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INSECT, PLANT DISEASE, & WEED SCIENCE NEWS [No. 92-13] [July 17, 1992]

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Insect Plant Disease Weed Science NEWS

No. 92-13
July 17, 1992

UNIVERSITY OF NEBRASKA COOPERATIVE EXTENSION • INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES

Plant Disease

Control volunteer wheat to limit 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 can build up. In the Central Great Plains, the most important summer host is volunteer wheat that emerges before or soon after harvest. Conditions this summer were ideal for an abundant crop of volunteer wheat. Freeze injury in May produced lightweight kernels, many of which will blow out of the combine during harvest. Although these kernels were shriveled, many will probably germinate. In addition to the freeze, hail storms in June caused shattering which produced an early crop of volunteer wheat. Frequent rains in late June and early July should contribute to even more volunteer wheat.

Much of the control for wheat streak mosaic hinges on successful control of volunteer winter wheat and weeds in stubble fields and other areas. These weeds are big users of soil moisture and nutrients. If soil moisture is available, they may use as much as three inches of soil water after harvest. Timely tillage and/or application of herbicides will keep these weeds from producing seed.

Several options are available for controlling volunteer wheat. Most years sweep blades can be used immediately after harvest. The weather must be dry and hot

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Bacterial leaf spot attacking western sugar beets

Bacterial leaf spot has appeared in sugar beet fields in the North Platte Valley. Torn and ragged leaves follow disintegration of infected tissue. Black lesions border damaged tissue in leaves and petioles. Necrosis often follows along leaf veins. Round black spots or light gray spots with dark borders appear on leaves and resemble Cercospora leaf spot except that no dark spore-forming structures develop in the spots.

The disease, caused by *Pseudomonas syringae*, follows physical injury to the leaves and most often appears in this region following violent weather, especially hail. Insect injury, sand blasting, or farming operations may heighten infection. The optimum temperature for growth of the bacterium is 25-30°C (77-86°F). The bacterium survives on living plants, seed or organic matter in the soil and can cause a seedling blight.

Though the disease appears serious soon after infection, it seldom causes serious yield loss. The symptoms disappear during warm dry weather and no disease management strategies have been developed. Fungicidal seed treatments minimize the severity of the seedling blight phase of the disease.

Eric Kerr, Extension Plant Pathologist
Panhandle Research and Extension

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

Cooperative Extension provides information and educational programs to all people without regard to race, color, national origin, sex or handicap.

Select wheat seed to reduce disease problems

When planning whether to save or obtain seed for the 1993 winter wheat crop, producers should be concerned about seed quality (test weight and percent germination). The planting of certified seed will ensure high quality. If, however, noncertified bin-run seed is used, it should be cleaned before planting. Seed treatments are available for winter wheat which will give some protection against root and crown rots. However, we have not routinely recommended this as part of the winter wheat management program. There was a lot of winterkill in the 1992 crop and some of this could have probably been prevented by use of a fungicidal seed treatment. We feel, however, that a firm seed bed is equally important in reducing winterkill associated with root and crown diseases.

Also consider how varieties react to disease, especially leaf rust, wheat streak mosaic, soil borne mosaic, and stem rust if they have been a problem in the past. Unfortunately, we have very little resistance available in our current varieties for either tan spot or Septoria leaf blotch which along with leaf rust and wheat streak mosaic are the most serious diseases in Nebraska. Crop rotation will help reduce tan spot and Septoria leaf blotch.

Information on disease reactions as well as other characteristics can be obtained from the *1992 Nebraska Certified Quality Seed Book for Winter Wheat* (Nebraska Crop Improvement Association) which can be obtained from your local Extension Office or Research and Extension Center.

Ben Doupnik, Jr., Ext. Plant Pathologist
South Central Research & Extension

Producer question

Will leaf rust carry over on seed wheat?

We've received several calls regarding this question and the answer is NO. Leaf rust has to be reintroduced by spore showers from the south each year in the spring and early summer for new infections to occur. Thus, heavy infections on the 1992 crop have nothing to do with the 1993 crop. Producers should, however, consider changing to varieties with higher levels of resistance to leaf rust if this disease was a problem this year. Information on wheat variety reactions can be found in the *1992 Nebraska Certified Quality Seed Book for Winter Wheat* (Nebraska Crop Improvement Association) which can be obtained from your local Extension Office or Research and Extension Center.

Ben Doupnik, Jr., Ext. Plant Pathologist
South Central Research & Extension

New Extension publications released

The following publications recently were released by the University of Nebraska Cooperative Extension and are available from your local Extension office.

G-1099 Estimating Effective Rainfall

G1108 Estimating Corn Rootworm Soil Insecticide

G422 Downy Brome Control

G488 Spring and Summer Black Stem Disease

EC 2500 Restricted Use Pesticides.

Insect Science
Plant Disease
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Lisa Brown Jasa, Editor

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Control volunteer wheat

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to successfully use a sweep blade because weeds must wilt within 30 minutes for good control. Two bladings usually are necessary in the fall for good weed control, since the first operation usually plants weedseeds.

Another option is to use herbicides. (Also see *Improving Weed Control After Winter Wheat*, page 5.) If no weeds are present after harvest, 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 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 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, the option of weed control with herbicides still may be economically feasible for the farmer who owns a sprayer.

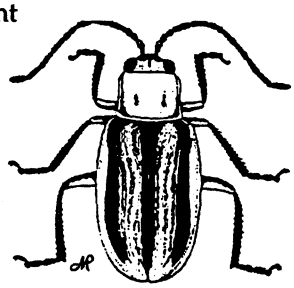
For those without sprayers who have weeds after harvest, the best option may be to blade immediately after harvest and then again in late August or early September, and apply atrazine with the spray boom mounted on the blade.

John Watkins
Extension Plant Pathologist

Insect Science

Corn rootworm adults emerging

Adults of western corn rootworms were observed at several locations in Nebraska beginning the week of July 6. Northern corn rootworm beetles should also begin to emerge soon. Both are 1/4 inch long, but western corn rootworm adults are pale yellow-green beetles with a black stripe on each wing cover. Northern corn rootworm beetles are a solid green-tan color. Western corn rootworms are the predominant species throughout Nebraska; northern corn rootworms are most common in northeastern Nebraska.



Western corn rootworm beetle

During late July and August, these beetles will be laying eggs that overwinter in the soil, producing rootworms in the spring which may damage corn next year if continuous corn is grown. However, more than 60% of Nebraska's continuous corn fields are estimated to ***not*** have economic corn rootworm infestations in a given year.

Begin scouting for corn rootworm beetles in late July and continue scouting weekly until threshold levels are exceeded or beetle activity stops. Examine 50 plants, taking samples from every quarter of the field. Sampled plants should be several paces apart so that examining one plant doesn't drive beetles off of the next plant to be sampled. Although many beetles will be found in the area near the ear, the most reliable information is obtained if the whole plant is examined. Beetles may hide behind leaf sheaths or in silks in the ear tip, so care is required to observe all beetles present.

Weekly scouting for corn rootworm beetles is the only way to determine whether economic infestations are likely to occur next year.

Corn rootworm beetle counts in July and August can provide growers with information on the potential for corn rootworm damage this season and next year. First, 1992 beetle numbers can be used to predict the potential for damage in 1993. Also, beetle counts will allow you to determine in which fields it would be profitable to use an adult control program to reduce the number of eggs laid.

If beetle counts exceed 0.75 beetles per plant, damaging populations of corn rootworms are possible in that field next year. To prevent or reduce corn rootworm damage in fields exceeding this threshold, rotate fields out of corn or treat with a soil insecticide if corn is planted again.

Fields remaining below 0.75 beetles per plant do not need a soil insecticide next year. This threshold assumes a population of 24,000 plants per acre. If different plant populations are used, modify the

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Corn rootworm beetles *(Continued from page 3)*

thresholds (see NebGuide G86-774, *Western Corn Rootworm Soil Insecticide Treatment Decisions Based on Beetle Numbers*.).

Another way to scout for corn rootworm beetles is to use a yellow sticky trap to attract and catch beetles. Research conducted in Iowa compared several trap designs and identified an unbaited Pherocon AM trap as the recommended trap to use. Attach traps to the corn plant at ear height and leave in the field for a week. Use 8-12 traps per field, with more in larger fields, spread out over the whole field. If beetle counts exceed an average of six beetles per trap per day, this is equal to the treatment threshold. If beetle counts are below this level, continue sampling until the threshold is exceeded or beetle activity stops. Some advantages of using traps over visual examination include: 1) traps catch beetles over an extended time and are not influenced by time of day or weather; and 2) counts are not influenced by the experience or skill of the sampler. Traps are available from the manufacturer, Trece (P. O. Box 6278, Salinas CA 93912; 408-758-0205) or from Great Lakes IPM or Pest Management Supply, Inc. (see IPW 92-7) and cost about $1 per trap.

One strategy for corn rootworm control is to kill the adults before they have laid enough eggs to damage next year's crop. For this strategy to work, you must carefully monitor corn rootworm beetles before and after treatment. If 10% of the female beetles have mature eggs and 0.75 beetles per plant are present, apply controls. Follow up monitoring after treatment should be continued at weekly intervals until beetle activity stops. If corn rootworm numbers build back up and exceed 0.5 beetle per plant, retreatment is warranted. Late maturing fields are particularly susceptible to corn rootworm beetles moving in during late summer from nearby earlier maturing fields.

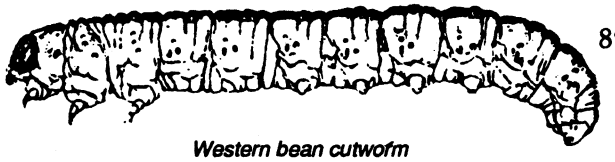
Adult control programs can successfully reduce damage by corn rootworm larvae next year, but regular scouting of fields is needed. If multiple applications of insecticides are needed to control corn rootworm beetles, consider the cost of the adult control program compared to a single application of an insecticide at planting or cultivation. Also consider the possible impact of multiple insecticide applications on natural enemies and other nontarget organisms.

For more information,.including rates and restrictions of registered insecticides for adult corn rootworm control, refer to EC 92-1509, *Insect Management Guide for Nebraska Corn and Sorghum*, available at your local University of Nebraska Extension office.

Bob Wright
Extension Entomologist
South Central Research & Extension

Western bean cutworms emerging; evaluate potential damage and plan control measures

Western bean cutworm moths have begun to emerge and eggs have been found on corn in some locations. This pest is usually confined to sandy soils in northeast Nebraska, along the Platte River Valley from Grand Island to the Panhandle, and southwestern counties. Western bean cutworm moths prefer to lay eggs on corn in the late whorl stage. Individual eggs are about the size of a common pinhead and are laid in masses ranging from 5 to 200 eggs. The eggs are initially round and pearly white, but by hatching (after four to seven days), they are dark blue or black.



Western bean cutwofm

When eggs hatch before tasseling, newly-hatched worms migrate to the developing tassel to feed. After tasseling and pollen-shed, larvae move to leaf axils and later to the ear where they feed on emerging silks. Once the ear has formed, worms enter the ear through the silk channels or through holes cut in husks and feed on the developing kernels.

Treatment is justified if 8% of the plants have eggs on leaves and/or small larvae in the tassels and the crop is at least 95% tasseled. Timing of the insecticide application is important. If the tassel has emerged from the whorl, best results are obtained when treating at 70-90% egg hatch. Control of western bean cutworms will be poor once worms have entered the developing ear, so scout fields often to avoid missing the early stages of infestation.

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Western bean cutworm *(Continued from page 4)*

Quite a bit of corn in Nebraska is small due to late replanting. If the corn is a few weeks away from tasselling, it is unlikely that the bean cutworm larvae will survive. Furthermore, the economic damage from this pest is focused on the ear, so scouting and treatment, if needed, should occur closer to when the ear is emerging in these late developing fields.

Many products labeled for control of western bean cutworms have been shown to increase the risk of spider mite infestations later in the season. If spider mites are present, even in small numbers, select an insecticide that is less likely to stimulate increases in mite reproduction. Examples include Furadan 4F or Lorsban 4E.

For more information refer to EC92-1509, *Insect Management Guide for Nebraska Corn and Sorghum*, and NebGuide G75-50, *Spider Mites in Corn*.

Steve Danielson
Extension Entomologist

Weed Science

Improve weed control after winter wheat

Controlling weeds after winter wheat harvest is an ongoing challenge for Nebraska producers. A survey taken after winter wheat harvest in west central and southwest Nebraska in 1986 showed barnyardgrass and green foxtail were the leading summer annual grasses that infested winter wheat yields. Control of these species was inadequate in many fields (55% to 85%). In addition to the summer annual grasses, Russian thistle and kochia are two broadleaf weeds that may be troublesome after winter wheat harvest.

The effectiveness of post-harvest weed control is often influenced by production practices associated with the previous wheat crop, such as winter wheat variety, fertilizer practices, planting date and stem density. Other factors influencing weed control include: weeds that are too large; cutting off weed tops with the combine; crop rotation; temperature when spraying; rain the day of spraying; streaks caused by sprayers; terraces; dust; straw; chaff; and weed seed distribution.

Many options, besides increasing the rate of herbicides, are available for controlling weeds after wheat harvest. It takes a total weed management package to obtain maximum weed control. Stands of vigorous winter wheat will compete better with weeds, thus concentrating on the fallow will pay dividends. Timely weed control, fertilizing if needed, proper seeding, planting during the optimum time, and selecting a competitive winter wheat variety will offer the winter wheat the best chances of reducing weed population and vigor after harvest. In addition, it's essential that you watch closely and spray at the proper time to control weeds. Most labels state that weeds must be treated before they are six inches tall. If weeds are under severe drought stress, wait for rain and spray about a week later.

Cyclone offers good control of barnyardgrass that is small or mature, but is less effective on large plants. Control of barnyardgrass is poor with Cyclone + atrazine when sprayed during the tillering to boot stage. However, once barnyardgrass has headed and stopped growing, Cyclone provides good control. Spraying after the grass has headed allows seed production. In addition, the longer the grass weeds grow, the more soil water is used.

Several options are available for using nonselective herbicides with difficult-to-control weeds. With Cyclone be sure to use a minimum of 2 pints of X-77 or equivalent surfactant per 100 gallons of solution. A surfactant also needs to be added to Roundup. The label rates are 2 qt/100 gallons of spray solution (0.5% v/v). Landmaster BW has a surfactant included. With Roundup, Fallow Master, and Landmaster BW, add ammonium sulfate (spray grade) at 17 lb per 100 gal of spray solution. Ammonium sulfate is especially helpful when stress conditions are present.

One cannot easily identify weeds under stress; therefore, it is wise to always add ammonium sulfate. Improve control by increasing the rate of Landmaster BW or Fallow Master. A spray volume of 5 to 10 gallons per acre should be used with Roundup, Fallow Master and Landmaster

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Weed control *(Continued from page 5)*

BW. Fallow Master will provide better control of kochia and Russian thistle than either Roundup or Landmaster BW.

Our research and field surveys suggest that atrazine combined with either Cyclone or Landmaster BW is an effective treatment if applied before weeds are too large. Use Landmaster BW + atrazine on grasses in the boot stage. If weeds are mature, use the Cyclone + atrazine combination. Do not use Roundup, Fallow Master or Landmaster BW on days that it will rain or when temperatures exceed 95°.

Split treatments have been especially effective. With the split treatment, an application is made in July or early August with a second application containing at least 1 lb of atrazine applied in September with Cyclone, Crop Oil Concentrate, or alone depending on the amount and size of volunteer winter wheat, downy brome and/or jointed goatgrass present. The atrazine rate varies with soil and rainfall patterns. In southwest Nebraska use at least 1 lb of atrazine in September, but in the Panhandle of Nebraska, 1/2 lb is often the maximum rate to be used in one season. Be careful not to exceed the label rate for atrazine with the two combined treatments. The advantage of the split treatments is that they provide excellent control of volunteer winter wheat and other winter annual grasses.

If winter annual grasses such as jointed goatgrass, downy brome or rye are a problem, tillage immediately after harvest may be desirable. See page 4 of the June 26, 1992 issue of *IPW News* for a discussion on the control of these troublesome weeds.

Gail Wicks, Robert Klein and Drew Lyon
Extension Weeds Specialists

Correct timing key to late season 2,4-D use

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

Attack problem weeds directly 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 25% Roundup in water to control broadleaf and grass weeds. Shattercane and volunteer corn are very susceptible to Roundup. Roundup concentrations of 20% work well on these plants.

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 will be required 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. For shattercane and volunteer corn reduce these concentrations.

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.

Alex Martin
Extension Weeds Specialist