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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 98-15
July 2, 1998

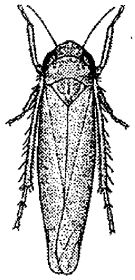
With potato leafhoppers in alfalfa

Growers should be scouting fields

Alfalfa growers should be mindful of the damage caused last year by the potato leafhopper and be prepared for them this year.

While the potato leafhopper does not overwinter in Nebraska, it has had ample opportunity the last two years to ride southerly air masses into the state. Last year potato leafhoppers caused problems statewide, but usually damage is mostly in the eastern third of the state. We have not received the number of reports that we did last year, however some have probably become established and regular scouting should begin.

These small (1/8 inch long), green, wedge-shaped insects may cause severe damage to alfalfa by injecting a toxin into the plant as they feed. This feeding results in a distinctive yellow or purple triangle shape at the leaf tip. First year spring-planted alfalfa fields are particularly attractive to and vulnerable to potato leafhoppers, as are fields planted last year. In older fields, these insects are usually a problem on second and third cuttings. Newly developed resistant varieties will provide some protection from potato leaf hoppers, but seedling alfalfa may still be damaged. All fields should still be scouted. Large numbers of leafhoppers — even in resistant variety fields — may still cause a problem.



Potato leafhopper

Treatment decisions are based on numbers captured by sweep net. A sweep net is the only reliable way to scout for potato leafhoppers. See the tables on pages 139 for treatment thresholds. Note that there do not have to be many to cause a problem. Most insecticides registered for potato leafhopper will give good control. See the table on page 140 for a list of registered insecticides.

Keith Jarvi, Extension Assistant
Integrated Pest Management
Northeast REC, Norfolk

Inside

Recent wet weather leads to increased disease reports

Gray leaf spot symptoms are appearing in commercial fields. Severity on individual leaves is still light but could change rapidly with the recent wet weather. Frequent rains stimulate secondary spore (conidia) production on the leaf lesions and our windy weather moves these around, within and between fields.

The UNL Plant Disease Clinic received an interesting corn sample that was diagnosed as having bacterial stalk rot. The lower stalk exhibited a dark brown soft rot and a foul odor characteristic of this disease. Bacterial stalk rot is most evident during periods of high rainfall, which certainly fits parts of central and eastern Nebraska.

In addition to stalk rot, this disease can also manifest itself as a top rot in which the upper portion of the plant dies. A slimy soft rot occurs at the base of the whorl and the dead top can easily be pulled out of the whorl.

Pythium and Rhizoctonia root rots are showing up in a number of corn samples. These root rots often develop following feeding injury by root worms. Small brown lesions occur on infected plant roots.

John Watkins
Extension Plant Pathologist

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Field updates

Dick Ronnenkamp, Extension educator in Boone and Nance counties: The corn has shot up with the hot weather. Many fields will be chest high by the 4th of July. Soybeans have improved and are showing good growth. Alfalfa needs to be watched for windows of good weather for second cutting.

I visited the hailed area south of Petersburg where corn was a stem with shredded leaves two weeks ago. Now new leaves are out and the plants were above waist high. The lower shredded leaves could be seen. What was a sick sight the day after the storm is a reasonable looking field today.

Some other areas were hit harder and several soybean fields needed replanting. The crops do have a great ability to recover with good growing weather.

Ralph Anderson, Extension educator in Buffalo County: It is that time of year when you can hear the corn crop growing. The light trap continues to produce low levels of corn borer moths, numerous "June Bugs", a "bunch" of mosquitos and assorted other moths. Central State Agronomics Agronomists are seeing continuing pressure from corn rootworms, but also observed many pupating this week and the corn plants root systems out growing the damage.

We have not started irrigation north of the Platte River, but most pipe is out and irrigation will probably begin this week. We would welcome rains to help with watering, but do not want any wind or hail storms.

Gary Zoubek, Extension educator in York County: Generally most of our corn and soybean acres are looking good at this time. Crops that had adequate moisture really grew this last week. Producers are preparing for the irrigation season.

Wheat harvest underway

Wheat harvest began last week near McCook, where fields are drier than normal. Overall quality of wheat in the West Central District is varying quite a bit, due to soil moisture levels and storms.

Many of the southern counties had good stands of wheat going into winter, but have received little moisture since then. Yields will be lower than usual in these areas. In other areas that escaped the hail, high winds, and heavy rains and where soil moisture levels were good, yield prospects are good.

Diseases, as well as insects, were relatively light this year.

In those areas where wheat was hailed, it's critical that volunteer wheat and grassy weeds be controlled to curb the spread of the wheat mosaic virus. The wheat curl mite, which is a vector for the virus, will move to the new green growth and develop to infect the next wheat crop. If volunteer wheat and grassy weeds aren't properly controlled, two crops can be lost due to a single hail storm.

Bob Klein, Extension Cropping Systems Specialist
West Central REC, North Platte

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Potato leafhoppers *(Continued from page 137)*

Dynamic treatment thresholds for potato leafhoppers (average number per sweep) on alfalfa that is 1 to 4 inches tall.

Hay value (per ton)	Cost of insecticide application (per acre)					
	$8	$10	$12	$14	$16	$20
$60	0.4	0.5	0.6	0.7	0.8	1.0
$80	0.3	0.4	0.5	0.5	0.6	0.75
$100	0.25	0.3	0.4	0.4	0.5	0.6
$120	0.2	0.25	0.3	0.35	0.4	0.5
$140	0.2	0.2	0.25	0.3	0.3	0.4
$160	0.15	0.2	0.3	0.3	0.3	0.4

Dynamic treatment thresholds for potato leafhoppers (average number per sweep) on alfalfa that is 4 to 8 inches tall.

Hay value (per ton)	Cost of insecticide application (per acre)					
	$8	$10	$12	$14	$16	$20
$60	0.7	0.8	1.0	1.0	1.3	1.7
$80	0.6	0.6	0.75	0.9	1.0	1.3
$100	0.4	0.5	0.6	0.7	0.8	1.0
$120	0.3	0.4	0.5	0.6	0.7	0.8
$140	0.3	0.35	0.4	0.5	0.6	0.7
$160	0.25	0.3	0.4	0.4	0.5	0.6

Dynamic treatment thresholds for potato leafhoppers (average number per sweep) on alfalfa that is 8 to 12 inches tall.

Hay value (per ton)	*Cost of insecticide application (per acre)*					
	$8	$10	$12	$14	$16	$20
$60	2.0	2.4	2.8	3.0	3.9	5.0
$80	1.8	1.9	2.2	2.7	3.0	4.0
$100	1.2	1.5	1.8	2.1	2.4	3.0
$120	0.9	1.2	1.5	1.8	2.1	2.4
$140	0.9	1.0	1.2	1.5	1.8	2.0
$160	0.8	0.9	1.0	1.2	1.5	1.8

Correction

In the article "Getting the most from late postemergence herbicide treatments" in the June 19 *Crop Watch*, Poast was listed as a late postemergence herbicide in corn. This is true, but one would obviously need PP or Poast Protected corn. Because Poast is a grass control herbicide, severe injury will result if applied to non-resistant corn. As with all herbicide treatments, be sure to read the label before use.

Jeff Rawlinson, Extension Assistant Weed Science

Insect update

Northeast District

Reports are coming in from northern Nebraska and southern South Dakota of suspected plant bug damage to alfalfa. Two plant bug species are important to alfalfa producers, the tarnished plant bug and the alfalfa plant bug.

The adult tarnished plant bugs are 1/4 inch long and brown. Nymphs are green with black spots on the back. Adult alfalfa plant bugs are 3/8 inch long and are light green. Nymphs are green with red eyes. These plant bugs are related to potato leafhoppers and feed in the same manner by inserting needle-like mouthparts into leaves and buds. Normally, they are only considered pests in seed production fields, however high populations can stunt alfalfa growth and crinkle and pucker leaves.

Treatment is suggested if there are three plant bugs (nymphs or adults) per sweep on alfalfa less than 3 inches tall, or five or more plant bugs on alfalfa more than 3 inches tall. If harvest is less than seven days away, harvest the alfalfa. Otherwise spray the field as soon as possible. Make sure the damage is being caused by plant bugs. Herbicides or other stresses can cause leaves to pucker.

Keith Jarvi, Extension Assistant
Integrated Pest Management
Northeast REC, Norfolk

South Central District

Crop consultants reported seeing rootworm pupae last week near Holdrege. Rootworm beetles should begin emerging in early July in south central Nebraska. Field reports and observations indicate that rootworm populations may be higher than last year in many locations due to the favorable winter and spring weather.

High numbers of rootworm beetles do not necessarily mean that a soil insecticide has failed. Soil insecticides are designed to protect the central root zone from feeding damage; rootworm larvae may survive outside the treated zone of soil. Next week I will describe the 1-6 root injury scale that may be used to rate rootworm injury as a measure of soil insecticide performance.

As western corn rootworm beetles emerge, if silks have not emerged they will begin feeding on leaf tissue. They feed by scraping off the green surface tissue, giving the damaged area a 'parchment' like appearance. This does not cause economic damage.

The earliest silking fields in an area are most at risk from silk feeding by rootworms. Beetles may move from field to field in search of silking plants, and concentrate in these early silking fields.

Bob Wright, Extension Entomologist
South Central REC, Clay Center

Insecticides registered for control of potato leafhopper

	Product name	Common name	Rate	Restrictions/ comments
R	Ambush 2 E or Ambush 25 W or Ambush 25W WP	permethrin	3.2 -12.8 oz/acre	6.4 oz or less, no preharvest interval (phi) Over 6.4 — 14 day phi
R	Baythroid 2	cyfluthrin	0.8 -1.6 oz/acre	7 day phi
	Cythion 5	malathion	1.5 - 2.0 pts/acre	0 phi
	Cythion 8	malathion	1.25 - 1.5 pts/acre	0 phi
R	Furadan 4 F	carbofuran	1.0 - 2.0 pts/acre	1.0 pt - 14 day phi 2.0 pt - 28 day phi
	Imidan 70-WSB	phosmet	1.3 lbs/acre	7 day phi
	Lorsban 4 E	chlorpyrifos	0.5 - 1.0 pts/acre	0.5 pt - 7 day phi 1 pt - 14 day phi
	Malathion 57 EC	malathion	1.5 - 2.25 pts/acre	0 phi
R	Penncap-M	methyl parathion	2 - 3 pts/acre	15 day phi
R	Pounce 3.2 E	permethrin	4 - 8 oz/acre	4 oz - 0 phi Over 4 oz - 14 day phi
R	Pounce 25 WP	permethrin	6.4 to 12.8 oz/acre	6.4 oz - 0 phi Over 6.4 oz - 14 day phi
R	Pounce WSB	permethrin	0.1 - 0.2 lb/acre	0.1 lb - 0 phi Over 0.1 lb - 14 day phi
	Sevin 4 F	carbaryl	1.0 qt/acre	7 day phi
	Sevin 50 W	carbaryl	2 lbs/acre	7 day phi
	Sevin 80 WSP or 80 S	carbaryl	1.25 lbs/acre	7 day phi
	Sevin XLR	carbaryl	1.0 qt/acre	7 day phi
R	Warrior	lambda-cyhalothrin	1.92 - 3.2 oz/acre	7 day phi

R = Restricted use phi = Preharvest interval

New book a guide to improved irrigation/nitrogen management

A new UNL publication, *Managing Irrigation and Nitrogen to Protect Water Quality*, EC98-765, provides detailed research-based information in a user friendly format.. This 66-page publication has numerous color illustrations, photos and tables which help expand on the text.

Contributors include UNL Extension soils specialists, water resources specialists and engineers. Editors are Darrell Watts, Extension water quality specialist, DeLynn Hay, Extension Water Resource and Irrigation specialist; and David Eigenberg, Extension educator.

Chapter topics include:

- soil characteristics that influence nitrogen and water management;
- what happens to nitrogen once it's applied;
- how to determine the optimum rate of nitrogen fertilzier;
- giving credit for non-fertilizer nitrogen sources;
- proper application;
- understanding crop water use;
- irrigation management for profitable crop production and water quality protection;
- understanding furrow irrigation management; and
- irrigation water management for sprinkler irrigation.

To order copies, contact your local Cooperative Extension office or write: Publications, Box 830918, University of Nebraska, Lincoln, NE 68583-0918. The book costs $2.50 plus $1.50 for shipping and handling.

Plant and Pest Diagnostic Clinic Update

Wheat diseases diagnosed in the last two weeks were scab, wheat streak mosaic, and crown and root rot.

Corn diseases included bacterial stalk rot and seedling damping-off and root rot caused by Pythium and Rhizoctonia. Leaf spots on corn have been identified as Alternaria leaf blight, Holcus leaf spot, Helmithosporium leaf spot, gray leaf spot, and Aschochyta leaf spot.

Soybean diseases identified in the clinic were Rhizoctonia root and corticle rot, Pythium root rot, and Fusarium damping-off.

Alfalfa diseases included common leaf spot and spring black stem.

Loren J. Giesler
Plant and Pest Diagnostic Clinic Coordinator

Test soil moisture to determine first irrigation

The irrigation season will soon be in full swing. The exact start of irrigation depends on several factors, including crop growth stage and the root zone soil moisture status.

The crop growth stage can be easily observed in the field. Remember that it is critical to ensure that there is adequate moisture available during the crop's reproductive stages. For corn, the tasseling, silking, pollination stages are especially important. While many areas of the state had significant June moisture, we shouldn't be lulled into thinking adequate moisture is necessarily available. The corn has been growing rapidly and water use rates have been high.

The only way to know exactly what the current soil moisture is in an individual field is to do field moisture checks. The most common method for checking field soil moisture is with a soil probe and by making a "feel and visual" estimate of the soil moisture status. With experience you can achieve a relatively close estimate of soil moisture status with the feel method. *Estimating Soil Moisture by Appearance and Feel*, NebGuide G84-690, provides guidelines for making soil moisture estimates and is available from your local Cooperative Extension Office.

The estimated crop water use information provided by the High Plains Climate Center is also a useful tool to assist in determining when irrigation is needed. A "checkbook" soil water balance can be maintained using the estimated crop water use values as withdrawals and irrigation and rainfall amounts as deposits. The irrigation system efficiency and effectiveness of any rainfall must be estimated to determine the net irrigation and rainfall. *Irrigation Scheduling Using Crop Water Use Data*, NebGuide G85-753, provides basic information for "checkbook" scheduling.

Most of the factors considered when deciding whether to irrigate are estimates — crop water use, net irrigation, net rainfall, and soil moisture status. This means that irrigation decisions are not necessarily yes/no decisions, but involve a lot of judgment and experience with a given field, soil, and crop.

Following are some key points to remember:

- Soil moisture monitoring is a key to making good decisions.
- Crop water use estimates are "estimates."
- Soil moisture status in the active crop root zone should be maintained above 50% of the available soil water holding capacity. (Do not deplete more than 50% of the available water holding capacity.)
- Don't apply more water than the soil can hold.
- Manage the irrigation system to apply water as uniformly as possible across the field.

DeLynn Hay
Extension Specialist for Water Resources and Irrigation

How to successfully use evapotranspiration estimates

When using evapotranspiration estimates from the UNL Weather Data Network to determine whether irrigation is warranted, sometimes the data may not seem to match actual field conditions. The problem may be with the nearby weather station, however, more often the seeming contradiction occurs when the data is not properly adjusted for a particular field situation. Following is a list of possible problems and remedial actions that can help ensure successful use of the ET information for irrigation scheduling.

1. The weather station site has improper exposure. Evapotranspiration estimates can be higher or lower than those of the irrigated field. Watch ET estimates from surrounding weather stations — the closest station is not always the most representative. Variations in temperature, humidity, and wind occur over short distances as the topography changes. If the irrigated field has an unusual exposure, a fixed percentage adjustment to the data may be required.

2. The estimate of crop growth stage does not match the actual growth stage for the irrigated field. Many hybrids are grown in the state and it is not possible to specifically represent each one in the ET estimates. Check the growth stage in the field and choose the maturity class(es) that result in the closest estimate(s) of growth stage. Watch several classes to see hybrid differences. The hybrid in question will fit somewhere in between.

3. Prior to full canopy, rain or irrigation has made the soil surface wet. Actual crop ET rates may be slightly higher than the estimates. If there is a higher than usual frequency of days with precipitation or irrigation make a check of the actual soil moisture conditions.

4. Prior to irrigation, there is a dry root zone in the field. Actual crop ET rates may be lower than the estimated ET. Check the root zone for soil moisture and irrigate if conditions warrant.

5. There are differences in emergence dates on irrigated fields. Obtain a separate ET estimate for each irrigated field by

(Continued on page 142)

Using ET estimates *(Continued from page 141)*

selecting the crop and emergence date for all scheduled fields.

6. Field observations of soil moisture are consistently higher than estimates from scheduling programs. The scheduling programs may not properly represent drainage in the soils. For slow draining soils, the water (above field capacity) is actually available to the crop for a longer time than in a faster draining soil. The 'effective' field capacity is higher after rainfall or irrigation.

7. The plant population in the irrigated field is higher or lower than average. Recognize that a higher population will have higher ET and a lower population will have lower ET in the early and late season. Differences during mid-season disappear as both population densities have sufficient leaf area.

Darrell Watts
Extension Water Quality Specialist
Kenneth Hubbard, Director, High Plains Climate Center
DeLynn Hay
Extension Specialist for Water Resources and Irrigation

GDD and Crop Water Use Data

Station	*Crop*	*Emer. date*	*Actual GDD*	*Normal GDD*	*Water use Past*			*Future*		*MC*
					week	*3 days*	*1 day*	*3 days*	*week*	
Ainsworth	Corn	5/15	636	722	.14	.17	.19	.17	.18	3
	Sorghum	5/24	519	619	.07	.09	.09	.09	.09	3
Alliance	Corn	5/15	582	626	.19	.23	.25	.21	.20	3
	Sorghum	5/24	467	534	.10	.12	.13	.11	.10	3
Beatrice	Corn	5/15	836	889	.25	.27	.19	.19	.20	3
	Soybean	5/20	734	823	.22	.24	.17	.17	.18	3
	Sorghum	5/24	668	765	.12	.13	.10	.10	.11	3
Champion	Corn	5/15	714	711	.22	.26	.25	.22	.22	3
	Soybean	5/20	631	656	.20	.23	.22	.20	.20	3
	Sorghum	5/24	574	609	.11	.13	.12	.11	.11	3
Concord	Corn	5/15	733	789	.19	.23	.24	.22	.21	3
	Soybean	5/20	629	731	.17	.20	.21	.19	.19	3
	Sorghum	5/24	584	681	.09	.11	.12	.11	.11	3
Holdrege	Corn	5/15	792	781	.27	.29	.27	.25	.24	3
	Soybean	5/20	697	723	.24	.26	.25	.22	.22	3
	Sorghum	5/24	633	635	.13	.15	.16	.14	.13	3
McCook	Corn	5/15	791	739	.27	.30	.31	.27	.25	3
	Sorghum	5/24	633	635	.13	.15	.16	.14	.13	3
Mead	Corn	5/22	705	788	.17	.19	.16	.16	.16	3
	Soybean	5/20	738	816	.20	.22	.18	.18	.18	3
	Sorghum	5/24	681	758	.11	.13	.10	.10	.11	3
North Platte	Corn	5/15	705	715	.18	.21	.21	.19	.19	3
	Sorghum	5/24	568	613	.09	.10	.10	.10	.10	3
Ord	Corn	5/15	734	785	.17	.19	.19	.19	.19	3
	Soybean	5/27	554	638	.13	.14	.15	.14	.14	3
	Sorghum	5/24	588	678	.08	.09	.10	.09	.10	3
Red Cloud	Corn	5/15	914	798	.34	.37	.33	.29	.27	3
	Soybean	5/20	804	739	.30	.33	.30	.26	.25	3
	Sorghum	5/24	722	689	.16	.19	.17	.15	.15	3
Rockport	Corn	5/15	948	894	.26	.28	.19	.19	.20	3
	Soybean	5/20	829	826	.23	.26	.18	.18	.18	3
	Sorghum	5/24	753	766	.13	.15	.10	.11	.11	3
Scottsbluff	Corn	5/15	616	623	.18	.22	.21	.19	.19	3
	Sorghum	5/24	492	531	.09	.11	.10	.09	.10	3
Sidney	Corn	5/15	571	636	.19	.23	.24	.21	.20	3
	Sorghum	5/24	452	542	.10	.12	.12	.11	.11	3
York	Corn	5/15	804	834	.21	.23	.22	.21	.20	3
	Soybean	5/20	700	774	.19	.21	.19	.18	.18	3
	Sorghum	5/24	639	721	.10	.12	.11	.10	.11	3