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## INSECT, PLANT DISEASE, & WEED SCIENCE NEWS [No. 91-7] [May 3,1991]

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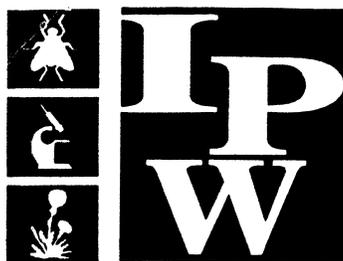
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# Insect Science Plant Disease Weed Science

# NEWS

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

No. 91-7

May 3, 1991

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## PLANT DISEASE

### Be Alert to Threat of Wheat Leaf Rust

The USDA Cereal Rust Laboratory reported late last week that leaf rust is severe on susceptible soft red wheats from the coast of South Carolina through the southern half of Louisiana and on into Texas (see Fig. 1). The disease is increasing in the northern Texas and Oklahoma wheat-growing areas, and "...recent dew periods and rain (will) allow for a rapid increase of leaf rust (incidence)."

Our Kansas colleagues also report that the leaf rust fungus successfully survived the winter in parts of southern Kansas and is now increasing in severity on susceptible cultivars near these overwintering sites.

With this buildup of leaf rust potential south of us, a day or two of strong winds could move rust spores north to infect susceptible cultivars in Nebraska and South Dakota. Be alert to the development of rust pustules within the next week or so. John Watkins, Extension plant pathologist, will be providing an update on the wheat disease situation after he and Eric Kerr, Extension plant pathologist at the Panhandle Research and Extension Center in Scottsbluff, complete a survey of western wheat-growing areas this week.

David Wysong

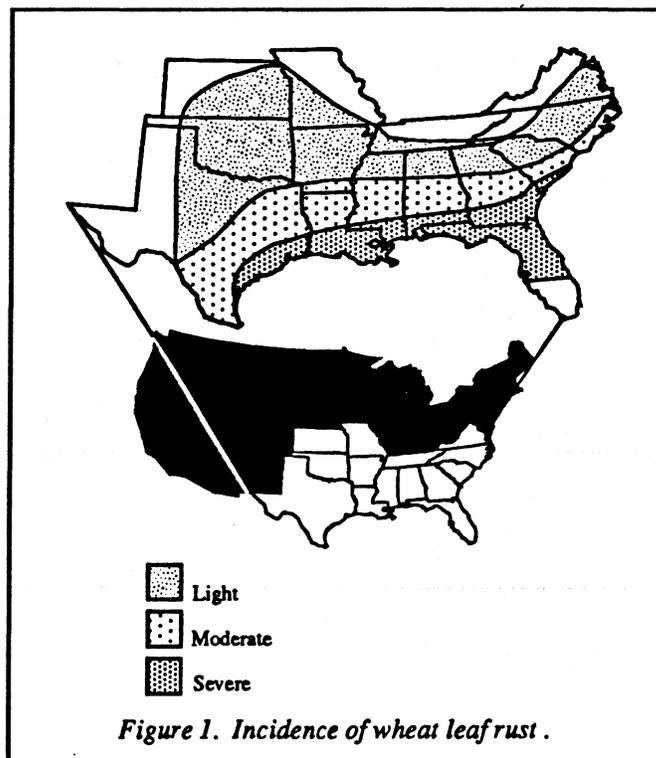


Figure 1. Incidence of wheat leaf rust.



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## *When Johnsongrass is a Problem*

# Virus-resistant Corn Hybrids Still Necessary

Dr. Paul Vincelli, plant pathologist at the University of Kentucky, noted recently that it is still necessary to plant virus-resistant corn hybrids even though herbicides such as Accent® or Beacon® are used for post-emergence control of johnsongrass. Although the article was written for Kentucky, his advice is also applicable to Nebraska.

## *Slow Corn Emergence? Consider Temperatures*

You had the seed in the shed, your planter was in good working order, and the fields were ready. Some of the producers who took advantage of warm weather the third week in April to plant corn early are wondering now why nothing is emerging. Is it disease or insect problems? Is the soil too wet or too dry? Are there crusting problems? These elements could be a factor, or, if no likely cause can be identified, slow emergence may be explained by the temperature.

Generally, it takes about 110 to 120 growing degree days from planting corn for the seed to germinate and seedlings to emerge. Growing degree days (GDD) are used to measure the length of time required for a crop to reach particular stages in its development. For corn (Base 50), the formula used is equal to the sum of the maximum and minimum daily temperatures divided by 2 minus 50. For example, if the average temperature for a day is 60° (a high of 75° plus a low of 45° divided by 2), subtract 50 for a GDD of 10. GDDs are calculated daily and accumulate as the season progresses.

It's not unusual for it to take more than two weeks to accumulate enough GDDs for emergence. This method of estimating emergence is a bit crude because cold soils will slow emergence regardless of the air temperature, but it may help explain some situations.

The corn "virus complex" (mostly strains of maize dwarf mosaic virus) survive the winter in johnsongrass rhizomes. The viruses are spread from infected johnsongrass to corn by certain aphids, including corn leaf aphids and greenbugs. Even if johnsongrass were eliminated from a cornfield, other plants in fence rows and in wild areas bordering corn fields would continue to act as a source of virus inoculum for spread by insects. In addition, as herbicide-treated johnsongrass dies, those insects that carry the viruses have no choice but to move to corn. As Vincelli noted, "...in research trials at Virginia Polytechnic Institute, the virus complex was more severe where johnsongrass was controlled post-emergence", for this very reason.

If you have a johnsongrass problem, use corn hybrids resistant to the virus complex, regardless of the use of Accent® or Beacon®.

David Wysong

## IPW News

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Lisa Brown Jasa, Editor

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## Watch for Damping-Off in Western Sugar Beets

Sugar beet planting is essentially complete in western Nebraska and recent rainfall will provide soil moisture for rapid emergence. Early stand establishment of healthy plants is critical to a good crop. The first disease affecting sugar beet stands will be seen in emerging seedlings as damping-off. *Pythium* damping-off and *Rhizoctonia* damping-off occur in Nebraska fields.

*Pythium* damping-off is favored by high soil moisture. Preemergence death of infected plants is most common, but postemergence damping-off may follow when the soil remains moist. An infected seedling may appear water-soaked or brownish before emerging from the soil. After emergence, the infected seedling may have wilted cotyledons and darkened stem discoloration extending upward from the diseased roots.

*Rhizoctonia* damping-off may kill plants before emergence but usually appears as a postemergence disease. This disease usually starts with below-ground infection that extends upward into the hypocotyl. A sharp margin may separate diseased and healthy tissue. The causal fungus may continue to infect sugar beet roots throughout the growing season in Nebraska and is a major root and crown rot disease. *Rhizoctonia* seedling diseases may be more noticeable in warm, dry springs.

Much of the sugar beet seed is treated with a combination of thiram and metalaxyl which provides protection against both diseases during early stand establishment. The *Aphanomyces* seedling disease and *Phoma* seedling infection can be serious in some sugar beet production areas. Relative occurrence of sugar beet seedling diseases has not been extensively described for Nebraska.

Eric Kerr

## Cedar Apple Rust Infections Appearing

Recent spring rains have triggered the start of cedar apple rust infections. The bright orange, gelatinous galls on infected junipers are hard to miss and make the trees look like they've been decorated for Christmas.

Cedar apple rust is caused by a fungus which requires two different hosts to complete its life cycle. Actually, there are several species of the same fungus (*Gymnosporangium*) which cause similar diseases on junipers and the alternate hosts (members of the rosaceous family such as apples, hawthorns, and juneberries). Damage to the juniper host is usually slight. Occasionally, a juniper may become severely infected which can lead to dieback, reduced vigor, and deformation. The rosaceous host is usually more seriously damaged. Yield and fruit quality may be affected as well as tree vigor and appearance.

Control of cedar apple rust diseases varies with the situation. Several very effective fungicides are available to the professional orchardist. Unfortunately, these fungicides are not available to homeowners. Fungicides such as chlorothalonil can be used on ornamental rosaceous hosts.

Cultural practices such as selecting resistant varieties of the rosaceous and juniper hosts and, when possible, separating junipers and rosaceous plants by two miles will minimize rust infections. However, in urban areas, planning such separations may be quite difficult. Removing the galls from juniper hosts by pruning can be effective if done before the orange, gelatinous stage appears.

Luanne Coziahr

# INSECT SCIENCE

## Video Conference Set on Integrated Crop Management

A video conference will be held May 8 dealing with the Integrated Crop Management (ICM) program administered by the U.S. Agricultural Stabilization and Conservation Service (ASCS). The program is directed to Extension professionals, Soil Conservation Service and ASCS personnel, crop consultants and others interested in the program.

Speakers will include ASCS, Extension and other University personnel. In addition, the program will include taped segments from the following universities: Pennsylvania State, Minnesota, Montana State, and Oklahoma State.

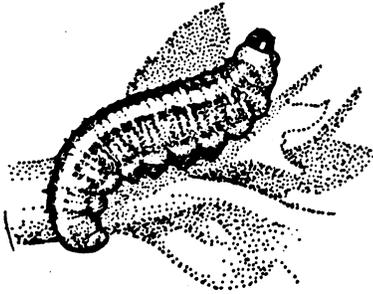
The program is set for 1-3 p.m. May 8, and is accessible at viewing sites at the UNL East Campus Union and several offices across the state. Check with your local Extension office for information on the closest viewing site. This video conference will be broadcast on Westar IV, Channel 23.

It will be videotaped and copies will be available from Betty Castan, (402) 472-3035 at the Department of Agricultural Communications. There will be a \$10 rental and mailing fee.

Bob Wright

## *Clover Leaf and Alfalfa Weevils Evident; Damage and Treatment Vary With the Pest*

The question of possible clover leaf weevil damage this year is causing concern among alfalfa growers in eastern Nebraska. Many farmers in the eastern third of the state experienced problems with alfalfa regrowth after the first cutting in 1990 because of feeding by the adult clover leaf weevil.



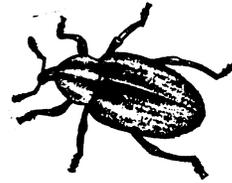
*Clover leaf weevil larva*

Producers have asked if the larvae of this insect, which closely resembles that of the alfalfa weevil, is causing economic damage to the first cutting of alfalfa in 1991.

When evaluating the potential for economic damage and the cost of treatment, it's important to recognize the differences between the clover leaf and alfalfa weevils.

The clover leaf weevil and alfalfa weevil larvae are similar in appearance. Both larvae are legless and yellowish to green in color with a white stripe down the back. The clover leaf weevil has a brown head while the alfalfa weevil has a black head. The differences between the two insects are shown in Table I.

There have been quite a few reports this spring of alfalfa fields with declining stands, yellowing leaves, and



*Clover leaf weevil adult*

leaf damage. We are not aware of leaf yellowing or other leaf discoloration as a result of weevil feeding. These symptoms are more typical of winterkill or frost damage. Reports of winterkill damage are fairly widespread throughout central Nebraska. Frost damage, which will turn leaf margins brown and cause areas that eventually tear, has been observed in some locations and may be confused with insect feeding damage. There should be no serious effect on yield from frost damage.

We have no scientific evidence that clover leaf weevil larvae cause economic loss to first cutting alfalfa. The only known replicated insecticide test for this larvae was conducted last year just west of Niobrara in northeast Nebraska. Three insecticides, Lorsban 4E (1.5 pints per acre formulation), Pounce 3.2EC (6 ounces per acre formulation) and Sevin XLR (2 pints per acre formulation) were applied to 6-7 inch tall alfalfa on May 2, 1990. A backpack sprayer delivering about 18 gallons per acre at 25 lb psi was used to apply insecticides.

The post-treatment larval densities in the untreated check plots were just under 30 larvae per square foot. The Lorsban (0.6 larvae/sq ft remaining after treatment) and

*Continued on Page 41*

**Table I. Differences in Appearance of Two Weevils**

### *Alfalfa Weevil*

### *Clover Leaf Weevil*

Overwinter primarily as adults.

Adults are brown with a dark brown stripe half-way down back, snout on head, and 3/16 inch long.

Larvae prefer to feed on newly emerging leaves at stem tip.

Larvae remain on plant most of the time.

Larvae have black heads.

Adults leave fields in June.

Overwinter primarily as larvae.

Adults are dark brown, pitted light brown underneath, snout on head, and over 1/4 inch long.

Larvae prefer to feed on lower and middle leaves.

Larvae feed on plant at night, and during the day, they rest in debris at base of plant.

Larvae have brown heads.

Adults may remain in fields into July.

**Clover Leaf Weevils** (Continued from Page 40)

Pounce (2.4 larvae/sq ft) provided excellent control. The Sevin (25 larvae/sq ft) did not adequately control the clover leaf weevil larvae.

Yield was taken from these plots on May 31. There was no significant difference in yields between the treated areas and untreated check plots. The plots treated with Lorsban and Pounce yielded slightly better than the untreated plots overall, but the yield difference was not enough to justify the cost of treatment. The Lorsban and Sevin treatments did temporarily bleach the new alfalfa foliage.

Most eastern Nebraska alfalfa fields have clover leaf and alfalfa weevils. Clover leaf weevil larvae are much larger early in the season. Alfalfa weevil larvae generally are about two weeks behind the clover leaf weevil larvae developmentally. Because of this lag in development, people who decide to treat for clover leaf weevils risk having to treat again if alfalfa weevil populations increase after treatment.

Pupation of clover leaf weevils will begin in about two weeks in northeastern Nebraska and continue through late May. Pupation will begin earlier in southern and eastern counties.

At the first alfalfa cutting, the clover leaf weevil will be in the pupal or adult stage and many alfalfa weevils will still be in the larval stage. Therefore, many alfalfa weevils will be destroyed mechanically during harvest or will starve due to lack of foliage to feed on. Clover leaf weevils are less likely to be killed since they have developed to a less susceptible stage at harvest, and thus the adults may pose a problem for regrowth.

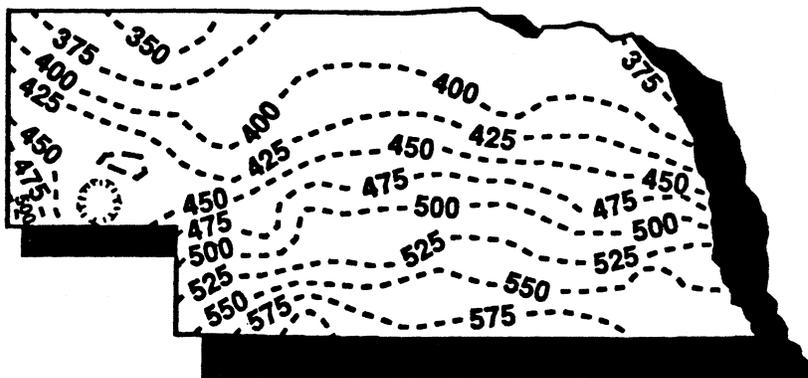
Should you consider controlling the clover leaf weevils now to prevent regrowth problems? We have no good indication of how many clover leaf weevil larvae it takes to threaten regrowth. They are very susceptible to a fungus disease which can cause over 90% mortality. If rainfall and temperature conditions are favorable for the disease, they will be killed naturally. The only way to know, of course, is to scout your fields regularly.

Clover leaf weevils tend to be in the crowns and on the soil surface during the day so the only good way to get a population estimate is to get down on your hands and knees and scratch around. Use a 12-inch square made out of conduit, PCV pipe or some other material to aid in making accurate counts. After first cutting, carefully examine the area around the crowns and the debris near the crowns for the presence of clover leaf and alfalfa weevils. Watch for feeding damage on new growth. Large numbers of clover leaf weevils will feed on stems, giving them a spotted appearance. Although no economic thresholds have been developed for clover leaf weevils, if greenup is not progressing normally after first cutting and five or more weevils are found per crown, an insecticide treatment may be necessary.

Although no insecticides are specifically registered for clover leaf weevil control, experience would indicate that the adults can be controlled with the same insecticides registered for alfalfa weevil adults. Consult EC91-1511, the *Insect Management Guide for Alfalfa, Soybeans, Wheat, Range, and Pasture* for a list of insecticides registered for alfalfa weevil control in alfalfa. This publication is available at your local Cooperative Extension Office,

Keith Jarvi and Steve Danielson

**Alfalfa Weevil Growth Progresses Across State**



Peak larval activity should occur soon in southern counties. Damage and larvae may be found in alfalfa fields across the state although we would not expect that all fields in all counties will experience serious problems. Growers are encouraged to scout their fields and make management decisions based on recommended guidelines.

Steve Danielson

The map indicates degree-day accumulations as of April 28.

# WEED SCIENCE

## Rotary Hoeing a Viable Weed Control Option

The rotary hoe when properly used is an effective tool for weed control in row crops. Crops seeded 1 to 2 inches deep escape appreciable injury from a rotary hoe. For best results, weed seedlings should be in the "white stage," from germination to emergence. Timeliness is critical for success because emerged green weeds, even though small, are generally too well anchored for control. A second hoeing five to seven days after the first provides improved control. Hoeing requires a dry firm soil surface. A rain-free period of several hours after hoeing is needed to desiccate the weed seedlings. Hot windy conditions for a few hours after the operation are best. A rainy period of several days seriously reduces the effectiveness. A rotary hoe will not satisfactorily control larger-seeded weed seedlings including shattercane and velvetleaf because they can germinate deeper in the soil and are more firmly anchored than small-seeded weeds such as pigweed and foxtails. Use operational speeds of 7-14 mph for rotary hoeing. Effectiveness is greater at faster speeds; however, injury to delicate crops increases with speed.

Crop safety is a consideration in rotary hoe timing. Take care not to cover the crop as it emerges. Corn can be hoed any time until the crop reaches 4-5 inches; however, avoid hoeing corn planted in furrows in loose soil from the spike to the one-leaf stage to prevent covering plants. A test strip can be hoed to evaluate damage. Avoid hoeing sorghum between the spike and two-inch stages to avoid covering small seedlings and don't hoe soybeans between the crook stage, just prior to emergence, and for approxi-

mately three days after emergence. Hoeing soybeans during emergence results in unnecessary stand loss. Stand losses of 5-10% are common with each hoeing of sorghum and soybeans. If necessary, increase planting rates to compensate for stand loss.

With proper timing and operation, a rotary hoe can provide economical weed control with minimum crop damage. The key to success is understanding the factors involved.

Alex Martin and Bob Stougaard

## *Without Atrazine, Proso Millet Needs New Management Plan*

The manufacturer of atrazine herbicide has eliminated its use in proso millet to reduce the product's geographical use and volume. They hope this will reduce new groundwater contamination and help ensure successful reregistration of the product for crops such as corn. In addition to not being able to use atrazine in the year of proso millet production, proso millet may no longer be grown the year after atrazine is applied for chemical fallow weed control after winter wheat harvest. Atrazine produced before 1991 which includes proso millet on the label may be used.

Weeds are the number one pest in millet production with broadleaf weeds being the biggest problem. If heavy rains occur soon after seeding, grassy weeds also may become a nuisance. If grassy weeds seriously infest millet, the only option is to till and reseed. For broadleaf weed infestations, the only option for proso millet producers is to apply 0.67 pints of 2,4-D (only certain labels list this use) + 0.25 pints of Banvel per acre to proso millet in the two- to five-leaf stage of development.

Without atrazine, cultural practices including seedbed preparation become very important. It's important to eliminate weeds and create a firm seedbed immediately before planting. Proso millet planting should be delayed until early June and seeding rates should be increased to a minimum of 20 pounds per acre to improve the millet's ability to compete with weeds.

Drew Lyon, Extension Dryland Crops Specialist

## Use Charcoal to Clean Herbicide-Contaminated Soil

If a herbicide is present in the soil, how much activated charcoal is needed to make the herbicide unavailable for plant uptake? If the herbicide rate is fairly well known and under 4 lbs/A, use 400 lbs activated charcoal per acre. This equates 10 lbs/1000 sq ft or 1 lb/100 sq ft of surface soil. Incorporate the charcoal to the suspected depth of herbicide penetration.

When the rate is known because of a spill, remove several inches of soil before applying charcoal. Use more charcoal if suspected pesticide rates are unusually high.

Supplies of activated charcoal (carbon) are available from Cornbelt Chemical, McCook and Omaha; and the Hummert Seed Company, St. Louis, MO.

Alex Martin and Bob Stougaard