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## CropWatch No. 2003-18, July 11,2003

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Jasa, Lisa, "CropWatch No. 2003-18, July 11,2003" (2003). *Crop Watch*. 44.

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# CROP WATCH

University of Nebraska Cooperative Extension  
Institute of Agriculture and Natural Resources

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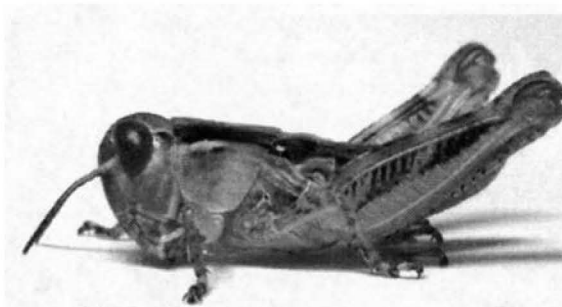
No. 2003-18, July 11, 2003

## Grasshopper control with ATV-RAATs

Recent grasshopper activity has increased concern about serious damage occurring when maturing grasshoppers move into cropland in the next few weeks. Treating immature grasshoppers now in the areas adjoining cropland is a good strategy to managing later grasshopper movement.

These adjoining areas can be treated using the reduced agent and area treatment (RAAT) strategy of control. The RAAT method was developed to allow economical application of insecticides to reduce populations below a level that will cause economic damage in rangeland. This method can be modified for use in range, pasture, and non-crop areas adjoining cropland to prevent movement of grasshoppers from these areas when their food sources dry up.

Typical RAAT treatments are applied via air with lower chemical rates. Treatment is applied only to about 50% of the acreage by treating alternate swaths. This strategy also



Migratory grasshopper 4th instar nymph. The migratory grasshopper is one of the four species which commonly cause the most crop damage in Nebraska.

has been shown to be effective with an ATV sprayer applying narrow treatment swaths. Any sprayer could be used to treat the swaths, but an ATV will be able to cover rougher terrain. An advantage of this method is the use of narrow swaths that reduce the distance the grasshoppers need to move to enter

a treated area.

The RAATs strategy takes advantage of natural grasshopper behavior -- over time they will move from feeding zones into treated zones and be controlled. Also, natural enemies will survive in the untreated zones and continue to exert a controlling influence on the grasshopper population.

The effectiveness of the RAATs strategy relies

on several factors. **First, and most importantly, the grasshoppers must be immature to enable better control. Third and fourth instars are the ideal stage to target.** Next, the residual of the product used must be maximized to enable grasshoppers to move from the

*(Continued on page 171)*

## Winter wheat combines roll across state with few problems

Wheat harvest is progressing across the state with many reporting better yields than they had expected. Following is a roundup of reports on wheat harvest and crop production from educators and specialists across the state.

**Randy Pryor, Extension Educator in Saline County:** Wheat harvest is 95% complete with the highest yields I have seen since

1982. There are numerous reports of 60 and 70 bushel per acre farm averages on dryland wheat. Chinch bugs are causing problems in some areas of the county and border treatments are being used in adjacent corn and sorghum.

Leafhopper damage occurred in many alfalfa fields and most

*(Continued on page 172)*

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## Updates

### Biotech update

**Larry Schulze, Extension Pesticide Education Specialist, writing in the June "The Label" newsletter published by the University of Nebraska:** A report to be published in the Proceedings of the National Academy of Sciences reports that Canadian researchers have developed technology that could render biotech crops unable to crossbreed with conventional crops. Eastern Cereal and Oilseed Research Center researchers in Ottawa say they have bioengineered a tobacco plant that can only breed with the exact same variety. (Source: The Gene Pool Newsletter, Vol. 6, Issue 18.) The Label newsletter can be found online at <http://pested.unl.edu/thelabel>

### Diagnostic Clinic report

**Jennifer Chaky, Extension Educator, NU Plant and Pest Diagnostic Clinic:** Samples received from June 16 to July 3 included the following:

**corn** - bacterial leaf blight;

**soybean** - rhizoctonia lesions on the stem (this has been very common), Fusarium and Pythium;

**wheat** - bacterial stripe, black sooty head molds (Alternaria and Cladosporium), Fusarium head scab, loose smut, stripe rust, septoria leaf blotch (*S. nodorum* and *S. tritici*), and powdery mildew.

We also have seen some samples of herbicide damage in alfalfa, corn, sorghum and soybean.

### Crop condition report

**USDA Nebraska Agricultural Statistics Service:** Soil moisture for both topsoil and subsoil generally is short to adequate with top soil being 30% short and 64% adequate and subsoil being 35% short and 53% adequate. For the week ending

July 6 temperatures averaged above normal, up to 7 degrees in some areas.

**Corn** condition declined and rated 1% very poor, 2% poor, 19% fair, 57% good, and 21% excellent, above last year and average. Irrigated corn rated 79% good and excellent while dryland rated 77%. Fields were beginning to silk in a few areas of the east and southwest, behind last year at 6% and average at 5%.

**Soybean** condition rated 2% poor, 21% fair, 61% good, and 16% excellent, above last year and average. Two percent of the fields were blooming, behind last year at 16% and average at 13%.

**Oat** condition rated 1% very poor, 1% poor, 19% fair, 57% good, and 22% excellent, well above last year and average. The crop was 98% headed, behind 100% last year and near 97% average. Harvest for grain was making a start with 3% combined, behind 26% last year and 10% average.

**Sorghum** condition rated 4% poor, 29% fair, 58% good, and 9% excellent, above last year and average.

**Wheat** condition rated 4% very poor, 10% poor, 25% fair, 48% good, and 13% excellent, well above last year and the five-year average. Wheat fields had turned color on 94% of the acreage, behind the 100% last year and 97% average. Forty percent of the acreage was ripe, well behind last year at 83% and average at 60%. Harvest made good progress with 15% completed, but was 10 days behind last year at 60% and a week behind average at 37%.

**Dry bean** condition rated 2% very poor, 5% poor, 24% fair, 57% good, and 12% excellent.

**Alfalfa** condition declined and rated 4% poor, 25% fair, 53% good, and 18% excellent, above last year and average. Second cutting activities progressed to 29% harvested, behind last year at 46% and average at 35%. Wild hay condition rated 1% very poor, 5% poor, 23% fair, 56% good, and 15% excellent.

**Pasture and range** condition rated 3% very poor, 11%, 34% fair, 43% good, and 9% excellent. With temperatures peaking above 100 degrees, extra care was being given to livestock in confined areas.



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*Crop Watch* is published from March to November by Cooperative Extension and Communications and Information Technology in the University of Nebraska Institute of Agriculture and Natural Resources, PO Box 830918, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order a print subscription or to change your address, write to *Crop Watch* at the above address or call (402) 472-7981. The newsletter also is available on the web at [cropwatch.unl.edu](http://cropwatch.unl.edu)

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Lisa Jasa, Editor; Email: [ljasa1@unl.edu](mailto:ljasa1@unl.edu)



## RAATs-ATVs *(Continued from page 169)*

untreated zones into the treated zones to contact the insecticide. In addition, application techniques must be ideal to enable uniform application of the product in the treated zones. Control in a RAATs treated area will likely be slightly lower (5-15%) than a comparable blanket treatment area, but the much reduced cost makes the method a great benefit.

Three products are labeled for grasshopper control in range, pasture and non-cropland areas (carbaryl, malathion and diflubenzuron) and would be appropriate for treating these areas around cropland. The residual for malathion will be short, perhaps only a few days. Carbaryl (Sevin XLR+) will last longer and at higher application rates may last two to three weeks. Diflubenzuron (Dimilin 2L) has a very long residual and will last 28 days or more at higher rates. The longer residual products have a better chance of success in the ATV-RAATs program.

Techniques for ATV-RAATs application are quite different from those used in aerial RAATs. Whereas application rates for aerial RAATs are reduced, recommendations for ATV-RAATs are to use the maximum labeled rate (1 oz/A Dimilin 2L, 32 oz/A Sevin XLR+). The RAATs strategy works by taking advantage of the movement behavior of the grasshoppers in that over time they will move into the treated zones and be controlled. Also, by leaving some areas untreated, natural enemies will survive and continue to exert an influence on the grasshopper population.

The amount of treated area with this program will vary depending on grasshopper density and grass forage coverage. The percent of the area treated should be equal to the grasshopper density with a minimum of 20% coverage. For example, if you have 30 grasshoppers

per square yard in the areas to be treated, leave two untreated swaths for every swath that is sprayed (33% coverage). A second major factor that will impact optimum swath width is the density of foliage. Dense, lush foliage will slow grasshopper movement from the untreated to the treated strips. In these situations consider an increase in treated area (narrower skip swaths).

Mixing and application of these products is enhanced with the use of 8 oz/A crop oil to the mixture. Tests also have shown that canola

oil may offer some advantages over crop oil in attracting grasshoppers into the treated areas. To maintain mixability, use at least 15% crop oil; for example 1.2 oz crop oil plus 7 oz canola oil.

More information on cropland grasshopper management and ATV and aerial RAAT treatments can be found on the University of Nebraska Department of Entomology Web site at <http://entomology.unl.edu/grasshoppers/index.htm>.

**Gary Hein**  
Extension Entomologist  
Panhandle REC

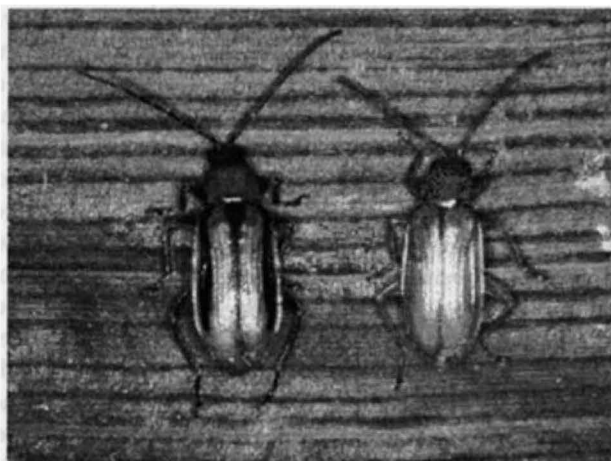
## Rootworm beetles expected to emerge soon

Western corn rootworm beetle adults were found at Clay Center starting Monday and likely could be expected in southern and central corn fields. I will discuss rootworm beetle scouting recommendations fully in the next issue of *Crop Watch*.

Regular scouting of rootworm beetles during late July and August, which corresponds with their egg-laying period, provides information on the potential for damage in that field if it is planted to corn next year.

Be aware that rootworm beetles emerging before silks are available will feed on the corn leaf surface by scraping away the green surface tissue, producing a window-pane appearance on the leaf. This is not an economic concern.

As silks emerge beetles will



**Adult western (left) and northern corn rootworms**  
(Jim Kalisch, UNL Entomology)

concentrate in the first silking fields to feed on silks and pollen.

Complete information on rootworm beetle scouting and thresholds is available in "Corn Rootworm Management" (NU EC 1563) available online at <http://www.ianr.unl.edu/pubs/insects/ec1563.htm>

**Bob Wright**  
Extension Entomologist  
South Central Ag Laboratory

## Wheat harvest *(Continued from page 169)*

producers are harvesting low yields on second cutting alfalfa. Older alfalfa fields are under moisture stress and were damaged more by the leafhoppers. The rainbucket has been at zero for the last two weeks and dryland crops are hanging on but suffering, particularly in the dryest area south and southeast of Friend.

**Gerald Hopp, Extension Educator in Richardson County:** Wheat harvest is in full swing. Yields are astoundingly good with reports of top quality wheat at 70-80 bushels per acre. Corn tasseling started last week in many fields. It's not a usual practice in this area, but some farmers drilled oats this spring with the specific intent of using it as hay. That crop is being harvested now.

**Paul Hay, Extension Educator in Gage County:** The southeast Nebraska wheat crop was very good with yields in the range of 45-60 bushels per acre with good moisture condition and good test weights. Three fields with 0-25 bushel yields provide harsh reminders of the impact of disease and insects. If you plant wheat within two years of brome grass pasture, take-all disease can be very real (10 bu/ac). In addition when common bunt or stinking smut aren't identified in the seed, the results can be disastrous and the wheat unharvestable.

When planting next year's wheat into soybean stubble, remember that this stubble can be dry and low in available nutrients so make sure your seeding depth is 1.25-1.5 inches. Use starter fertilizer to get the crop off to a quick start so it will be thick enough to thwart chinch bugs.

**Karen DeBoer, Extension Educator in Cheyenne County:** Wheat harvest started in the eastern part of the southern Panhandle late last week. Custom harvest crews were expected in the area this week.

The recent hot, dry conditions have helped as the grain moisture content was 11% in one field cut on Sunday.

**Drew J. Lyon, Extension Dryland Crops Specialist at the Panhandle REC:** Hot, dry weather throughout most of the Nebraska Panhandle has moved winter wheat development along rapidly in the last few weeks. I anticipate wheat harvest to begin this week on the lighter soils and move into full gear this weekend and next week throughout the area.

What effect the recent weather will have on wheat yields and quality will soon be known. Spring rains resulted in the potential for an excellent wheat crop, but mostly dry conditions in June, along with some very warm temperatures the last few weeks certainly trimmed yield expectations. However, wheat never ceases to surprise, as exhibited by the surprisingly good yields last year given little or no precipitation from January through harvest in July of 2002.

## Fusarium head blight found in some southern NE wheat

Fusarium head blight (also known as wheat scab) has been reported in some fields in southeast and south central Nebraska. While it's not a major problem, growers should be aware that it may be present and avoid contaminating disease-free grain during harvest.

Symptoms of fusarium head blight are most conspicuous after the soft dough stage on immature wheat. The fungus may attack the entire head or only part of it. Diseased heads appear to have ripened prematurely. During warm, humid weather, infection produces a salmon orange to pink ring of mycelium and spores at the base of the spikelet or in the crease of the kernel. Infected spikelets take on a tan to brown color and are usually sterile or only partially filled. Infection of the young, developing grain results in shrunken kernels that have a dull, chalky, tombstone-like appearance. These kernels are easily crushed. A tuft of whitish pink mycelial growth may be seen on the seed.

If a wheat field appears to be infected, harvest it last and keep the grain separated from non-infected

grain. Increasing the air on the combine will have a tendency to separate and blow out a lot of the lighter, diseased kernels.

Fusarium head blight can produce toxins harmful to animals. If scab-infected grain is to be used for feed, the grain should be tested for vomitoxin and zearalenone. If it is to be fed to horses, include a fumonisin test. Fumonisin can cause equine leukoencephalomalacia in horses. Straw from nonharvested, scab-infected fields should not be used for bedding for swine or horses without being screened for mycotoxins.

An NU Cooperative Extension NebGuide, "Scab of Wheat" (G94-1207) provides information on disease symptoms, life cycle, management, potential affect of mycotoxins, and guidelines for using infected grain. This publication, which is available on the Web at <http://www.ianr.unl.edu/pubs/plantdisease/g1207.htm>, also includes color photos to aid in identifying diseased wheat and vomitoxin advisory levels.

**John Watkins**  
Extension Plant Pathologist

## Nitrogen found to increase Bt levels in young corn

Bt concentrations in young corn plants are directly influenced by the amount of nitrogen fertilizer applied at planting, according to research conducted at the USDA-ARS Jamie Whitten Delta States Research Center in Stoneville, MS. The results were discussed in an article by H. Arnold Bruns and Craig A. Abel in the January-February issue of *Agronomy Journal*.

Two corn hybrids with different types of Bt toxin were used in the experiment. Two plantings of these hybrids were grown in greenhouse pots. Ammonium nitrate was blended into the potting mixture prior to planting. Fertilizer rates used in the experiment represented zero, low, normal, and high amounts of nitrogen used to grow corn. Pots were carefully watered to avoid leaching of the fertilizer during the experiment. When the plants had five fully extended leaves, sample tissues were taken to determine the Bt and nitrogen concentrations of the plant.

The levels of Bt toxin and total nitrogen in the plant steadily increased as the amount of nitrogen fertilizer increased. Both Bt hybrids responded the same to increasing levels of nitrogen fertilizer.

Increasing available nitrogen is known to increase protein levels in most plant species, especially in vegetative cells. Much of this increase is in the form of enzymes. The authors suggest that as nitrogen levels increase, more Bt  $\delta$ -endotoxin synthesizing enzymes are likely produced, which could result in more of the Bt protein being synthesized.

"The effectiveness of Bt hybrids to avoid insect damage may be dependent on the amount of nitrogen fertilizer applied to the crop early in the growing season. Further research will be necessary to determine if similar effects to Bt concentrations can be found in more mature corn. These findings could affect the way we manage nitrogen fertilizer

applications to Bt hybrid corns," Bruns said.

Based on the results from this one-year greenhouse study, researchers are now conducting multi-year, full-season field trials. Nitrogen rates ranging from 0 to 300 lbs per acre were applied to help determine how different rates may affect the extent of the nitrogen advantage over a longer term. In the preliminary study, plant tissue samples were taken at the five-six leaf stage; however, in the field studies, plant tissue samples will be taken at silking and analyzed for Bt content.

These early results indicate that adequate levels of nitrogen are essential to get the effect of Bt that you desire, Bruns said. General

timing of the application may not be as critical as ensuring that the nitrogen is available when the plant needs it.

"If you're investing that kind of money [in Bt corn], you want to get the maximum benefit from it," Bruns said.

In the *Agronomy Journal*, the authors suggested that further research also would be needed to "determine if the Bt protein remains intact after synthesis or if it can be degraded and translocated and the nitrogen utilized in developing tissue, thus rendering the plant susceptible to insect attack."

**Larry Schulze, Extension  
Pesticide Education Specialist  
Lisa Jasa, CropWatch**

## *Ascochyta blight in chickpeas*

Interest in chickpea production as an alternative crop in western Nebraska has grown rapidly. Production has increased substantially over the last several years, with an estimated 10,000 acres grown in 2001.

*Ascochyta* blight, caused by the fungal pathogen, *Ascochyta rabiei*, is the most serious and widespread disease of chickpeas in the world. A severe epidemic of this disease occurred in Box Butte County in 2001, causing complete crop failure in those fields that were not treated. Disease development is most rapid at temperatures of 68°-70°F, and high relative humidity (leaf wetness periods of more than six hours).

Symptoms on leaves and pods consist of circular lesions with dark brown concentric rings of pycnidia (spore-bearing structures). Petioles and stems contain elongate lesions. The pathogen is seedborne. Early in the season infected plants will appear scattered in fields and can serve as foci for further disease spread under conducive conditions. This disease has been identified at

numerous locations in Box Butte County and from Keith County, near Ogalalla.

Growers in all production areas need to be alerted to this problem and be prepared to treat affected fields. It is important to remember to be particularly attentive to protecting young green foliage during pod fill.

Affected fields can be treated with fungicides, and several are currently labeled for chickpeas, including Bravo and Headline. To reduce pathogen survival, infected residue should be buried with tillage and volunteer plants controlled.

Additionally, chickpeas should not be grown more frequently than every three to four years, and new crops should not be planted near previously blighted fields. For more detailed information, see "*Ascochyta Blight of Chickpeas*," NebFact 02-543, available from your local Cooperative Extension Office or online at <http://www.ianr.unl.edu/pubs/plantdisease/nf543.htm>

**Robert M. Harveson, Extension  
Plant Pathologist, Panhandle REC**

## Hastening hay drydown

High humidities and dew points make it difficult for hay to dry fully. To harvest alfalfa successfully, you need to minimize rain damage and dry the hay as quickly as possible. While you can't control the weather, you can take steps to protect your hay and its value.

Exposure to sunlight is the most important factor for drying hay rapidly. Avoid bunching or mounding windrows up high. Instead, begin by making your swath loose and wide, at least half the width of the mown area for as much exposure as possible. If your soil is moist, though, leave enough ground uncovered so later you can turn hay onto some dried out soil.

Turning hay to speed drying so you don't lose many leaves takes skill and good judgement, especially when you have many acres to cover.

Shortly after mowing, after the windrow has started to settle and top leaves are fairly dry, a tedder or fluffer can be used with little leaf loss to expose hay underneath to sunlight while maintaining a loose, spread out windrow.

But don't ted or fluff after hay gets too dry to retain leaves and don't rake too early unless you're able to gently flip the windrow upside down onto drier ground without losing leaves or roping the hay.

Final raking should occur when just the bottom of the windrow needs a little more drying and while humidity is high enough to help leaves on top stay attached to the stems.

**Bruce Anderson**  
Extension Forage Specialist

## Adjust haying for sweet clover

Producers may be noticing an abundance of yellow sweet clover in their hay this summer. A legume, sweet clover produces its own nitrogen and can provide more nitrogen for adjacent grasses than most other legumes. It may even give your pastures a production boost the following year.

It also provides good quality grazing similar to alfalfa before plants bloom heavily. After blooming, though, sweet clover gets stemmy and woody, reducing both feed value and palatability. Even young plants are quite bitter, so if other plants are available cattle will graze only limited amounts of sweet clover. This greatly reduces bloat hazards, which is a risk when sweet clover is abundant.

The biggest risk from sweet clover is in hay, specifically in moldy hay. Spoiled sweet clover

produces a chemical called dicoumarin that interferes with metabolism and synthesis of vitamin K. Without vitamin K, blood will not clot properly after an injury and can even seep out of otherwise healthy blood vessels. That's why sweet clover poisoning also is called sweet clover bleeding disease.

Make sure hay containing sweet clover is extra dry before baling or storage to prevent mold. And remember — mold can develop on perfectly dry bales if they get wet so avoid outdoor storage. If you must feed moldy sweet clover, alternate by feeding moldy hay for a week followed by alfalfa or other non-moldy forage for a week. This intermittent feeding is safer than mixing good and moldy hay together.

**Bruce Anderson**  
Extension Forage Specialist

## Republican River basin drought, focus of water tour

A three-day tour of Nebraska's Republican River Basin will spotlight continuing drought conditions in the area and local reaction to provisions of last winter's settlement of the water lawsuit between Kansas and Nebraska. The annual University of Nebraska/Kearney Area Chamber of Commerce Water and Natural Resources Tour leaves Kearney Tuesday, July 22, and returns there Thursday, July 24.

"Drought conditions in the area seem to have mitigated to some degree this spring, but I think most would agree that it's way too early to say the drought in southwest and south central Nebraska is over," said tour co-organizer Michael Jess, associate director of UNL's Conservation and Survey Division and acting director of the UNL Water Center.

Highlights of the tour, which features dinner and evening stops at historic sites, include:

- discussions at Imperial with local natural resources district officials on water well permit moratoriums, metering compliance and exchange of groundwater among local irrigators;

- visit to Harry Strunk Reservoir to look at outcroppings of the Ogallala formation. Officials of the Frenchman-Cambridge Irrigation District will address drought and lawsuit settlement issues in their district;

- discussions with Lower Republican NRD officials and a tour of Harlan County Reservoir;

- visit to the Guide Rock Diversion Dam, where the Courtland Canal diverts Republican River water to neighboring Kansas.

Cost is \$375 single occupancy or \$325 double occupancy. For more information on the stops not listed here or to register, contact the Kearney Area Chamber of Commerce at (800) 652-9435.