 200 bu/acre and the expected price is \$1.50/bu, then the value per acre is \$300.

Deciding whether to treat involves two steps. First, determine the percentage of leaves infested with mites (an infested leaf has one or more live mites). Compare that number with the first number in the table. If the field average is less than the table value, you don't need to treat, but do continue to monitor the field. If the field average exceeds the table value, then estimate the



Twospotted spidermite (left) and Banks grass mite (right). The overall shape of the body and the difference in pigmentation are two means of distinguishing these mites.

percentage of total leaf area damaged by mites. If the field average exceeds the table value, it is likely that treating for spider mites will increase yield above the cost of treatment.

Also, note that control costs are a factor in this table. Depending on the product chosen, the critical values may change greatly. For example, under the column \$300 market value, the critical value for percent infested leaves varies from 20%, if control costs are \$10, to 49% if control costs are \$25.

Labeled products for spider mite control on corn include dimethoate (several formulations), Comite 6.55EC and Capture 2EC. Dimethoate has performed reasonably well in Nebraska against Banks grass mites, but not twospotted spider mites. If twospotted spider mites are present, either Comite or Capture would provide better control. See the Department of Entomology web site on spider mite control or product labels for specific rates and restrictions. With the exception of Comite, pesticides do not kill mite eggs, and there is a possibility of re-infestation of the fields as eggs hatch out. Since many of their natural enemies were probably killed by the initial pesticide application, these populations may build up rather quickly and should be monitored carefully. Corn is unlikely to benefit from treatment for spider mites after the dent stage.

Twospotted spider mites also may develop on soybeans. No research has been conducted that would allow calculation of an economic injury level for twospotted

spider mites on soybeans. Iowa State University Extension specialists have suggested that control may be warranted when infested plants have substantial spotting or leaf yellowing and live mites, but before mites cause browning and leaf drop. Damage from mites may be confused with that caused by drought and several foliar diseases, so be sure to base treatment decisions on the presence of mites, rather than just apparent injury symptoms.

Fields may be spot treated if the infestation is localized, but check other areas for mites (especially downwind of infestation) and extend treatments into these areas if large numbers of mites are found. Although late season infestations may accelerate soybean senescence and increase pod shattering, use caution when evaluating whether to treat with pesticides because many of the pesticides used for mite control have 21-28 day preharvest intervals. Products to use in soybeans include dimethoate (several formulations) and Lorsban 4E at 1/2 to 1 pt per acre. See the Entomology web site or product labels for specific rates and restrictions.

For more information see the UNL Cooperative Extension publication, *Spider Mite Management in Corn and Soybeans*, G1167, available at your local Extension office or on the Web at <http://www.ianr.unl.edu/pubs/insects/g1167.htm>

Bob Wright
Extension Entomologist
South Central REC
Keith Jarvi, Extension Assistant
Integrated Pest Management
Northeast REC

Mites *(Continued from page 159)*

Table I. Economic injury level for the Banks grass mite or twospotted spider mite on corn, based on the percentage of infested leaves per plant and percentage of total leaf area damaged.

| Control cost/acre | Market value per acre (\$) | | | | | | | | | | |
|-------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 |
| | <i>Percent infested leaves per plant/Percent of total leaf area damaged</i> | | | | | | | | | | |
| \$5 | 15/8 | 12/6 | 10/5 | 8/5 | 7/4 | 7/3 | 6/3 | 5/6 | 5/3 | 5/2 | 4/2 |
| \$10 | 29/16 | 24/13 | 20/10 | 17/9 | 15/8 | 13/7 | 12/6 | 11/6 | 10/5 | 9/5 | 8/4 |
| \$15 | 44/23 | 35/19 | 29/16 | 25/13 | 22/12 | 20/10 | 18/9 | 16/9 | 15/8 | 14/7 | 13/7 |
| \$20 | 59/31 | 47/25 | 39/21 | 34/18 | 29/16 | 26/14 | 24/13 | 21/11 | 20/10 | 18/10 | 17/9 |
| \$25 | 74/39 | 59/31 | 49/26 | 42/22 | 37/20 | 33/17 | 29/16 | 27/14 | 25/13 | 23/12 | 21/11 |

No relief in sight as drought worsens

Except for narrow pockets of heavy rainfall earlier this month in Keith, Gage, Lancaster, Saline, and Saunders counties, most of Nebraska continues to miss the precipitation it desperately needs. Last week's cold snap was short-lived as significantly warmer temperatures returned to the central United States this week.

Corn and soybean conditions continue to deteriorate across the 10 leading grain producing states. As of July 14, only 48% of the U.S. corn crop was rated in the good to excellent category, representing a drop of 14 percentage points from June 23. Fifty percent of U.S. soybeans were reported in the good to

conditions are being reported over the southern two-thirds of Illinois, as well as portions of Indiana, Ohio, and Michigan. Another week of heat and dry conditions will warrant further upgrades to these states, as well as eastern Nebraska.

Colleagues from the Midwestern Climate Center have indicated that Champaign, Illinois had received only 0.07 inches of rain for the 32 days preceding July 15. The extremely wet conditions that materialized across Illinois during April and May are now reversed. Because significant crop planting delays occurred across the eastern corn belt, corn fields have very shallow rooting depths and have undergone severe stress with the recent dryness. Estimated rooting depths for the corn crop are less than 20 inches at many Illinois locations.

In Nebraska, indications are that some surface irrigation deliveries will be shut down by this weekend. In addition, some of the shallower irrigation wells in north-eastern Nebraska are running dry.

I wish I could provide promising news as far as the forecast was concerned. Unfortunately, the models don't indicate any significant precipitation in the immediate future. The models have consis-

tently shown a precipitation field generated at the end of each 10-day run for the last week. This is typical output for weather models trying to break down a dominant ridge.

The best hope for western Nebraska will be for the monsoon season in the desert southwest to become more active than usual over the next few weeks. This could be possible if a tropical storm comes ashore on the Baja Peninsula of Mexico. For eastern Nebraska, we will need a frontal system to move southward out of the Dakota's to increase our rain chances. However, neither of these options looks very promising for the next 10 days.

Al Dutcher
State Climatologist

Soybean aphid

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can be found on soybean from seedling through reproductive stages. It feeds on new growth or the undersides of mature leaves. Heavy feeding may produce wilting, leaf distortion and yellowing.

Further information on the aphid and current management strategies will be discussed in subsequent issues of *CropWatch*.

**Tom Hunt, Extension
Entomologist, Northeast REC**

Value-added ag grants

Collaborative value-added agriculture projects could be eligible to receive grant money through the Nebraska Ag Opportunities and Value-Added Partnership Act Grant. The \$238,000 remaining in the program will be awarded in August.

All applications must be submitted to the Nebraska Department of Agriculture by August 1. An application form is available on the NDA web site at www.agr.state.ne.us.

For more information, contact NDA at 800-422-6692.

Check corn roots for rootworm injury; evaluate efficacy of your management program

Western corn rootworm beetles have been emerging since early July in southeastern and southcentral Nebraska, indicating that rootworm larval feeding is ending. Mid to late July would be a good time to dig roots to evaluate the efficacy of your rootworm management program.

The presence of adult beetles or rootworms in a field is not necessarily an indication of insecticide failure. Soil insecticides are applied in a narrow band or infurrow to the soil, or as a seed treatment, and corn roots grow beyond the treated zone where rootworm larvae may survive. Also, plant lodging may occur without significant rootworm feeding. Dig and wash some roots to check for rootworm injury before assuming that rootworm damage is responsible for lodging.

Rootworm insecticide efficacy can only be evaluated reliably if replicated, untreated check strips are left in the same field as the treatment. Without check strips, you won't know whether the absence of injury is due to insecticide efficacy or the absence of rootworms.

Root damage from rootworm feeding can be rated using the Iowa 1-6 injury rating system (see figure and NebGuide G92-1108, *Evaluating Corn Rootworm Soil Insecticide Performance*). Before corn plants can be rated for injury they need to be at a growth stage where at least three nodes of roots are clearly visible. Dig at least 10 randomly selected plants from several areas of a field. Leave a 9-inch cube of soil surrounding the root system, wash the roots to remove soil and rate each plant for injury using the rating scale.

The relationship between root injury rating and yield loss is complex, but usually a root injury

1. No feed damage

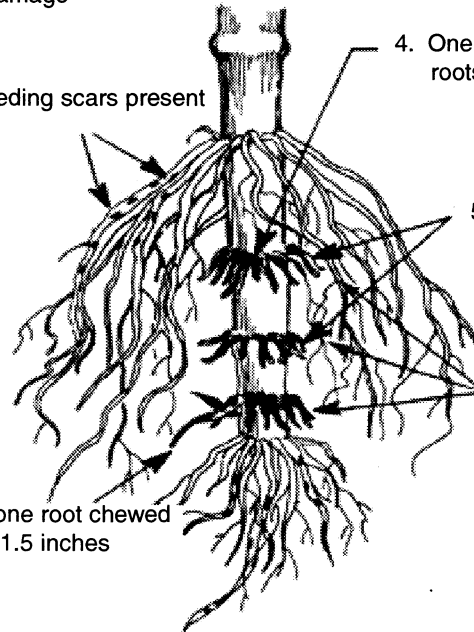
2. Visible feeding scars present

3. At least one root chewed to within 1.5 inches of plant

4. One entire node of roots destroyed

5. Two nodes destroyed

6. Three or more nodes destroyed



Rating Description of root system

- | | |
|---|---|
| 1 | No noticeable feeding damage. |
| 2 | Feeding scars present but no root pruning. |
| 3 | At least one root pruned, but less than an entire node of roots pruned. |
| 4 | At least one full node of roots pruned but less than two full nodes. |
| 5 | At least two full nodes pruned, but less than three full nodes. |
| 6 | Three or more full nodes of roots pruned. |

To qualify as a pruned root, the root must have been pruned to within 1 1/2 inch of the plant. It is not necessary for all of the pruned roots to originate from the same node to qualify as a root system with a full node pruned. It is only necessary that the number of roots pruned is equivalent to that in a full node.

rating of 3 or more is needed to cause economic yield loss. The corn plant has the capacity to regrow roots and compensate for some early season injury, especially if soil moisture and fertility are adequate during the regrowth period. If several weeks have passed between the end of rootworm injury and the time of root rating, new root growth

may hide the injury. Examine roots carefully to accurately rate them.

An alternative method to evaluate root injury has been developed at Iowa State University and is gaining acceptance. It is based on a 0-3 scale. This system was developed to avoid some of the

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Rootworm injury

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perceived problems with the traditional 1-6 scale, including that the 1-6 scale is not linear (e.g., a rating of 4 does not represent twice as much injury as a rating of 2), and that the 1-6 scale is difficult to explain. The 0-3 scale is linear and the meaning of the injury values are easy to understand. Another potential advantage to the 0-3 scale is that it is more sensitive in detecting differences at low levels of injury compared to the 1-6 scale. This is particularly important in some research applications.

In this scale 0 = no damage, 1 = one complete node of roots is pruned (as defined above), 2 = two complete nodes of roots are pruned, and 3 = 3 nodes of roots are pruned. Fractional ratings are possible, e.g. 1.5 = equivalent of 1.5 nodes of roots pruned.

A web site describing the 0-3 rating system is at <http://www.ent.iastate.edu/pest/rootworm/nodeinjury/nodeinjury.html>

Bob Wright, Extension Entomologist, South Central REC

Northeast Nebraska meetings to address drought issues with strategies and humor

Meetings will be held in Holt and Knox counties in July and August to address drought issues for dryland crops and preparations for next year's crop. The August meetings also will feature a little dry, clean ag humor and the winners of two drought-related contests.

On Monday, July 22, meetings will be held at 10 a.m. at the Holt County Extension Office in O'Neill and at 2 p.m. at the Knox County Extension Office at Center to address drought concerns for dryland crops. Topics will include nitrates, prussic acid, grazing, silage, hay and alternative feeds.

In August meetings will be held to address winter preparations following a drought. The Aug. 26 meeting will be at the Holt County Extension Office in O'Neill and the Aug. 27 meeting will be in the Bloomfield Community Center. Both will be held from 1 p.m. to 5:30 p.m.

Speakers will include Al Dutcher, NU state climatologist; Bruce Anderson, NU extension forage specialist; Tom Hunt, NU entomologist, and three Extension educators, Gary

Stauffer, Ralph Kulm and Terry Gompert. They will address insect considerations; climate probabilities, feeding cows whole shelled corn; grazing standing corn; purchased protein sources; and planning winter feed.

Extension educators Terry Gompert and Ralph Kulm also hope to mix in a little humor by encouraging farmers to participate in two drought-related contests: the Best Clean Drought Joke and the Largest Drought Crack in Holt County or Knox County.

For those interested in entering the contests, the largest crack in the earth from the drought will be judged on a point system:

- width (10 points per 1/4 inch at the widest part),
- depth (10 points per inch at the deepest part), and
- length (1 point per foot at the longest part).

Contest entries need to be turned into either the Holt or Knox County Extension Office by 4:30 p.m. Aug. 21. Winners will be announced at the drought meetings on Aug. 26-27.

Rally sparks marketing options for wheat

The last couple of years the most challenging marketing decision for wheat producers was trying to maximize the Loan Deficiency Payment. This year's drought and subsequent yield reductions in wheat have changed that. Cash prices are now above loan rates and producers need to consider marketing alternatives.

The old adage, "Store a small crop, sell a large crop," might not hold true this year, according to Dr. Dillon Feuz, ag economist at the University of Nebraska Panhandle Research and Extension Center in Scottsbluff.

With the recent rally, cash prices have increased \$0.30 to \$0.40 at most elevators. The KCBT September wheat contract increased \$0.35 per

bushel. From mid May prices have rallied \$0.60 to \$0.70 per bushel. Basis levels in Western Nebraska at -\$0.15 to -\$0.20 per bushel are about \$0.30 per bushel stronger than last year and are \$0.15 per bushel stronger than the five-year average. "Those basis levels make it very attractive to sell now," Feuz said.

"The market is not providing many incentives to store. KCBT December and March contracts are only priced about a nickel more than the September contract." If the market doesn't continue to rally, a producer would lose storage costs. Typical storage costs, including interest on the grain are in the range of \$0.02 to \$0.04 per bushel per month for on-farm and off-farm storage, respectively.

"If exports pick up from the present dismal rate and if the spring wheat crop continues to deteriorate, we may still see rallies in the market," Feuz says. If you want to be a part of this potential market rally, but feel like you should sell your wheat now with the positive basis, then you might consider buying a call option. A \$3.50 KCBT Mar call is currently priced around \$0.25 per bushel. If you buy the call and the market does not rally, you will lose your \$0.25 per bushel. However, if the market rallies to \$4.00 per bushel, you could sell the Mar call for \$0.50 per bushel and you would net a \$0.25 per bushel gain.

Feuz encourages producers to review all market options. "If you don't have much wheat to sell, you sure need to sell that at a favorable price."