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CropWatch No. 94-13, July 1, 1994

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 94-13
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Evaluating corn, soybean damage after recent hail storms

It is never a good time to be hit by hail. Deciding whether to replant or keep hail damaged fields is difficult, especially at this time on partially destroyed fields.

Producers in the Ponca-Pender-Walthill area hit by hail last Saturday night are facing such decisions. From our initial assessment the corn crop was severely damaged, with many fields destroyed. Severe bruising on stalks made even standing corn questionable for potential survival. Soybeans also had severe bruising but some fields looked like they would refoliate. If the soybeans were not flowering before the hail storm, plant population is adequate (greater than 80,000 plants per acre), stems were minimally bruised, and there are good nodes on the plants then I would consider keeping the field.

Replanting either corn or soybeans at this time would result in reduced yields of about 50% and 40%, respectively. Soybeans show a large drop in yield sometime in early July. Yields from a three-year planting date study decreased from 70% of maximum for mid to late June plantings to 43% of maximum for early-mid July plantings. Previous research on corn indicates that fertilization through the pivot is not an effective first aid treatment. If production plans called for additional nitrogen through the pivot and predicted yield loss is not severe, then apply it as scheduled.

Cooperative Extension has NebGuides on hail damage to corn, soybeans and grain sorghum (G86-903, G85-762, and G86-812). In addition, there is an Extension Circular on *Hail Damage Assessment and Replant Decisions* (EC-89-119).

Charles Shapiro, Extension Soils Specialist, Northeast Research and Extension Center, Concord

Don't spray early-planted corn with 2,4-D now

Do not spray corn with 2,4-D from a week before tassel emergence until after the silks turn brown. Treatments during this critical time often interfere with pollination and reduce yield. After the silks turn brown, pollination is complete and 2,4-D can be safely used. The state's early planted corn is now in the stage where it should not be sprayed with 2,4-D.

Do not spray grain sorghum with 2,4-D from the boot through the dough stage. As in corn, pollination problems and yield reductions result from spraying sorghum during this sensitive period. Between a 12-inch height and boot stage, use a drop extension to direct 2,4-D away from the sorghum whorl. Never use Banvel on grain sorghum after it is 15 inches tall.

Alex Martin
Extension Weeds Specialist
John McNamara, Extension Assistant-Weed Science

Readers:

Stories and tables on pages 94-96 provide weather and crop moisture data valuable for assessing production steps and planning irrigation. Much of this information is new to *CropWatch* this year. Is this information useful to you? Which parts are you using? Please drop us a line at the address listed on page 2 or call the phone number listed. We'd like to know what information best fits your needs.

Inside

Attack weeds with wipers, bean bars

Wiper applicators are popular for controlling tall weeds in shorter crops. Weeds should be at least 10 inches taller than the crop. Roundup is the herbicide of choice for wiper applications in sorghum and soybeans. Use a concentration of 33% Roundup in water to control broadleaf and grass weeds. Shattercane and volunteer corn are very susceptible to Roundup.

Roundup is less effective against broadleaf weeds than grasses. Sunflower and pigweed control is usually good, but velvetleaf is not readily controlled. Dense weed stands make good herbicide coverage difficult with a wiper. Two passes in opposite directions are needed for good control.

Bean bars have become quite popular for controlling weed escapes in soybeans. Weeds need not be taller than the crop since they are individually sprayed with hand held spray nozzles. Roundup is registered at a 5% concentration for straight stream nozzles and a 2% concentration for spreading nozzles.

Some crop damage occurs with Roundup in a bean bar since spray droplets contact the crop. Growers have searched for treatments that are safer to soybeans than Roundup. Using Assure, Basagran, Blazer, Classic, Fusilade, Pinnacle and Poast in bean bars provides weed control with less crop injury than Roundup. These herbicides are generally mixed at the per acre rate of herbicide and surfactants in 25 gallons of water. Be certain you heed the preharvest interval when using these treatments.

John McNamara, Extension Assistant-Weed Science
Alex Martin, Extension Weeds Specialist

Soybean chlorosis ID'd in the northeast

Soybean chlorosis has been observed in northeast Nebraska locations where it's not typically found. The symptoms are yellow leaves with green veins. Generally, the problem occurs on river bottom soils with pH levels above 7.5. Not all high pH soils cause chlorosis. NebGuide G89-953, *Soybean Chlorosis Management*, discusses several ways to prevent the problem through variety selection, seed applied iron chelates, and planting populations. A rescue treatment can be attempted on mildly chlorotic plants. Severely chlorotic plants or plants treated too late may not benefit. Begin treatments as soon as symptoms appear. They may need to be repeated every 7-10 days.

Spray with a 1.0 percent solution of iron sulfate. Two pounds of ferrous sulfate ($FeSO_4$) or 4 pounds of ferrous sulfate heptahydrate in 25 gallons of water makes a 1 percent solutions. Too much can burn the leaves. Chelated products usually come with instructions or concentration. Apply enough solution per acre to wet the foliage adequately. Material that runs off or lands on the soil will not be useful. Surfactants or stickers may be useful. Applications should be made early in the morning or late evening when air temperature is cool, humidity is higher, and winds are calm.

Charles Shapiro, Extension Soils Specialist, Northeast Research and Extension Center, Concord

CROP WATCH

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Lisa Brown Jasa, Editor

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Reports in from southeastern Nebraska

Potato leafhoppers found in soybeans

Economic infestations of potato leafhoppers have been observed in some soybean fields in southeastern Nebraska. These insects are light green, wedge-shaped and about 1/8 inch long as adults. While feeding, they inject saliva through their piercing-sucking mouthparts. This damages the plant internally, which in turn reduces the plant's ability to move water and nutrients. Feeding symptoms include stunting of the plants with curling, yellowing and drying of the leaves. Soybeans grown in Nebraska generally have pubescent (hairy) leaves and stems, which inhibit feeding and thereby provide a degree of resistance to this kind of damage. However, leaves on seedling soybean plants have fewer hairs and are more susceptible to damage. Damage is most likely to occur in late-planted fields or fields near recently cut alfalfa that was infested with potato leafhopper adults.

Once feeding symptoms are observed, economic damage may have already occurred, so it is important to scout soybean fields and assess population densities before symptoms become visible. Directly observe seedlings to determine the number of leafhoppers per plant for V1 to V4 plants. Only a limited amount of information is available, but economic thresholds have been developed to use as an aid in deciding when control may be justified. These economic thresholds are presented in the accompanying table.

Consult the current edition of EC 1511, *Insect Management Guide for Nebraska Alfalfa, Soybean, Wheat, Range and Pasture*, available at a University of Nebraska Cooperative Extension Office, for information on insecticides registered for use on soybeans.

Tom Hunt, Extension Entomology Technologist
Steve Danielson, Extension Entomologist

Table 1. Economic thresholds for potato leafhopper on seedling stage soybean.

a. V1 Economic thresholds (insects per plant)

	Pest-management costs, $/a			
Crop value, $/bu	6.00	8.00	10.00	12.00
5.00	0.6	0.8	1.0	1.2
6.00	0.5	0.7	0.9	1.0
7.00	0.4	0.6	0.7	0.9
8.00	0.4	0.5	0.6	0.8

b. V2 Economic thresholds (insects per plant)

	Pest-management costs, $/a			
Crop value, $/bu	6.00	8.00	10.00	12.00
5.00	1.0	1.3	1.6	2.0
6.00	0.8	1.1	1.3	1.6
7.00	0.7	1.0	1.1	1.4
8.00	0.6	0.8	1.0	1.2

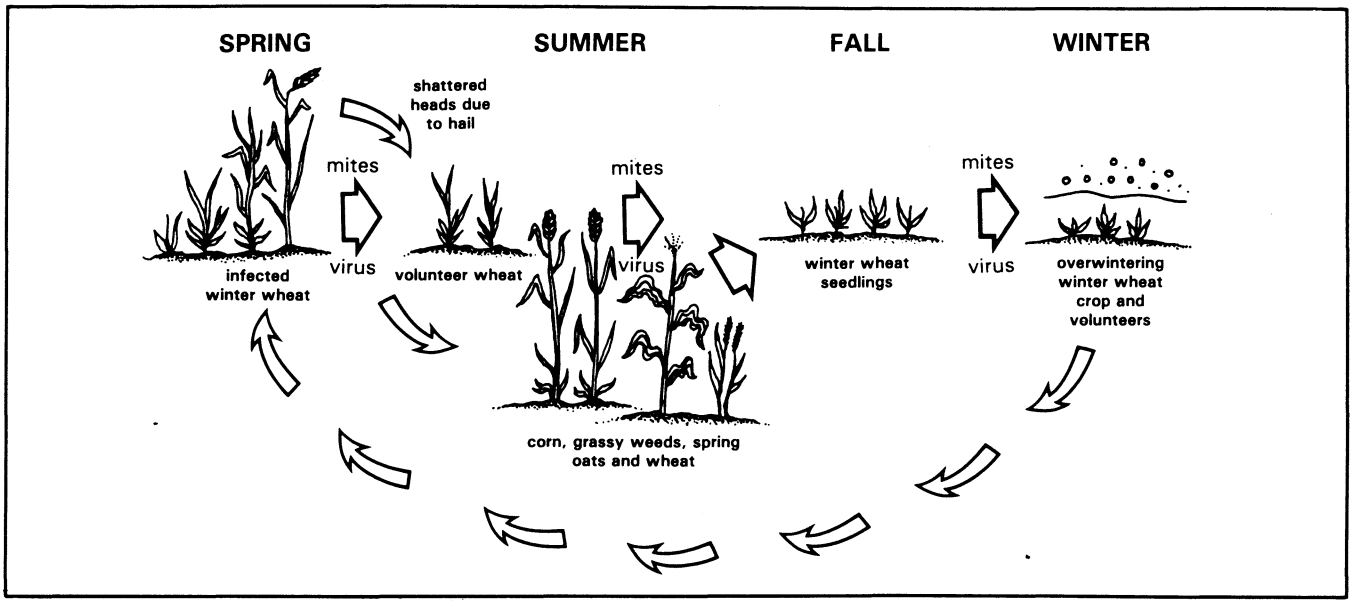
c. V3 Economic thresholds (insects per plant)

	Pest-management costs, $/a			
Crop value, $/bu	6.00	8.00	10.00	12.00
5.00	1.4	1.9	2.4	2.9
6.00	1.2	1.6	2.0	2.4
7.00	1.0	1.4	1.7	2.1
8.00	0.9	1.2	1.5	1.8

d. V4 Economic thresholds (insects per plant)

	Pest-management costs, $/a			
Crop value, $/bu	6.00	8.00	10.00	12.00
5.00	2.1	2.8	3.5	4.2
6.00	1.7	2.3	2.9	3.5
7.00	1.5	2.0	2.5	3.0
8.00	1.3	1.7	2.2	2.6

The next *CropWatch* will be July 15.



Limit volunteer wheat

Hail may contribute to wheat streak mosaic

The key to outbreaks of wheat streak mosaic on winter wheat is the presence of oversummering hosts on which virus-carrying mites build up to large numbers.

In the Great Plains the most important summer host is volunteer wheat that emerges before harvest, often as a result of hail shattering the heads. Much of the wheat in central and western Nebraska is at the right stage to produce volunteer wheat if hailed. Even in the absence of hail and early volunteer wheat, control of the wheat streak mosaic hinges on successful control of volunteer wheat and grass weeds in stubble fields after harvest.

Several options are available for control. Most years sweep blades can be used immediately after harvest. The weather must be dry and hot to successfully use a sweep blade, as weeds must wilt within 30 minutes for good control. Usually, if you do not blade immediately after harvest, it is impossible to get the blade into the ground later unless moisture is received. Two bladings usually are necessary in the fall for good weed control, since the first usually plants weeds seeds.

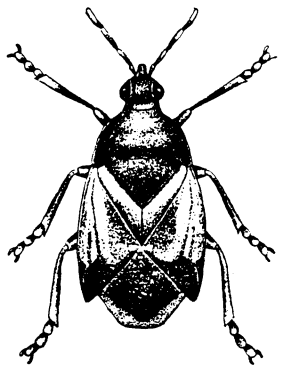
Another option is to use herbicides. If no weeds are present after harvest, the best option is to wait until late August or early September and apply atrazine plus a contact herbicide if weeds and/or volunteer crops are present. In a three-year rotation when corn, sorghum or proso millet will be planted the next spring, the best option usually will be to use herbicides after harvest and plant the crop no-till into the treated winter wheat stubble the next spring.

With a winter wheat-fallow rotation, the decision is more difficult. Factors to consider include farm program compliance, equipment availability, labor, herbicide costs, etc. In general, if no weeds are present after harvest and most weeds can be controlled with one timely herbicide application, that application is probably the best bet. If weeds are present after harvest and two herbicide treatments must be used, herbicides still may be feasible for the farmer who owns a sprayer.

For those without sprayers who have weeds after harvest, the best option may be to blade immediately after harvest and then blade again in late August or early September, applying atrazine with a spray boom mounted on the blade.

John E. Watkins, Extension Plant Pathologist, Lincoln
Robert N. Klein, Cropping Systems Specialist, North Platte

Know your friends: Minute pirate bugs



Minute pirate bug

Minute pirate bugs are common insect predators that are found in many agricultural crops, pastureland and surrounding areas. Both immature stages (nymphs) and adults feed on a variety of small prey, including spider mites, insect eggs, aphids, thrips, and small caterpillars. Both adults and nymphs feed by sucking juices from their prey through a sharp needle-like beak, which is characteristic of all true bugs.

Adults are very small (1/8" inch long), somewhat oval-shaped, and black with white wing patches. Females lay tiny eggs within plant tissues where they are not easily seen. These hatch into nymphs, the immature feeding stage. Nymphs are small, wingless insects, yellow-orange to brown in color, teardrop-shaped and fast moving. Growth from egg to adult takes a minimum of 20 days under optimum conditions. Several generations may occur during a growing season.

The most common species in the Midwest is *Orius insidiosus*. Another species, *Orius tristicolor*, is more common in western states. Both immature and adult *Orius* can consume 30 or more spider mites per day. They are often seen in corn silks, and can be an important predator of corn earworm eggs, which are laid on corn silks. Other reported prey include eggs and small European corn borers, corn leaf aphids, potato aphids, and potato leafhopper nymphs. Occasionally, *Orius* may even bite humans, but the bite is only temporarily irritating.

Minute pirate bugs are most common where there are spring and summer flowering shrubs and weeds, since they feed on pollen and plant juices when prey are not available. Foliar applications of insecticides to crops can greatly reduce their numbers. Even soil applied systemic insecticides may reduce their numbers because of their habit of sucking plant juices. *Orius* are available commercially from insectaries, but specific use recommendations have not been researched.

Diversified cropping systems, use of microbial insecticides, e.g., products containing *Bacillus thuringiensis* (Dipel, Biobit, Condor, etc.) and use of economic thresholds to minimize insecticide applications, are all practical recommendations to maximize the natural biological control from minute pirate bugs.

Bob Wright, Extension Entomologist, South Central

Pest management manuals available

Purdue University recently published an excellent resource for people working in popcorn production. This 237-page publication, *Popcorn Pest Management Manual for the Midwest* (IPM-5), covers basic scouting procedures and information on the biology, identification and management of insects, mites, slugs, diseases, weeds, nematodes and vertebrates, as well as information on pest management in storage.

It is illustrated with color photographs and line drawings. It is available for $35 from Media Distribution Center, Purdue University, 301 S. 2nd St., Lafayette IN 47905-1092, (317)-494-6794.

Another Purdue University publication, *Seed Corn Pest Management Manual for the Midwest* (IPM-2), is available for $28 from the same address. It covers similar information for seed corn pest management.

Bob Wright, Extension Entomologist, South Central Research and Extension Center, Clay Center

Kansas crop report

Wheat harvest is 60% complete, well ahead of 10 percent at this time last year and the average of 35%. Wheat condition is rated 63% good to excellent and only 37% fair to poor.

Corn is beginning to silk in most districts. The crop condition is currently rated 71% good to excellent and 29% fair to poor.

Sorghum planting is virtually complete at 99%, which is ahead of 90% for both last year and the average. Soybean planting is 98% complete, compared with 90% last year and the average of 85%.

June 27

Last week chinch bugs were found migrating out of mature wheat into adjacent seedling sorghum fields and causing significant stand losses at scattered sites.

Stripped blister beetles were found feeding in a home garden in Jefferson County so they are likely present in some alfalfa fields. Dead bodies of blister beetles which are incorporated into baled hay are very poisonous to horses.

No high first generation infestations have been detected thus far in limited surveys in corn.

Kansas Insect Survey State Department of Agriculture

Drought, moisture indexes help predict crop water needs

With the dry spell observed across portions of Nebraska during the past several months, there have been requests to begin publishing the Palmer Drought Severity Index (PDSI) for each of the climatic districts in Nebraska. For the remainder of the growing season, the PDSI will be published bi-monthly. A summary of the PDSI and elements in the table on page 6 follow.

The Palmer Drought Severity Index (PDSI) and Crop Moisture Index (CMI) are indices of the relative dryness or wetness effecting water sensitive economies. The Palmer Index indicates the prolonged and abnormal moisture deficiency or excess, while the Crop Moisture Index gives the short term or current status of a purely agricultural drought or moisture surplus and can change rapidly from week to week. Both indices indicate general conditions and not local variations caused by isolated rain. Input to the calculations include the weekly precipitation total, average temperature, water capacity of the soil, and previous history of the indices by climatic division.

The duration of a drought or wet spell is determined by calculating indices for different weather spells (incipient and established wet/dry spells). A week of normal or above normal rainfall is welcome in an area that has experienced a long drought but may be only a brief reprieve and not the end of the drought. Once a weather spell is established, a final PDSI value is assigned. An "F" is placed after the PDSI value when a weather spell is established and a "P" when a weather spell is in transition.

The CMI was developed from some of the moisture accounting procedures used in computing the PDSI. This index is the sum of the evapotranspiration requirement and the available moisture (soil and atmospheric). Both terms are a function of the previous week and a measure of the current week.

If the potential moisture demand exceeds available moisture supplies, the CMI is negative. However, if

(Continued on page 95)

PDSI values for the 11 drought (or wet) categories.

4.00 and above	Extreme moist spell
3.00 to 3.99	Very moist spell
2.00 to 2.99	Unusual moist spell
1.00 to 1.99	Moist spell
.50 to .99	Incipient moist spell
.49 to - .49	Near normal
- .50 to - .99	Incipient drought
-1.00 to -1.99	Mild drought
-2.00 to -2.99	Moderate drought
-3.00 to -3.99	Severe drought
-4.0 and below	Extreme drought

When the CMI index increased or did not change from the previous week.

3.0 and above	Excessively wet, some fields flooded
2.0 to 2.99	Too wet, some standing water
1.0 to 1.99	Prospects above normal, some fields too wet
0 to .99	Moisture adequate for present needs
0 to - .99	Prospects improved but rain still needed
1.0 to -1.99	Some improvement but still too dry
-2.0 to -2.99	Drought eased but sill serious
-3.0 to -3.99	Drought continues, rain urgently needed
-4.0 and below	Not enough rain, still extremely dry

When the CMI index decreases from the previous week.

3.0 and above	Some drying but still excessively wet
2.0 to 3.99	More dry weather needed, work delayed
1.0 to 1.99	Favorable, except still too wet in spots
0 to .99	Favorable for normal growth and fieldwork
0 to - .99	Topsoil moisture short, germination slow
-1.0 to -1.99	Abnormally dry, prospects detriorating
-2.0 to -2.99	Two dry, yield prospects reduced
-3.0 to -3.99	Potential yields severly cut by drought
-4.0 and below	Extremely dry, most crops ruined

Z index values for dry and wet periods

3.50 and above	Extreme wetness
2.50 to 3.49	Severe wetness
1.00 to 2.49	Mild to moderate wetness
-1.24 to .99	Near normal
-1.99 to -1.25	Mild to moderate drought
-2.74 to -2.00	Severe drought
-2.75 and below	Extreme drought