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Rootworm egg hatch detected; determine need for cultivation time treatments

The first hatch of rootworm eggs was reported June 9 at Clay Center. This somewhat late hatch is related to the cool weather we’ve had this spring. Corn producers should be scouting now for rootworm larvae.

Cultivation time treatments of insecticides, if needed, should be applied soon. They can effectively reduce injury to corn plants from rootworm feeding.

Except for Fortress and Aztec, granular planting-time soil insecticides labeled for corn rootworms are also labeled for use at cultivation. Apply Force 1.5G and 3G within 30 days of seedling emergence. Apply insecticides to the base of the plant or over the row as directed on the label. Incorporate with 1-2 inches of soil after application. If aerial applications are made, effectiveness may be decreased unless the insecticide is incorporated.

Rootworm larvae

Other chemical control options include the use of Furadan 4F and the use of chemigated Lorsban 4E. Furadan 4F will perform best if applied close to the time of first egg hatch. Control will generally be improved if the treatment is cultivated into the soil. Lorsban 4E applications should be timed for the first appearance of second instar corn rootworms. For more information on insecticides, rates and restrictions, read the label, contact your local Cooperative Extension Office or visit the UNL Entomology home page at http://ianrwww.unl.edu/ianr/entomol/instabls/instabls.htm.

We do not have field performance data on cultivation time applications of insecticides against the resistant populations of western corn rootworm found near York and Holdrege, but laboratory data suggest that insecticide performance against larval rootworms may be reduced in areas where adult control has been difficult (Crop Watch, Oct. 4, 1996). We have two on-farm research trials this year in Phelps and York counties where we are examining performance of soil insecticides applied at planting and cultivation time.

Regardless of whether a soil insecticide was applied at planting, you should scout corn fields for corn rootworm larvae and damage. This will help determine whether an insecticide is needed if one was not used at planting, and will provide a check of the effectiveness of planting time insecticide applications. In particular, it is possible that corn treated at planting in April may experience less effective control due to the late hatch. In case of poor control, this will allow you to apply a rescue treatment before too much damage has occurred.

To check for larvae in a field, dig a 7-inch cube of soil centered on the corn plant. Sample a minimum of two plants at each of five sites in a field. Carefully search through the soil and plant roots for larvae. There are three larval instars (stages). The first instars are about 1/16 inch long and difficult to find without magnification. Often the first detected rootworms are second instars. Corn rootworm larvae are slender and cream-colored, with brown heads and a dark plate on the top side of the tail, giving them a (Continued on page 98)
Reports from the field

Gary Hein, Extension Entomologist, Panhandle Research Extension Center, Scottsbluff: Grasshoppers continue to feed on crops, with new seedings of alfalfa sustaining injury in areas of high grasshopper numbers. Newly planted fields of all crops should be checked for grasshoppers as the plants are emerging. As the hoppers grow they will become more damaging, especially at field margins.

Alfalfa weevils continue to feed, especially in the northern Panhandle. Wet weather has delayed chances of early harvest. Check harvested fields closely for larval feeding on the regrowth. Consider stubble treatment if you see more than eight larvae per square foot and delayed greenup.

Moderate sugarbeet root maggot activity has occurred, but this has been limited due to the weather. Watch for sugarbeet root maggot activity to increase as the weather warms and dries up. Leafminers in sugarbeets have been widespread. The end of this leafminer generation usually coincides with a period of rapid sugarbeet growth. Once leaf area is added to the beets, this insect has little impact.

Gary Hergert, Extension Soils Specialist, West Central Research and Extension Center, North Platte: The wheat looks good, but if we don’t get rain by the end of this weekend, wheat yield potential will be reduced. We are still 3 inches behind normal precipitation for the year. Corn planted early is developing well, with most between true V4 and V5 on Tuesday. There is a lot of yellow corn in the Platte Valley due to the cool temperatures and iron chlorosis. Differences between tolerant and non-tolerant varieties is very apparent. Warmer temperatures will help green things up some, but on higher pH areas, it looks as if there will be definite chlorosis effects. Cultivation is starting on many corn fields. The aeration, usually coupled with warmer temperatures, produces vigorous growth starting now. Later planted corn (May 10) is at the two- to three-leaf stage. Soybeans are coming up nicely.

Larry Peterson, Extension Educator in Grant County: Colorado State University has a web site that will monitor daily weather patterns as they relate to dry edible bean production problems. Forecasts of rust and other pests will be emphasized if warranted. The web site is http://www.colostate.edu/Orgs/VegNet/. This will include southwest Nebraska data.

Corn rootworms

(Continued from page 97)

double-headed appearance. Mature larvae are 1/2 inch long. Searching through the soil and roots over a sheet of black plastic will help make the small white worms more visible. There is no established treatment guideline for corn rootworm larvae, but some consultants advise treating if there are two or more rootworms per plant. The usefulness of this guideline depends on your ability to find rootworm larvae in the soil.

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

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Lisa Brown Jasa, Editor

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First gen. European corn borer eggs hatch

Freshly laid European corn borer eggs were found Wednesday (June 11) at Clay Center. Moth activity was first reported the first week of June in field margins in the southern tier of Nebraska counties. Light trap catches have been increasing since then.

First egg hatch usually follows the first moth flight by about 212 accumulated degree-days using 50 degrees F as the base. Presently, we are accumulating about 15 degree-days each day. First moth catch in light traps at the Northeast Research and Extension Center near Concord was June 5.

The cool weather this spring has significantly delayed corn growth and borer development. First thoughts might indicate no first generation borer threat this year, but things can always change rapidly. There always seem to be some fields of taller corn that are differentially attractive to egg-laying moths. Remember, corn borer moths will lay eggs on short corn. Survivalship of larvae however is influenced by plant height, plant resistance, and the environment.

If the corn plant is small (usu-

(Continued on page 100)

Management worksheet for first generation European corn borer larvae

1. Yield potential for this field
   Example field
   Your estimate
   bu/acre
   bu/acre

2. Number of larvae/infested plant = average live larvae/infested plant x average percent infestation (4 larvae x 50% infestation = 2 larvae/plant)
   larvae/plant
   larvae/plant

3. Potential yield loss (2 larvae/plant x 5% loss/larva = 10% loss in yield, 10% x 150 bu/acre = 15 bu/acre loss)
   __________

4. Dollar loss/acre (15 bu/a x $3.50 per bu = $52.50/acre loss)
   __________

5. Preventable loss (if chemical is 75% effective = $52.50 x 75% = $39.37)
   __________

6. Cost of chemical (ex. $8.00/acre) and cost of application (ex. $4.50/acre)
   Your estimate
   __________

7. Compare preventable loss ($39.37/acre) with total cost of treatment ($8.00 + $4.50/acre = $12.50/acre) or $39.37/acre - $12.50/a = $26.87 saved by the treatment
   __________
First generation ECB (Continued from page 99)

ally before the 6th-leaf stage) when eggs hatch, most of the larvae fail to become established. A greater proportion of larvae survive on corn in mid-to-late whorl stage when plants are in the 8- to 12-leaf stage. Some hybrids are resistant to whorl feeding by the larvae and first feeding results in immediate death. Native whorl feeding resistance is generally due to the presence of DIMBOA, a plant aglucone that usually decreases in effectiveness as the plant approaches tasseling. Bt transgenic corn expresses a resistance to corn borer due to a synthetic gene in the corn plant that was derived from a protein from Bacillus thuringiensis, a naturally occurring bacteria in the soil. Corn hybrids expressing both types of resistance and in combination, are available in the marketplace. Native whorl feeding resistance is only effective during the whorl stage, is governed by several genes, and its effective expression across hybrids is variable. Our research however, has validated several corn hybrids expressing whorl feeding resistance to the magnitude equal to or better than most insecticide applications. Bt transgenic corn hybrids are exceptionally effective in controlling borer larvae in the plant whorl.

Other factors over the next few weeks that will influence the magnitude of the first generation corn borer infestation include weather, i.e., warm, mild temperatures, high humidity and the absence of violent, hard driving rainstorms will favor egg survival and larvae establishment. High populations of lady beetles are detrimental to egg and young larvae.

Ideally, the decision of whether to treat should be made after all the eggs have hatched but before the corn borers reach 3rd instar (about 1/2 inch long) and begin leaving the whorl to borer into the stalk. Delaying treatment to just before borers leave the whorl allows for maximum natural mortality and increases the accuracy of predicting the average number of borers present to form cavities. However, don’t wait too long. Once the borers have formed a cavity and entered the stalk, control is not possible.

Following is a recommended scouting procedure and some recommendations on selecting an insecticide and application method. Use the worksheet on page 99 to determine whether treatment may be warranted.

Begin scouting fields every few days and track populations over time. Examine at least 25 corn whorls at each of several locations in each field for fresh whorl damage. Record the percent of total plants showing recent whorl damage. Unroll several damaged whorls at each site and record the number of live worms present. Multiply the average number of larvae per damaged whorl by the average percent of plants with whorl damage. Enter this number into the worksheet in Step 2. In Step 3, use an average figure of 5% loss in yield for each live larvae found per plant.

For more complete information, contact your local extension educator and/or purchase a copy of EC96-1509, Insect Management Guide for Corn and Sorghum.

The insecticide application can be ground, aerial or by chemigation. Each method has its pluses and minuses and its place. Granular formulations are more effective than liquid formulations if ground or aerially applied. Consider those products containing the bacteria, Bacillus thuringiensis or Bt. These products are non-harmful to beneficial insects and generally safer to the applicator. In any case always read the insecticide label before using.

For more information, contact your local extension educator or visit the Entomology home page on the web: ianrwww.unl.edu/ianr/entomol/entdept.htm.

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John Witkowski, Extension Entomologist, Northeast Research and Extension Center

Acres set aside offer opportunity for successful weed control

If left unattended, CRP set aside acres can turn into a real weed problem next year. Ideal growing conditions, coupled with no tillage, on set-aside acres set the stage for excellent control of perennial weeds. Controlling perennial weeds successfully with herbicides depends on having the right growing conditions and chemical application at the right growth stage.

The flower bud through flower stages are ideal for treating perennial weeds with 2,4-D, Banvel, and Roundup. Canada thistle, field bindweed, hemp dogbane, and common milkweed on undisturbed sites are approaching these growth stages. Swamp smartweed will reach treatment stage later. Set-aside acres are an opportunity to deal with these weeds without involving a crop. Apply 1.5 quarts 2,4-D ester (4 lb/gallon) or 1 quart 2,4-D + Banvel. Curtail is particularly effective on Canada thistle. Where annual grass and broadleaf weeds are a problem, Landmaster, a combination of Roundup and 2,4-D amine, is effective. Use caution when applying herbicides to minimize the chance of spray drift damaging nearby vegetation. When temperatures exceed 90 degrees Fahrenheit, 2,4-D ester and Banvel can produce vapors that drift and damage sensitive broadleaf plants.

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

For more information, contact your local extension educator or visit the Entomology home page on the web: ianrwww.unl.edu/ianr/entomol/entdept.htm.

June 13, 1997
Despite early season problems,

Alfalfa quality good; 1st cutting underway

The first cutting of alfalfa is underway or completed in many parts of Nebraska. Growers are urged to not wait for bloom to initiate cutting, since bloom may not occur or may be delayed due to the May frosts. While there is some concern throughout the state about uneven alfalfa stands due to the late frosts, I’m pretty optimistic about the quality of hay, especially if it gets put up before there is weather damage.

Overall, the May freeze and general cool temperatures may have caused a 10% loss of annual total yield. Approximately 2-3% of the total acreage in Nebraska was killed, with a greater degree suffering some early season damage. Few significant disease or insect problems have been reported in this year’s alfalfa; however, it would be wise to watch new seedings for signs of cutworm damage.

Historically, bloom often was used as a signal to plan for the first cutting. When bloom isn’t likely or is delayed, as is the case this year, consider these alternative approaches:

1. Examine the base. If new shoots are growing, it’s likely time to cut.
2. A more aggressive approach uses the calendar as a base. Day length and heat units influence how fast alfalfa develops. In a cooler spring like this year, plants are usually delayed just 5-7 days. Remember the date when bloom or your first cutting occurs in a normal year, assess the growing conditions, and then plan the first cutting for this year.

In some fields, the uneven plant height may seem to be in a mosaic pattern, with some alfalfa at knee height while a sizeable area next to it is just at ankle height. This pattern is typical of a lack of subsoil moisture in different areas of the field. This is particularly common in areas that were dry last year or in older fields reaching the point of using all available subsoil moisture.

If there is uneven growth among stems on a single plant, however, this is more indicative of a disease problem.

Recently a producer asked if it would be feasible to plant alfalfa under irrigation at this time. Planting dryland alfalfa now has little chance of success and irrigating it only increases the success potential to 25-40%. Instead, consider planting and irrigating a summer annual grass like foxtail millet. You can get a higher tonnage of hay this season, and plant alfalfa into the stubble in August with enough moisture to establish a new stand of alfalfa with less risk.

Bruce Anderson
Extension Forage Specialist

Control perennial weeds in grazing land now

Normally, late June is the best time to treat broom snakeweed, vervain, goldenrod sagebrush, snow-on-the-mountain, western ironweed, and western ragweed. There is a tendency to treat too late rather than too early. A good guideline for most perennials is to mow or apply the herbicide when weeds are in the early flower bud stage. Biennial thistles are an exception and should be treated in the rosette stage.

The most commonly used treatments are 2,4-D ester and a combination of 2,4-D and Banvel. Tordon is available for tough weeds and Crossbow is effective on woody plants. Grazing restrictions are minimal, with the exception of milking dairy animals. See the 1997 Herbicide Use Guide for Nebraska for grazing restrictions on herbicide treated grass land.

Uneven terrain often makes a uniform herbicide application difficult on grazing land. A marking system helps eliminate missed strips. Use care when applying herbicides near sensitive crops, gardens, windbreaks, and farmsteads. Injurious drift can occur for 0.5 mile or more.

Alex Martin
Extension Weeds Specialist

Hammons named NCIA manager

The Nebraska Crop Improvement Association has announced that Dennis Thompson, NCIA secretary-manager, will retire June 17. Roger Hammons, currently NCIA associate manager, will become the new secretary-manager.

Thompson has been active on the state and national level, serving on the Executive Committee of the Association of Official Seed Certifying Agencies, the Advisory Committee and numerous AOSSCA committees.

Hammons has been with NCIA for 20 years as associate manager.

John McNamara, Extension Assistant, Weed Science

John McNamara, Extension Assistant, Weed Science

Alex Martin
Extension Weeds Specialist

John McNamara, Extension Assistant, Weed Science
Precipitation (% = percent of average)

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Common stalk borer

Growing degree day accumulations on a 41 F base for stalk borers. Begin scouting at 1,300-1,400 accumulated GDDs.

The weather data on this page is provided as space is available. For data on more emergence dates and maturity classes, consider subscribing to CropWatch on the web, where crop water use data is updated daily and other weather information is provided in more detail.

Degree day accumulations for wheat, corn, soybeans and sorghum*

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*MC = maturity class
Growing degree days to maturity for early season (1), mid season (2) and late season (3) crops:
Corn: MC1 = 2400; MC2 = 2500; and MC3 = 2750
Wheat: MC1 = 1600; MC2 = 1840; and MC3 = 2000
Soybeans: MC1 = 1950; MC2 = 2360; and MC3 = 2450
Sorghum: MC1 = 2125; MC2 = 2200; and MC3 = 2369