2000

*Crop Watch* No. 2000-13, June 16, 2000

Lisa Brown Jasa

*University of Nebraska-Lincoln*, ljasa@unlnotes.unl.edu

Follow this and additional works at: [http://digitalcommons.unl.edu/cropwatch](http://digitalcommons.unl.edu/cropwatch)

Part of the [Agriculture Commons](http://digitalcommons.unl.edu/cropwatch)


[http://digitalcommons.unl.edu/cropwatch/220](http://digitalcommons.unl.edu/cropwatch/220)

This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Crop Watch by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
Managing early season spider mites in corn

Spider mites have begun to infest corn at extremely early stages this year. Infestations have been reported from many areas of the state, but appear to be most serious in western Nebraska. Reports vary from serious infestations where portions of fields have been killed to mite colonies only being present on the lowest leaf or two of the plants. So far reports have been of infestations of Bank's grass mite. These infestations are most often associated with being adjacent to or near winter wheat or grassy areas.

Management of spider mites in corn at such an early stage can be difficult because of the uncertainty involved. The impact of the mites at these early stages is unknown, and no treatment guidelines are available. However, an explosion of mite populations when plants are this small would clearly threaten plant survival. Natural enemies often help control mite populations later in the season, so early treatments may affect spider mite natural enemies and interfere with this control. Perhaps the most important factor in determining the potential for problems is the impact of environmental conditions. Continued hot and dry weather will make the situation more difficult to manage as these conditions are beneficial to the mites and more detrimental to the corn. All of these factors need to be considered in managing Bank's grass mites at these early corn stages.

I have discussed our situation with entomologists in Kansas (Phil Sloderbeck) and Texas (Tom Archer) who regularly deal with spider mites. They have seen these serious early infestations on occasion and feel that this situation is not necessarily a disaster for the corn crop. Often these early infestations are an opportunity for natural enemies to build up early and provide good mite control later in the season.

However, miticide applications must be kept to a minimum and those used must be managed well for this to happen. There are no thresholds for miticide applications at this time of year, but some guidelines can be used. On smaller corn (four to eight leaves) treatments should be considered if the top two leaves begin to be invaded by mites. On older corn, the top half of the plant should be protected, so treatments should be considered if mite colonies are beginning to establish on the upper half of the plant. These guidelines are more liberal perhaps than later thresholds for mites on corn, but should maximize the potential for the buildup of natural enemies. In making decisions consider the weather forecast as predicted hot and dry conditions will favor rapid mite buildup.

Three miticides have been effective against spider mites in Nebraska, including dimethoate (several formulations), Capture 2EC, and Comite. If miticides are used, resurgence of mite populations is a

(Continued on page 111)
Ron Seymour, Extension educator in Adams County: Plants in all fields, even irrigated fields, have symptoms of drought and heat stress. Although irrigated field corn is showing heat stress, the crop, particularly in fields with overhead sprinklers, looks good. Most of the irrigated field corn is in the seven to eight leaf stages. Most of the fields have been cultivated and hilling is underway in many furrow irrigated fields. Small Banks grass mite colonies and a few stalk borers were found at the edge of one com field. Soybean maturity ranged from the first to the third trifoliate stages. Cultivation is underway in a few fields.

Dryland alfalfa is 6-9 inches. A few small grasshoppers and lygus bugs were found in the alfalfa but the number of these pests was low. Sorghum fields were in the three-leaf stage and looked good.

Ray Weed, Extension Educator in Kimball/Banner counties: Tuesday afternoon a “dirt” storm swept through Kimball from the West blotting out the sun and limiting visibility to a few feet. It was literally a Nebraska “brownout.” However, we did get a thunderstorm afterward which brought some valuable but likely short-term relief. Prior to the storm, we were short on topsoil moisture throughout both counties. We do have subsurface moisture, so our dryland corn and sunflowers are still in fair to good condition but that won’t last very long. Our winter wheat crop is stressed by lack of moisture.

Gary Hall, Extension educator in Phelps and Gosper counties: It’s dry dry dry with lots of irrigation going on right now. Corn is showing more stress and soybean leaves are curling. The wheat crop is almost ripe and harvest should begin this week (June 16) or next.

Noel Mues, Extension educator in Furnas County: Crop conditions are deteriorating rapidly. We received about 0.6 inch of rain in May and none so far in June. Producers have been irrigating for over a month. Even some furrow irrigators started to run water up to three weeks ago. Ecofallow corn and sorghum are hanging on where there is good residue.

Last week, for the first time that I can remember, I reported to the Nebraska Ag Statistics Service that Furnas County is 100% very short on both topsoil and subsoil moisture. High winds and temperatures continued to accelerate the wheat crop toward early harvest which could begin late this week in the southern part of the county. We are not excited about the yield and quality outlook for the crop.

Ralph Anderson, Extension educator in Buffalo County: We received .5-2.5 inches of rain Sunday, which helped relieve some drought stress. Pivots are going strong and we will have furrow irrigation going this week. We were seeing some corn rolling last week, but it may have been caused more by the extreme heat and wind rather than the moisture shortage. Most of those fields recovered as soon as the sun and wind went down. European corn borer moth flight has been light and only limited feeding is visible. I do not expect a serious

(Continued on page 112)
very real possibility with all products, including Comite. This is perhaps the most serious situation that could require growers to apply repeated applications to keep the mite numbers low enough to reduce the impact on the plants through the season. The use of repeated applications of insecticides, besides being extremely costly, will also increase the potential for mite populations to develop resistance to the miticides. Current corn prices make it difficult to justify increased input costs for miticides.

The dynamics of mite treatments at this time of year are really unknown; however, with limited foliage, chemical coverage will be improved and control should be better than later season treatments. However, we have seen heavy egg numbers in many of these colonies on young corn, and a dimethoate treatment, which will not kill eggs, has increased potential of resulting in resurgence when the eggs hatch and the residual of the chemical is past.

In the past, Bank’s grass mites in most areas of the state have been controlled reasonably well with dimethoate, which is the least expensive product. The disadvantages of dimethoate are its toxicity to natural enemies and its inability to control mite eggs. There will be few natural enemies left in a field after a dimethoate treatment. When this is considered along with the potential of resurgence of mites from eggs to re-establish mite colonies, dimethoate is not the best choice for early season control. However, if dimethoate is chosen for control, spot treatments, leaving areas of the field that are not seriously infested, should be left to allow for natural enemy buildup.

Capture 2EC has provided good control of both Bank’s grass mites and two-spotted spider mites in the past; however, Capture 2EC will also be hard on the natural enemies, and the additional cost of Capture 2EC is likely not warranted for control of only Bank’s grass mites.

Comite should be considered for controlling these early season infestation even though it is costlier than dimethoate. With good coverage that should result from limited foliage, Comite provides good control of adult mites plus it will also control mite eggs. Most importantly, Comite does not kill natural enemies, but will allow for their buildup; however, if entire fields are treated, mite populations may be nearly eliminated and natural enemies will leave the field due to lack of food. Because this can occur, the best treatment for these early infestations will be to apply Comite in spot treatments to the most serious areas of a field and leave those areas with low infestations as a reservoir of mites for natural enemy buildup. Comite can only be applied once each season.

**Recommendations**

The following recommendations will be important to managing the current mite situation in corn.

(Continued on page 112)
Spider mites
(Continued from page 111)

1. Reduce the moisture stress on corn. Stressed corn will be impacted more by the mites and will be a better host for the mites.

2. Determine the level of infestations in your fields immediately. Treatments may not be warranted at this time, but with continued hot dry weather, growers must continually monitor this situation.

3. Delay any miticide application as long as possible. This will allow time for beneficial populations to build up and assist in controlling the mite populations.

4. During this early season period, it will be important to target miticide treatments to preserve and enhance natural enemy populations. This can be done by using a miticide that will not reduce natural enemy populations (Comite) and/or applying miticides on a spot treatment basis to only those areas of a field that are threatened by serious mite infestations.

For more information on spider mite management and control, refer to the Cooperative Extension NebGuide, Spider Mite Management in Corn and Soybeans, G93-1167, available on the Web at http://ianr.unl.edu/ianr/pubs/insects/g1167.htm. For miticide rates, refer to the University of Nebraska Department of Entomology Web site at http://www.ianr.unl.edu/ianr/entomol/instabls/spmitcon.htm

Gary Hein
Extension Entomologist
Panhandle REC, Scottsbluff

Nebraska 5th in milk gains

In 1999, Nebraska produced 1,139 million pounds of milk, up 8.5 percent over 1998, ranking it fifth for yearly gains in production, according to the American Farm Bureau Federation. Only Idaho, California, Arizona and New Mexico ranked higher.

Fuel price increase adds $10 per acre to irrigation cost

In 1999, the average farm diesel fuel price was about $0.70 per gallon. The current price for diesel is about $1.10. What effect will this have on the cost of irrigating in Nebraska?

To answer this question, we must make some assumptions about area irrigated, depth of water applied, the pumping water level, system pressure, and the efficiency of the pumping plant. For our analysis, we will assume 125 acres irrigated with a center pivot, a gross irrigation application of 15 inches, a lift of 90 feet from the pumping water level in the well to the pressure gauge, a system pressure of 40 PSI and an irrigation pumping plant operating at the Nebraska Performance Criteria (NPC) for deep-well turbine pumps.

Given these assumptions, a diesel powered pumping plant would consume 3100 gallons of diesel for the season. Using the average 1999 diesel price of $0.70 per gallon, we would have resulted in a season-long fuel cost of $2,172.00. At $1.10 per gallon of diesel, the season-long fuel cost would be $3,413.00. This is an increase of $1,241 as a result of the increase in fuel price. Expressed on a per acre basis, it amounts to $10 per acre ($1241/125 = $10/acre).

Other fuel sources could also be compared. A system powered by LP (liquid propane) gas at the NPC would have consumed 5628 gallons of fuel. A system powered by natural gas would have consumed 628 mcf (thousand cubic feet). An electrical powered system would have consumed 43,814 kW.h. The reader can multiply the estimated fuel use by their 1999 and 2000 fuel costs to compare the effect of price changes.

Tom Dorn, Extension Educator
Lancaster County

Briefs
(Continued from page 110)

European corn borer problem this year, but there is still time.

We are seeing root feeding from rootworms, some of which are nearing maturity, while some are still hatching. Rescue treatments applied last week should benefit from the weekend moisture. Many fields still look great, in spite of the challenges that we have had this spring. The only thing more depressing than the subsoil moisture situation are crop prices!

Jim Peterson, Extension Educator in Washington County:
Rains throughout Washington County came just in the nick of time. Some parts of the county have had more than others, but these rains are enough to keep things going for awhile. The corn and soybeans look good at this time. Corn is 10-15 inches tall. The first cutting of alfalfa was short because of the drought and there were some problems with regrowth due to alfalfa weevil. In general, things look fairly good considering the lack of rainfall.

Plant and Pest Clinic update

Diagnostic Clinic Corn diseases diagnosed in the last two weeks were Stewart’s Wilt, anthracnose, leaf blight, and stand problems related to environmental conditions.

Soybean diseases included Rhizoctonia, and Fusarium root rots and heat canker.

Alfalfa diseases included Fusarium crown rot and Verticillium wilt.

Jane A. Christensen
Plant and Pest Diagnostic
Rootless corn syndrome -- finding the cause

One of the more unusual problems associated with hot, dry weather is “rootless” corn (also referred to as rootless corn syndrome). Rootless corn has occurred in corn fields across the corn belt. In recent weeks we have received many calls on this symptom from south central and southeast Nebraska.

The problem concerns plants with poorly developed root systems and is usually observed in plants from about the three-leaf stage to the eight-leaf stage of development. Plants exhibiting rootless corn symptoms have either lodged and are laying on the ground or are ready to lodge. Some times the corn will only be anchored in the soil by a single nodal root or by seminal roots. Before the problem is evident, corn plants may appear vigorous and healthy, but after strong winds (like we’ve experienced the last several weeks), plants can fall over because there is limited or no support. Thunderstorms with strong winds are often causal agents too. Leaning and lodged plants may also wilt. Affected plants lack all or most nodal roots. The nodal roots present appear stubby, blunt, and are not anchored to the soil.

Under normal field conditions seeds absorb moisture and growth begins. The radical emerges from the seed which is soon followed by the coleoptile. Emergence (spiking) occurs due to the rapid mesocotyl elongation which pushes the coleoptile to the soil surface. Upon exposure to light, coleoptile and mesocotyl growth stops. The growing point (crown) is at the top of the mesocotyl and the base of the coleoptile and is usually 1 to 1½ inches below the surface. Nodal root (crown or secondary roots) growth occurs at this point. Depth of the growing point (and thus the nodal roots) is not greatly affected by normal planting depths. The plant’s first leaves break through the coleoptilar tip and expand.

Under favorable growing conditions, the nodal roots develop at the growing point and become the permanent root system of corn. The seminal (or primary) roots (which emerge from the seed) and the seed are responsible for early growth of the seedling. Seminal root growth slows after seedling emergence and is virtually non-existent by V3. Although the seminal roots continue to function throughout most of the plant’s life, their most important contribution comes before the nodal roots are established. The nodal roots are important in providing the majority of the water and the mineral nutrients that the corn plant needs for growth and development.

Many investigators have attributed rootless corn problems to weather-related conditions that coincide with development of the permanent (nodal) root system and other environmental factors. These include hot, dry surface soils, shallow planting depths, compact soils, and loose or cloddy soil conditions. Nodal root development is inhibited by hot, dry compact soils. Authors of an older text book (Aldrich et al., Modern corn production, 1975. A and L Publications, Champaign Ill) indicate that conditions that favor the problem are loose soil especially after rotary hoeing, dry soil, and a smooth soil surface. With loose soils or with rotary hoeing, coleoptiles are exposed to light sooner than normal and nodal roots may form closer to the soil surface. Several of the reports we’ve heard about this year are from no-till fields that were in soybeans last year. Abrasive action of strong winds also can break off secondary roots and inhibit establishment of a permanent root system. Excessive rainfall and shallow planting depths may cause erosion and soil removal around the crown region that can result in rootless corn.

Although certain types of herbicide injury and insect feeding may cause lodging to occur in corn plants during vegetative development, generally there has been little evidence of their involvement in these rootless corn problems. Nevertheless, there may be situations where insect feeding (e.g. corn rootworm) and/or growth regulator herbicides (e.g. 2,4-D, and dicamba) appear to contribute to rootless corn problems.

(Continued on page 115)
Wheat crop continues to deteriorate with high temperatures at fill stage

Nebraska’s winter wheat crop was particularly vulnerable last week when high winds and unusually high temperatures in the mid to upper 90s hovered over fields, further reducing expected yields. High temperatures are particularly damaging when plants are in the reproductive stage, as much of western Nebraska’s wheat was, affecting kernel set and head fill.

Due to a variety of factors, yields are expected to decrease, harvest will be sooner than usual, and post-harvest management will need to be adjusted for the potential increase in volunteer wheat.

“Most wheat fields have some areas that are really suffering,” said Drew Lyon, Extension dryland crops specialist at the Panhandle Research and Extension Center near Scottsbluff. “We’re probably doing as well as any part of the state, but the wheat’s been hit hard. We probably lost 10-15% of yield from last week alone in the southern Panhandle. Flag leaves on many plants have been severely damaged by desiccation and this will further affect grain fill.”

While the northern Panhandle has been about the wettest part of the state, given last week’s high temperatures and drying winds, plants were still stressed and yields may be affected.

Wheat in west central Nebraska is “going down every day”, said Bob Klein, Extension crops specialist at the West Central Research and Extension Center at North Platte. Many fields are below 50% moisture and plants aren’t able to draw the moisture they need from the soil, he said.

Wheat in southeast Nebraska was already hit hard by severe drought conditions before last week, with some fields being harvested for hay. Conditions continued to deteriorate.

As a cool season crop, winter wheat is usually well timed to Nebraska’s more typical summer with the reproductive stage occurring in early to mid June when temperatures are still relatively cool and then drying down when temperatures increase in late June and early July directly before harvest. This year however, the crop is maturing earlier than normal and the hot dry temperatures came two to three weeks ahead of normal. The cooler temperatures at mid-week and sporadic rains may help some wheat recover.

As of June 1, Nebraska’s winter wheat crop was forecast at 73.5 million bushels, already down 15% from last year’s crop, according to the Nebraska Agricultural Statistics Service. The recent heat and continued drought further reduced yields. On Monday (June 12) Nebraska Ag Statistics reported wheat condition at 17% very poor, 29% poor, 31% fair, 21% good, and 2% excellent. About 71% of the crop had turned color.

With last week’s high temperatures, the pollination period likely was shortened for western Nebraska wheat that wasn’t pollinated yet. Wheat that was just starting to fill may have aborted some of the kernels and may not fill completely. In some cases kernels may be shriveled and smaller and lighter than normal and fly out of the combine during harvest, contributing to an increase in volunteer wheat, Klein said. Producers should plan now for herbicide treatments after harvest so volunteer wheat won’t get an opportunity to use valuable soil moisture, Klein said. Early and timely control of volunteer wheat — at least two weeks before planting — will also break the “green bridge” which provides a means for vectors of the wheat streak mosaic virus to survive until the next crop.

See last week’s Crop Watch for the schedule of wheat variety trial tours being conducted across the state to see how different varieties fared under this year’s adverse conditions.
**Wheat disease update**

**Rusts:** All three rust diseases i.e., leaf, stem and stripe, are present in Nebraska throughout most of the wheat-growing areas in the state. The severity level for leaf and stripe rusts is low to moderate and is low for stem rust. Dry weather throughout much of the central plains has limited the development of leaf rust, and thus it will not be a factor in wheat yields this year.

**Viruses:** Barley yellow dwarf virus is the most widespread disease in Nebraska and will probably have some impact on yields. The barley yellow dwarf virus is transmitted by aphids and aphids have been in abundance throughout the wheat areas in Nebraska. This disease is recognized by the appearance of bright yellow flag leaves.

Wheat streak mosaic is the major disease in the southern Panhandle this year. The pattern of mosaic conforms well to the pattern of hail in that region in 1999. Volunteer wheat that resulted from that hail and was not controlled served as the green summer bridge for the curl mites and resulted in this year’s wheat being infected last fall. The wheat streak mosaic is widespread and severe enough in the southern Panhandle to have a significant impact on yields this year.

Any hail that occurs within the next two weeks could lead to volunteer and wheat streak mosaic problems next year’s wheat crop. The losses from wheat streak mosaic can be kept to a minimum if growers destroy volunteer wheat in their stubble fields and pay attention to their planting dates. If an area is hailed every grower in the hailed area has to control their volunteer. One uncontrolled volunteer field can serve as a source of mites and virus for a number of surrounding wheat fields. The “Good Neighbor” philosophy can really make a difference in reducing the threat of mosaic for everyone.

**Other diseases:** Tan spot, Septoria leaf blotch and Cephalosporium stripe are present in background levels in many fields. Severity levels are low and the diseases will not impact yields.

**Heat and drought:** For most wheat-growing areas, except possibly the northern Panhandle, the drought and heat during the critical grain filling period will be the primary overriding factor in determining yields this year.

John E. Watkins
Extension Plant Pathologist

---

**Grass seed tour June 22**

The High Plains Grass Seed Association will host a summer field day in Cheyenne County on June 22 at 9 a.m. The tour will begin at the High Plains Ag Lab about six miles north of Sidney.

The tour will include Kentucky bluegrass, tall fescue and perennial ryegrass variety trials, field production on Rushman farms, and discussion of disease, insect, and post-harvest management. Martin Massengale, director of the NUCenter for Grassland Studies, will lead the program with an overview of the industry potential. Lunch and a brief meeting of the association will be held at the Dalton cafe. An afternoon tour to research and production sites in Box Butte County will be optional. This will be your opportunity to visit first hand with current grass seed producers, representatives from the industry, grass seed cleaners and grass seed researchers.

“The learning curve on grass seed production is steep,” according to association president Dan Laursen. “Many errors can be avoided by talking with others and participating in field tours prior to beginning your production.”

Grass seed production can be a highly profitable venture that fits well in the Nebraska Panhandle. For more information about the Grass Seed Field Day, contact your local county extension office.

David Baltensperger
Extension Plant Breeder
Panhandle REC, Scottsbluff

For more farm, ranch and drought information, visit ruralroutes.unl.edu
In some fields, escapes may be the norm

Managing weeds in a dry year

Early dry conditions reduced performance of soil applied herbicides contributing to weed escapes in many crop fields. While dry weather and low crop prices are discouraging, it is cost effective to control significant weed populations. A few scattered weeds of cosmetic concern are another issue. Weeds use valuable moisture that would otherwise be available to the crop.

Cultivation under dry conditions is effective in controlling weeds but wastes valuable soil moisture. Postemergence herbicides are less effective when weeds are growing under dry conditions. Spray additives are especially important in countering the effect of dry weather. Remember to match the additive(s) with the herbicide(s). Product labels and the 2000 Weed Management Guide, published by NU Cooperative Extension, provide guidelines for additive use with postemergence herbicides.

Roundup Ultra, other brands of glyphosate, and Touchdown are widely used in Roundup Ready soybean. These herbicides will perform better by adding ammonium sulfate, AMS, when hard water is used as the carrier or weeds are under moisture stress. Don’t take a chance -- add ammonium sulfate.

Alex Martin
Extension Weeds Specialist

Haskell Ag Lab field day to feature biotechnology tours and discussions

The morning program will be held at the Dixon County Fairgrounds. Speakers will include Dr. Susan Harlander of Pillsbury, Inc. who will discuss the effect of GMOs on food production in the United States and Dr. Roy Fredericks, NU agricultural economic policy specialist, who will discuss the impact of biotechnology on U.S. economics and public policy. In addition, a panel of experts will discuss topics ranging from grain handling to resistance management.

The afternoon program will focus on current research at the Haskell Agricultural Laboratory to address various aspects of biotechnology. Tour stops highlighting the farm and current biotechnology research will be included.

Take this opportunity to meet with the faculty and familiarize ourselves with the facilities and research efforts of the Haskell Agricultural Laboratory. All are invited and lunch will be free.

For more information about the field day contact Tom Hunt, Extension Entomology Specialist, Haskell Ag Lab, (402) 584-2863, thunt2@unl.edu.

Tom Hunt
Extension Entomologist
Haskell Ag Lab

Counties receive CRP grazing release

The USDA Farm Service Agency has approved six counties in southeast Nebraska and one in north central Nebraska for grazing CRP, but has denied the applications of another four counties, saying the precipitation deficit for those counties was not great enough.

Johnson, Nemaha, Otoe, Saline, Thayer, Lancaster and Dundee counties were approved while Gage, Jefferson, Pawnee and Richardson counties were not.

In Iowa 24 counties have been approved for grazing CRP. The last time CRP acres were released in Nebraska was in 1997.

David Baltensperger
Extension Plant Breeder
Panhandle REC, Scottsbluff