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INSECT, PLANT DISEASE, & WEED SCIENCE NEWS [No. 91-19] [Aug. 9, 1991]

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Insect Science Plant Disease Weed Science NEWS

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

No. 91-19 Aug. 9, 1991

In this issue

INSECT SCIENCE

Treatment often not cost efficient

Ear attacking insects may be prevalent in corn

In most of Nebraska, corn is past the green silk stage, and there is little concern about rootworm beetle feeding interfering with pollination. However, a variety of insects still may feed in the ear tip or within the ear of corn plants. These include European corn borers, corn rootworm beetles, fall armyworms, corn earworms, western bean cutworms and picnic beetles. People often ask what can be done to control these insects. With the exception of corn rootworm beetles, once these insects enter the ear they can not be controlled with insecticides. For all these insects, the amount of yield loss is less than the cost of control.

European corn borers feed on silks and developing kernels in the ear tip or tunnel in the ear shank. Finding corn borers in the ear does not indicate that a control has failed because the borers may have entered the ear before an insecticide was applied or after the residual activity of the insecticide had dissipated.

Corn rootworm beetles normally feed only on corn silks, but when many beetles are found on an ear, they also may feed on developing kernels in the ear tip. Spraying specifically to control beetles feeding on kernels is not economically justified in field corn. However, insecticides applied during August to reduce beetle egg-laying also will reduce feeding damage to kernels.

Corn earworms are a major pest of sweet corn producers. Although their feeding may greatly reduce sweet corn quality, it is not feasible to treat them in field corn. Corn earworms may vary greatly in color, from brownish to yellowish to greenish, but yellowish lateral stripes and alternating light and dark colored longitudinal stripes on the dorsal surface are on all larvae. Also, numerous raised bumps occur on the skin, each with a spine. Corn earworm

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Ear attacking insects *(Continued from page 107)*

moths lay eggs on corn silks, and the earworms enter the ear soon after hatch, thus repeated insecticide applications would be necessary to significantly reduce the number of surviving corn earworms. Normally, damage is restricted to the tip, and since the caterpillars are cannibalistic, normally only one or two survive to maturity per ear.

Fall armyworms, which may have fed in the whorl earlier in the season, also may feed in ear tips. Fall armyworms have a whitish-yellow upside-down "Y" marking on the front of the head.

Western bean cutworms are best controlled while the cutworms are small and feeding in the whorl, on the tassel or are otherwise exposed. Young cutworms may be confused with young armyworms, but young cutworms are not obviously striped. They are pale tan to cream colored with a light area running lengthwise down the back. Fully grown larvae are light brown to pale gray with brown heads, and a wide dark brown collar behind the head with three narrow pale stripes. Once they enter the ear, insecticides will not provide much control. Heavy populations can extensively damage corn, as several cutworms may survive to maturity in one ear, and damage is not restricted to the tip. Timely scouting and treatment, if needed, is necessary to prevent damage to the ear.

Picnic beetles or ***corn sap beetles*** are attracted to decaying vegetable matter and often invade corn ears damaged by insects. These are small (1/3-inch) dark black or brown beetles, which may have orange to yellow spots on their wing covers. These secondary invaders are not attracted to healthy ears, but feed on decaying plant tissue and the associated microorganisms.

For more information on these insects, see NebGuide G82-613, *Ear Attacking Insects of Corn*, available from University of Nebraska Cooperative Extension offices.

Bob Wright

Organic producers may have to change practices

The few Nebraska growers who have entered the organic food production industry will face strict requirements when provisions of the 1990 Farm Bill take effect in 1993.

Durward Smith, UNL food scientist, said the Organic Foods Production Act, which was included in the farm bill, will establish national standards for the production of food labelled "organic."

Once the bill takes effect, Smith said, all organic foods will be produced on soil that has not been treated with artificial fertilizers, pesticides, herbicides or other chemicals for three crop years prior to the crop year being certified as organic.

With the expanding national market for organic foods, Smith said, national legislation was necessary to ease trade difficulties between states. Although the specifics of organic regulation have not been finalized, Smith said requirements probably will include:

- state certification for farms and handling operations that deal in organic foods;
- production of all organic foods on certified farms and distribution by certified handling operations;
- annual on-site inspections of each certified farm to ensure that each is implementing a farm plan agreed upon at the time of certification;
- periodic testing of products by certified laboratories for pesticide residue and natural toxins;
- maintenance and availability of comprehensive records by farm operators;
- construction of buffer zones and facilities to ensure the complete separation of organic and nonorganic foods produced on each farm.

IPW News

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Lisa Brown Jasa, Editor

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Plan measures to reduce Hessian fly problems

Preventive measures are the best safeguard against Hessian fly problems since chemical controls are not a practical solution for this pest. Reduce Hessian fly fall infestations by:

1) plowing stubble and volunteer wheat prior to planting;
2) planting Hessian fly resistant or tolerant wheat varieties; and
3) planting after the fly-safe date.

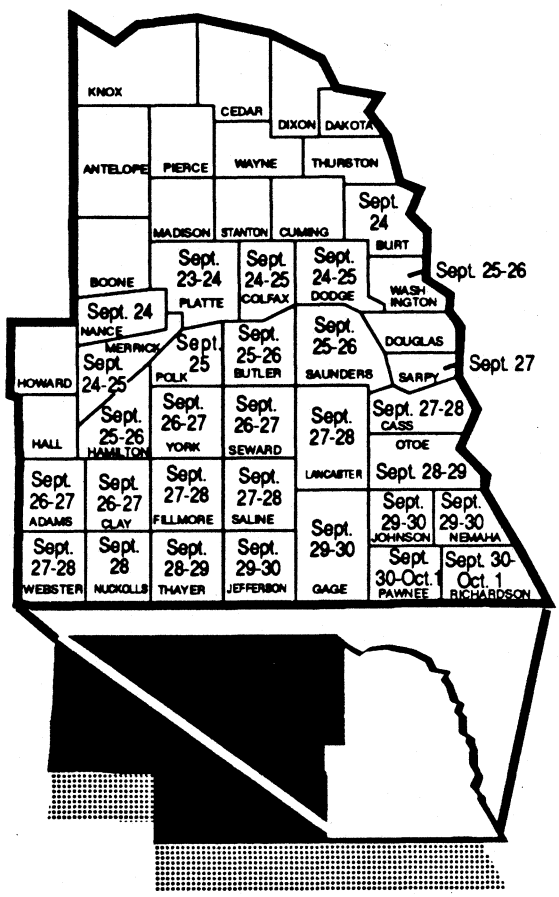
The Hessian fly spends the summer in the inactive flaxseed stage on wheat stubble. In the fall, adults emerge to deposit eggs on early-seeded or volunteer wheat. Plowing will bury many flaxseeds deep enough to prevent adults from reaching the surface. Planting after the fly-safe date allows seedlings to emerge after most adult Hessian flies have died. Fly-safe dates are averages based on several years of observations. A hot, dry September can delay fly emergence, and a moist, cool month may expedite emergence dates. Fly-safe dates have not been developed for western Nebraska, however, a late planting is recommended if Hessian fly problems are a concern. The map shows average fly-safe dates for individual counties.

Producers wanting to plant early should strongly consider planting resistant varieties. Varietal resistance to Hessian fly does not guarantee immunity, but should reduce the probability of severe infestations. Among the Hessian fly resistant varieties listed in the *Growers' Directory for Fall Planting* are:

Resistant - Arkan, Brule, Redland, and Norkan,

Moderately Resistant - Arapahoe, Buckskin, Colt, Vona, Mesa, and Wings.

Steve Danielson and Bob Wright



Fly-safe planting dates for Hessian fly control

PLANT DISEASE

Need for winter wheat seed treatments varies

Winter wheat seed does not necessarily need to be treated every year. Seed treatment is most likely to be beneficial with late plantings, low test weight seed, smut or scab detected in fields or seed, certified seed production, or bin-run seed.

Scab was widespread in the Great Plains this season and common bunt was reported in some fields. Any time scab is present, seed from that field should be cleaned, tested for germination, and treated with a fungicide before planting. If common bunt is present, do not plant the seed. If there is absolutely no other alternative, the seed definitely should be treated.

The heavy outbreak of leaf rust reduced test weights and grain quality. If this grain is to be used as seed wheat, test the germination and treat the seed. Some farmers tend to use bin-run seed as seed wheat for three or four consecutive years. This is not a good practice for maintaining quality in their seed wheat because this seed often is a good candidate for seed treatment.

Which treatment should you use?

The wide array of seed treatments can sometimes make product selection confusing. Use a systemic fungicide to battle loose smut. If protection against seedling blights or common bunt is the objective, use a protectant fungicide.

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Seed treatments (*Continued from page 109*)

Remember, treat only what you intend to plant. Excess treated seed can only be used for seed. Most seed treatments are brightly colored to prevent their introduction into food or feed channels.

How do I get my seed treated?

Farmers have certain options when it comes to treating wheat seed. They can use an on-the-farm treater or a drill box formulation of the fungicide. When applying a drill box product, the seed and fungicide are mixed together in the drill. Some on-the-farm treaters attach to an auger and apply the product as the seed is augured into the drill box. Uniform coverage is important if the fungicide is to be effective. Other alternatives include buying treated seed or taking it to a commercial seed treater. Some seed treatment products can only be applied by a commercial seed treater.

Treating seed is not a guarantee for higher yields. Rather it is insurance against losses from smuts and seedling blights when these diseases threaten losses.

John Watkins

Plant Disease Clinic closed Aug. 19-22

The Plant Disease Diagnostic Clinic will be closed Aug. 19-22 so members of the UNL Plant Pathology Department can attend the North Central Divisional and National meetings of the American Phytopathological Society.

Please do not send plant samples for disease diagnosis during this time. Samples that are sent will probably deteriorate, rendering them unsuitable for later diagnosis.

Ellen Mayer, our secretary, will receive phone calls, but faculty members will not be available to handle samples.

Although closing the clinic may cause a temporary inconvenience, we feel periodic attendance at and participation in our professional society meetings are important. They provide us with the opportunity to share current research and extension results with our colleagues across the nation. They keep us abreast of cutting-edge research in the science of plant pathology, and they allow us to bring back new ideas and useful information to be incorporated in our extension plant pathology programs.

Dave Wysong

New, sweeter genotypes revolutionize sweet corn

Producers and consumers are reaping the benefits of two new types of sweet corn this summer and the rewards are encouraging for those already planning where to plant next year's crop.

The two main types are referred to as shrunken-2 (*sh-2*) and sugary enhancer (*se*) genotypes, both of which feature a high-sugar endosperm. The genotypes provide greater flexibility at harvest and improved quality.

The **shrunken-2** (*sh-2*) genotype has peak sugar levels two to three times those of normal sweet corn and the conversion of sugar to starch is very slow and incomplete. The form of sugar in the kernels is straight sucrose. This corn holds extremely well in the field and tastes sweet throughout the 4 to 10 day post-harvest shipping and handling period. The endosperm is thin, watery, and very sweet, not milky as in normal corn. *Sh-2* corn is crisp and sweet — almost crunchy. The pericarp (skin) of the kernels tends to be slightly tougher than normal corn and seed germination has been a problem, especially in cold soils. With little stored food reserve, the seedling is weak. The seed is fragile and easily cracked by mechanical impact. The better growers handle these seeds as if they were eggs. Commercial varieties include *SweetBelle,* the *SummerSweet* numbered series, *Pinnacle, Ultimate, How Sweet It Is, Sweet Treat, Florida Staysweet, Sugar Loaf, Earliglow, Sweetie, Platinum Lady,* and many others.

The **sugary enhanced** (*se*) types have sugar levels higher than normal sweetcorn, but less than the sh-2 types. A mixture of sugars provides a more complex flavor than the *sh-2* types. The sugars in *se* corn convert to starch at the same rate as in normal sweet corn. The water soluble polysaccharides provide a creamy, pleasant corn flavor that is not present in the *sh-2* types. The pericarp is very tender. Thus the corn is tender, smooth, creamy, with a nice sweet, complex "corn" flavor. The se genotype may be used in either a homozygous state or crossed with normal sweet corn to produce a heterozygous variety with characteristics closer to normal sweetcorn. One primary reason to use the heterozygous material is to obtain a tougher pericarp to facilitate mechanical harvesting. Generally, *se* genotypes are difficult-to-impossible to machine harvest. Commercially available varieties include *Calico Belle, Honey and Sugar, SnowBelle, Funks G90, Miracle, Classic,* and many others.

Isolate *Sh-2* varieties from all other corn types — field corn, regular sweet corn, and sugary enhanced sweet corn. If cross pollination occurs, kernels will dent. For adequate isolation, plan for distance (300 ft or so will work), wind direction, relative times of pollen shed and silking, and crop blocking or buffer strips. *Se* corn also must be isolated from dent and *sh-2* corn. They do not do well in cold soils.

Laurie Hodges
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