6-6-2003

CropWatch No. 2003-13, June 6, 2003

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

University of Nebraska Lincoln

No. 2003-13, June 6, 2003

In northeast Nebraska

Alfalfa weevils slowing regrowth

Calls from consultants, coop managers, farmers and personal visits to area alfalfa fields are indicating that some fields in northeast Nebraska are not greening up as quickly as expected due to feeding by alfalfa weevils. This does not affect every field, but we have received calls that cover almost our whole northeast area.

Most of the failure to green up can be attributed to larval feeding on new growth. This is unusual but not unprecedented. Fields in Boyd, Holt, Knox, and Antelope counties experienced the same situation in 1999, and similar occurrences have been reported in the Panhandle over the years.

The cool spring has delayed alfalfa weevil development. Normally by now alfalfa weevils have pupated into cocoons and turned into adult weevils (small brown beetles with rigid snouts). Usually the adult weevils are associated with the delay in green up of the second cutting; however, this year the larvae are still present (small, yellow to green legless worms with white stripes down the back, about 1/8 to 1/4 inch long) and feeding on new growth after the first cutting. The larvae will be smaller in the northern counties, while in the southern counties there may be a mixture of larvae, cocoons, and adults.

Management

If you haven't cut your alfalfa yet, do so and remove it from the field as soon as possible. Often the cutting will kill enough larvae to eliminate the need for an insecticide treatment (*Table 1*). Also, most insecticides have a preharvest interval of seven days or more and most growers want to harvest alfalfa now rather than wait. (Mustang Max has the shortest preharvest interval: three days.)

To decide whether an insecticide treatment is necessary, first determine if the regrowth has been held back enough to justify an application (*Table 2*). Generally, with the rain we have had, anything not greening up four to six days after regrowth probably has a problem. Then determine the percentage of larvae, cocoons, and adults present. If two to three larvae per crown are found and the alfalfa is not greening up, an insecticide is necessary.

If there are no cocoons, spray as soon as possible. Spraying will not greatly affect the weevils in the cocoon stage until they emerge and become active. The pupae stage in the cocoon lasts 7 to 14 days. Adults will feed for a week or so after emerging, so this also may affect

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Inside

Treatment window for wheat rust closing for most of the state

The window for applying a fungicide to wheat for protection against stripe rust and other foliar diseases has passed for much of the state with the exception of some areas in the far west. Wheat cannot be treated with a foliar fungicide beyond growth stage 10.53 on the Feekes scale which corresponds to flowering. A lot of the wheat that I examined this week is 1/2 to 3/4 berry which is well beyond flowering. Any wheat that is just now in the flowering stage (yellow anthers protruding from the florets) could still be treated; however, you'll need to decide now since the treatment window will pass quickly.

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Updates

While recent rains have been well received, subsoil moisture levels in many areas of the state continue to cause concern for the wheat crop, according to reports from Extension specialists and educators. In a phone conference Wednesday, Bob Klein, Extension crops specialist at North Platte, reported that in areas where the rains had been spotty or nonexistant, wheat was deteriorating rapidly. Areas in the Republican River Valley and near McCook have received rain and the crop is reported to have responded well.

In some areas of western Nebraska wheat has already used most of the available moisture and needs irrigation or precipitation. Wheat is particularly vulnerable to water stress at this time and yields may suffer.

According to the USDA Nebraska Agricultural Statistics Service: Wheat condition declined slightly last week and rated 1% very poor, 10% poor, 30% fair, 45% good, and 14% excellent, above last year and the five-year average. Wheat fields were 69% headed statewide, ahead of last year at 63% but the same as average.

Jennifer Chaky, Extension Educator in the UNL Plant Diagnostics Laboratory: Field crops have been a little slow coming into the clinic, so I am reporting on the last two weeks in this issue.

We received the following samples between May 20 and June 3:

Alfalfa - spring black stem and leaf spot (Hamilton County);

Corn - environmental effects on corn emergence (coleoptile growing down) (York County); pythium seedling disease (Holt County);

Wheat - stripe rust (Hall and Nance counties), septoria leaf blotch (Hall County).

Bob Wright, Extension Entomologist at the South Central Ag Laboratory: European corn borer moth flight has begun in south central Nebraska. Light traps are operated by UNL faculty at Aurora and Clay Center, with more locations to be added later. Updated light trap reports can be found through the UNL Department of Entomology Web site at *http://entomology.unl.edu/fldcrops/index.htm*

I received a sample of millipedes and crane fly larvae from a seedling corn field. In one case the crop consultant thought the millipedes were injuring germinating seed and causing stand loss. Millipedes normally feed on decaying organic matter but have been reported to damage crops occasionally. Emerged plants are unlikely to be damaged. The recent cool wet weather encouraged millipede activity at the soil surface. Crane fly larvae are sometimes mistaken for cutworm larvae, but they feed only on decaying organic matter in the soil. They can be distinguished from cutworms by the lack of legs and lack of a well-developed head.

John Wilson, Extension Educator in Burt County: Corn and soybean planting (and replanting) was basically completed over the past weekend. Last Friday (May 30) we received enough heat GDDs from our first peak flight that we are in the window when we would anticipate seeing black cutworm feeding damage this week. I recorded four significant flights between April 30 and May 5 this year so, with them being that close together, I'd expect damage from all of these to run together. We will accumulate enough GDDs today for the last of the flights.

Paul Hay, Extension Educator in Gage County: Planting is largely completed. Corn, soybeans and milo look good. Leaf stripe is attacking wheat fields and will likely decrease yields by at least 10%. We also have a lot of loose smut, 3-4% of heads will have no yield. Chinch bugs are being reported rather frequently. They will pose a problem later for milo and corn growers.

Ralph Kulm, Extension Educator in Holt and Boyd counties: The rains have missed this area, allowing for planting to be completed and a lot of alfalfa and small grain to be harvested for hay. The problem is that we're running out of moisture and soon could be back in drought trouble. The winter wheat is losing its lush look also with rust starting to show up in some fields. Hopefully we will receive moisture this week.

CROP WATCH

cropwatch.unl.edu

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 subcription 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**

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Alfalfa weevils *(Continued from page 121)*

regrowth. Spraying now will enable the new growth to get a "jump" on any late emerging adults. Because of the lack of vegetation in the newly harvested fields, rates of registered insecticides in the low range should do the job. However, to get better residual activity, use rates in the mid to upper end of the label.

Some salesmen are suggesting a "combo" of two products with different modes of action. For example, Lorsban (an organophosphate) withWarrior (a pyrethroid). While the rates of both may be lower in the combo, the price of the two combined may be higher than when using a medium range rate of a single product. With the products listed in *Table 1*, there is no reason to mix them as a "combo", unless other harmful insects are present. All of the suggested insecticides will control other alfalfa pests, as well.

Stubble treatment calculation

After cutting and removing the hay, examine the stubble in several areas for evidence of continued feeding. Sift through the litter where the windrows were, checking in and around crowns for larvae, pupae, and adult weevils. *Table 2* provides a calculation for determining if an insecticide treatment of the stubble would be necessary if regrowth will be delayed by alfalfa weevils. It calculates the number of days of complete defoliation that can be tolerated before an insecticide treatment will be economically warranted. The number of days will vary, depending on the cost of treatment, hay value and whether the hay is cut at first bloom or on a 28-day harvest schedule.

Keith Jarvi, Extension IPM Specialist, Northeast REC

Table 1. Suggested insecticides for alfalfa weevil (all are labeled for larvae and adults): Prices are approximate and are used for comparison. Price per acre depends on the rate used. Contact your local dealer for current prices. Application costs are extra.

Insecticide	*Rate per acre*	*Preharvest interval*	*Approximate cost*
Baythroid 2 E	1.6-2.8 oz	7 days	$2.20 per oz
Furadan 4 F	0.5-2.0 pts	0.5 pt, 7 days	
		1.01 pt, 14days	
		2.0 pts, 28 days	$9.00 per pint
Lorsban 4 E	1.0-2.0 pts	1.0 pt, 14 days.	
		Over 1.0 pint, 21 days	$4.00 per pint
Mustang Max	2.24-4.0 oz	3 days	$1.25 per oz
Penncap-M	2-3 pts	15 days	$4.00 per pint
Warrior	2.56-3.84 oz	1 day for forage,	
		7 days for hay	$2.00 per oz

Table 2. Alfalfa weevil stubble threshold calculation.

Factors	*Example*
A) Insecticide plus application	$10.00 per acre
B) Value of hay (dollars per ton)	$80.00 per ton
C) Loss Factor (cutting at first bloom 0.02; cutting at 28-day interval 0.035)	
D) Days if complete defoliation	6.25 days that can be tolerated

To estimate D, multiply B by C, and divide into A. The example is calculated as follows: D = A/(B*C) = 10.00/(80.00*0.02) = 6.25

Wheat rust

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Another factor in the treatment decision is the so called "threshold level" for treatment. It's not like counting the number of insect eggs on a corn leaf at a certain growth stage. With wheat rusts it isn't that clear cut. The objective of treating wheat is to reduce infection of the flag leaf and head to maximize the grain filling period.

If the rust severity on the flag leaf is already greater than 20% before treatment, much of the benefit of treatment will have already been lost because that 20% will probably become 40-50% in a few days regardless of treatment. If the flag leaf has 10% or less rust severity at the time of treatment, the fungicide will probably hold rust severities to an acceptable level. The decision to treat has to be made early before the disease has had a chance to build up on the upper part of the plant.

In making a decision, consider the following criteria for treatment:

- The variety is susceptible.
- The yield potential is high, for example above 50 bu/A.
- The wheat is being grown for seed or is high input irrigated wheat.
- The wheat is in the boot stage of development.
- Disease (rust, leaf spot or mildew levels) are moderate on the lower half of the plant with only light (less than 10%) infection on the flag and flag-1 leaves.
- Current and 30-day weather forecasts are for periodic rains.

John Watkins
Extension Plant Pathologist

Controlling weeds in alfalfa after first cutting

Now that alfalfa stands across the state are well into first cutting, herbicide selections are severely limited. Herbicides such as Lexone/Sencor, Roundup Ultra, Velpar, Zorial, and Karmex are no longer an option, due to injury.

Typically there is a 5- to 10-day window after the first cutting for weed control. Once you take the first cutting, you dramatically change the crop canopy for the field. Weeds that germinate after the crop can now get the sunlight they so desire for growth and, now that these weeds are more visible, you can target them with your spray boom. If you wait much past the 10-day window, you may run the risk of having increased crop canopy, taller weeds and problems with the 30-day pre-harvest interval with such herbicides as Butyrac or Pursuit.

Several herbicides can be used to control these weed species on established stands (one year or more) after dormancy. **Butyrac** (2,4-DB) is a growth regulator that is converted to 2,4-D within the plant through an enzymatic process not found in alfalfa plants. Butyrac has fair activity on many annual broadleaf weeds at 1-3 qt/A. The effect of Butyrac on mature mustards will be very limited. Butyrac should not be used when temperatures are expected to fall below 50°F for three days after application.

Poast at 1.5-2 pt/A, **Poast Plus** at 1.5 to 3 pt/A and **Select** at 6-8 oz/A will have good activity on most annual grasses but will not control broadleaves. Growers should be aware of the 14-15 day preharvest interval with these products. In addition be sure to use the additives suggested on the herbicide label. **Pursuit** can be used at 1-2 oz/A with good activity on sunflower, kochia, and pigweeds.. **Raptor** can be used at 4-6 oz for control of waterhemp (not ALS- resistant), nightshade, yellow foxtail, kochia, and pigweed. **Select** will provide excellent control of downy brome at 6-8 oz/A.

In fields where this control will not be effective enough, growers will need to wait until fall, after dormancy. Once the alfalfa stand has gone dormant, winter annuals can be more easily controlled with treatments such as Roundup Ultra, Lexone/Sencor, Velpar, Zorial, Gramoxone Extra, and or Karmex. The best advice for producers at this time is to assess the quality of the stand and weed growth stage, control what weed species they can this late in the season and throughout the summer, and regain control of winter annuals once the stand has gone dormant in the fall.

Brady Kappler
Extension Educator – Weed Science

Weed science field days rescheduled

Due to the slow growing season and drought in western Nebraska, two of the stops on the annual Weed Science Field Day Tour have been rescheduled and one has been cancelled. The field day originally set for June 17 at the South Central Research and Extension Center at Clay Center has been rescheduled for 9 a.m. June 26. The field day originally set for June 25 at the Haskell Agricultural Laboratory at Concord has been rescheduled for 1 p.m. July 10. The field day originally scheduled for June 18 at North Platte has been cancelled.

Other weed tour dates remain the same as follows:

Wednesday June 18

3:00 p.m. (MDT), Sidney, High Plains Agricultural Laboratory

Thursday June 19

9:00 a.m. (MDT), Scottsbluff, Panhandle Research and Extension Center

Tuesday June 24

9:00 a.m., Lincoln, Havelock Research Farm

Brady Kappler, Extension Educator - Weed Science

Governor names June Noxious Weed Awareness Month

Governor Mike Johanns recently signed a proclamation recognizing the potential noxious weeds have for reducing crop yield and proclaiming June as Noxious Weed Awareness Month.

"Noxious weed control is essential to Nebraska's number one industry -- agriculture," said Merlyn Carlson, Nebraska Director of Agriculture. "It protects agriculture and our natural resources from profit-robbing pest weeds."

Spring marks the start of the growing season for noxious weeds, which compete with pastures and crops, reducing yields considerably. Some noxious weeds can be poisonous or injurious to humans, livestock, and wildlife. By law, it is the duty of each person who owns or controls land to effectively control noxious weeds on their property.

NU Cooperative Extension in cooperation with the Nebraska Department of Agriculture is publishing six Extension Circulars on the biology, identification, distribution and control of the state's noxious weeds. These publications offer a range of graphics, photographs, and content to aid in the mandatory control of these pests. Five of these publications are currently available

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In soybeans

Targeting weed control for greatest efficiency

With the advances of herbicide tolerant soybean (eg. Roundup-Ready), there is still a constant dilemma on how to "time" post-emergence weed control. To decide whether weed control is economically worthwhile, it's important to understand whether a given weed infestation is likely to reduce yield if left uncontrolled. This establishes the rationale for the concept of the **"critical period of weed control"** (CPWC). The critical period of weed control is a period in the crop growth cycle when weeds must be controlled to prevent yield losses. Weeds that emerge before or after this period may not present a threat to crop yields. This information is essential in determining the need for and timing of weed control and in achieving an efficient use of herbicides.

Research at the University of Nebraska has shown that each crop has a CPWC and that the length of this period can be influenced by cropping practices, such as row spacing in soybean.

Time of weed removal as affected by soybean row spacing

The critical time of weed removal is when weed control needs to begin in order to prevent yield losses. Studies were conducted in 1999 at Mead and in 2000 and 2001 at Mead and Concord to study how this period was affected by row spacing. Predominant weed species at both locations and years were velvetleaf, common waterhemp and green foxtail, with densities of 70-100 plants per square yard.

The critical time of weed removal was significantly influenced by row spacing. Generally, an increase in row spacing resulted in a need for earlier weed removal. For example, the beginning of the CPWC in wide-row soybean (30-inch rows) was approximately at the 1rd trifoliate stage, based on a 5% acceptable yield loss level (*Table 1*). This suggests that in the wide-row soybeans control should start early in the season (at the 1st trifoliate stage). Beginning of the CPWC in 15-inch rows was delayed and corresponded approximately to the 2nd trifoliate stage, compared to the 3rd trifoliate stage in soybean grown in the 7.5-inch rows (*Table 1*).

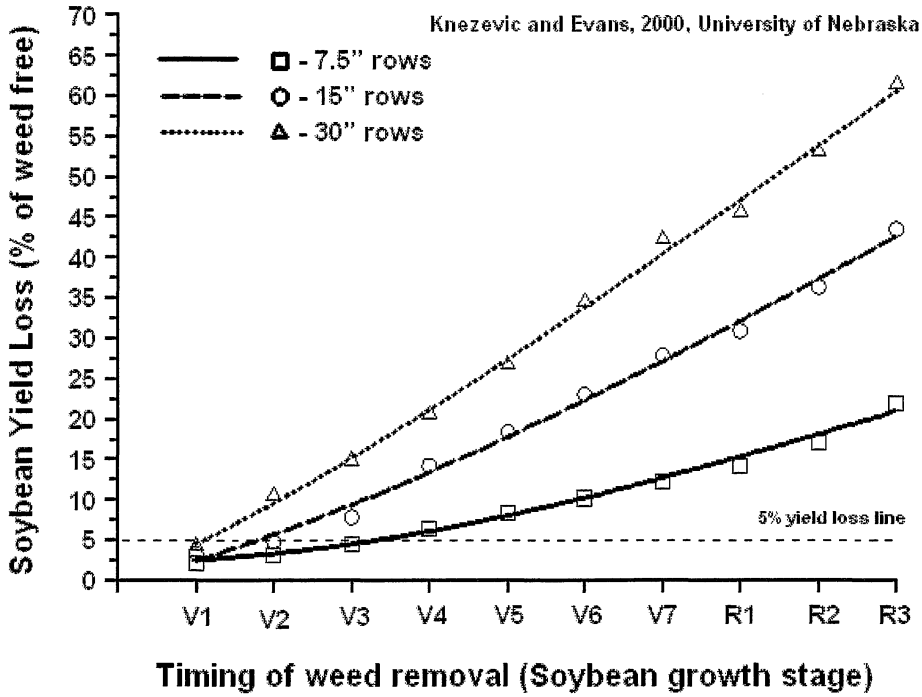

Figure 1. Soybean yield loss and beginning of the critical period of weed control as influenced by the timing of weed removal and row spacing.

This data implies that reducing row spacing delays the timing of weed control and increases the tolerance of soybean to weed presence. The mechanism of soybean tolerance needs to be determined yet, although we believe it is related to the effects of crop shading. The speculation is that even though weeds are present in narrow row soybeans, they are not growing as vigorously and are not as competitive against the crop, due to crop shading. Furthermore, from

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Table 1. The beginning of the critical period of weed control in soybean based on 5% yield loss expressed as crop leaf stage (eg.V1) and days after crop emergence (DAE) as affected by the row spacing, at two locations in 1999, 2000 and 2001.

Row spacing in inches	*Time to control weeds Soybean leaf stage*	*Time to control weeds Days after crop emergence*
7.5	V3	19
15	V2	15
30	V1	9

CPWC in soybeans *(Continued from page 125)*

a practical standpoint, these results indicate that a reduction in soybean row spacing increases soybean tolerance to weeds, likely leading to less intensive weed management programs.

Cost of delaying weed control

The commonly asked question among producers is "how much is it going to cost me if I delay weed control." Possible reasons for delayed weed control may include weather constraints such as wind and rainfall and time constraints due to large acreage to spray. In order to answer the above question the yield loss data from the above studies were pooled among years-locations and graphed against the crop growth stage at the time of weed removal in corn and soybean (*Figure 1*).

The 2% yield loss for every leaf stage of delay after the critical stage of weed control was determined as the cost of delaying weed control in soybean. For example, the time to control weeds in 7.5-inch rows of soybean is the V3 stage (third trifoliate-*Table 1*). If weed control is delayed to the V4 (fourth trifoliate), it will cost a producer about 2% in yield losses due to prolonged competition from weeds. The same is true if weed control is delayed past the recommended critical time in other soybean row spacings (*Table 2*). This recommendation is applicable up to the R3 stage in soybean (beginning pod). If weed control is delayed further than these indicated stages, yield losses will be much higher than suggested.

In terms of actual economic losses in soybean, it will be about $5 per acre for every soybean leaf stage of delay, assuming a price of $5 per bushel and a yield goal of 40 bushels.

Weed size

Weed size at the time of weed control is another concern. If the weeds emerge four to five days before the crop or they are taller than the crop, they will shade the crop. In this case control should be initiated four to five days (one to two leaves) prior to the beginning of the critical period of weed control. If the weeds emerge 5-10 days after the crop, they will not shade the crop. In this case control can be initiated 5-10 days (two to three leaves) after the critical period begins.

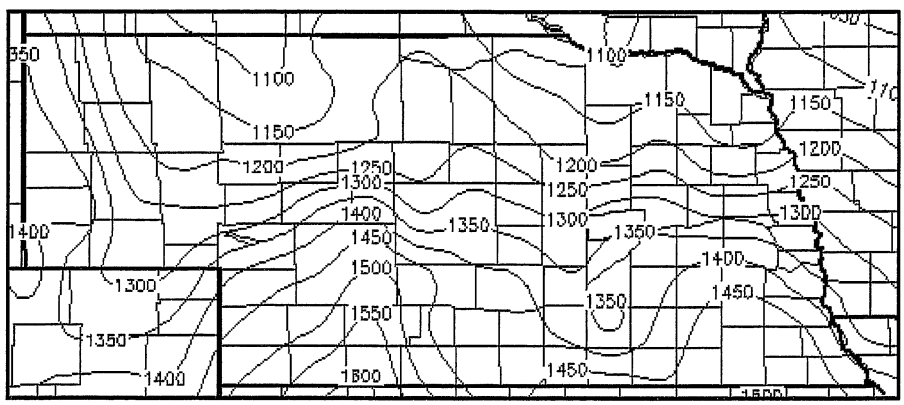
The size of weed species will affect herbicide use rates too, especially the rates of Roundup or any generic glyphosate in Roundup-Ready soybeans. It is well known that Roundup has much better activity on grassy rather than broadleaf species. The 16-24 oz rates should provide control of most common annual grassy species (foxtails, barnyardgrass, field sandbur, woolly cupgrass, and panicums) that are 3-8 inches tall. The same rates should control annual broadleaves (velvetleaf, lambsquarters, pigweeds, mustards) less than 6 inches tall. For taller grasses and broadleaf species a full rate (32 oz) will be required. Higher rates of Roundup (40-60 oz) will be needed to control species such as ivy-leaf morning-glory, sweet clover, field bindweed, Venice mellow and various smartweed species (lady's thumb, Pennsylvania smartweed, wild buckwheat, etc).

Timing weed control in herbicide tolerant crops

Roundup-Ready soybeans are widely used in Nebraska. The concept of critical period of weed control is an important part of integrated weed management in answering the fundamental questions as to **IF** and **WHEN** to apply postemergence herbicide.

A generally sound strategy in Roundup-Ready soybeans will be to apply Roundup tank-mixed with a residual herbicide at the beginning of the critical period, which will provide adequate weed control throughout the period. In order to select appropriate herbicide mixtures for the weed spectrum at your farm, consult the herbicide efficacy tables from the *Guide for Weed Management in Nebraska* (NU Extension Publication, EC-130).

Stevan Knezevic, Extension Weeds Specialist, Haskell Ag Lab



Common stalk borer

Accumulated growing degree days as of June 4, using a 41°F base. Producers should begin scouting for common stalk borers when 1,300-1,400 growing degree days have accumulated. See full story on stalk borer management in the May 23 *CropWatch* available on the Web at *http://cropwatch.unl.edu/archives/2003/crop03-11.htm#corn_stalk_borer.* (Map courtesy Al Dutcher, NU State Climatologist)

Manage pastures to limit need for herbicide applications

Rangeland and pasture weeds are prominent this year because grass stands were weakened by last summer's drought. In some cases, herbicide applications may be warranted; however, if the application is intended more for cosmetic reasons, save your money.

The more experience I get with grazing and pasture management, the less spraying I do. In fact, any time a pasture is sprayed, it indicates that grazing has not been as effective as it could be or that the owner wants a quick fix.

First, a profitable pasture situation requires high management but low dollar input and spraying costs money. Second, livestock eat many plants, including those we label as weeds. In fact, many weeds can be good feed if grazed while young and tender. Third, unpalatable weeds usually become established in pastures after grass is weakened by severe grazing. They thrive when grazing management fails to encourage vigorous grass regrowth. Finally, unless pasture and livestock are managed to benefit both plants and animals, the weeds will return despite spraying.

Do you manage your grazing to allow adequate rest so your grass can increase its vigor? If not, don't waste money spraying weeds and brush – they'll just keep returning. If you do manage your grazing well, spraying weeds and brush can hasten improvement of your pasture or protect it from recent invasions.

Early June is the best time to control most perennials, annuals, and woody plants. Read and follow all label directions, including any post application grazing restrictions.

Small annual broadleaf weeds are controlled well by either 2,4-D ester or Ally. Mixing some Banvel with the 2,4-D improves control if weeds have gotten larger. Be especially careful, though, when using Banvel anywhere near sensitive crops, gardens, or trees because it can drift half a mile or more.

For tougher weeds, including most perennials like western ragweed, vervain, ironweed, and broom snakeweed, Tordon is quite effective and provides some soil residual activity to limit new weed seedlings. Another good choice to control these tougher weeds is Grazon, which is a premix of Tordon and 2,4-D.

When woody plants are your main problem, Tordon, Spike, and Crossbow usually are your best choices in pasture and rangeland.

Bruce Anderson
Extension Forage Specialist

Crop condition

USDA's Nebraska Agricultural Statistics Service (NASS) June 1 report: Higher humidity and warmer temperatures combined to give grain and forage crops a boost. Corn planting was virtually completed and many producers were finished with soybeans. Grasshoppers were being sprayed on large tracts of land in central counties.

Corn condition rated 1% poor, 20% fair, 61% good, and 18% excellent. Eighty-four percent of the corn fields had emerged, behind 86% last year.

Soybean planting also made excellent progress with 83% complete. This is only a few days behind the 87% last year and 88% average. Thirty-nine percent of the fields had emerged, behind 53% last year and 57% average.

Sorghum planting was active with 55% of the acreage seeded. This is behind 63% last year and 71% average.

Ag Lab to host wheat field day June 18 at Sidney

The University of Nebraska High Plains Ag Lab near Sidney will host its annual Wheat Field Day June 19. The gathering is free and open to the public. Lunch will be provided by local agribusinesses.

Following is a schedule of topics and speakers:

- 8:45 a.m. Welcome, Dr. Charles Hibberd, director, NU Panhandle Research and Extension Center;
- 9 a.m. Load trailers for field plots
- 9:10 a.m. Alternative Spring Crops; David Baltensperger, alternative crops specialist;
- 9:25 a.m. Feeding Peas to Livestock, Erin Fendrick, graduate student
- 9:40 a.m. Marketing Strategies for the 2003 Crop, Paul Burgener, agricultural economist;
- 9:55 a.m. Transitioning from Summer Crops to Winter Wheat; Drew Lyon, dryland cropping systems speicalist;
- 10:30 a.m.: Nitrogen Management for Winter Wheat: The Importance of Knowing What You Already Have, David Tarkalson, soil fertility/nutrient management specialist;
- 10:45 a.m.: Update on Russian Wheat Apid and Wheat Curl Mite, Gary Hein, dntomologist;
- 11:15 a.m.: Quality Improvement of Nebraska Wheat Varieties, Brian Beecher, plant breeder;
- 11:30 a.m.: Wheat Varieties, Stephen Baenziger, plant breeder; David Baltensperger, plant breeder; Robert Graybosch, plant breeder, USDA-ARS; and Drew Lyon, dryland cropping systems specialist; and
- 12:15 p.m. Lunch.

The NU High Plains Ag Lab will host its Summer Crop Field Day on August 12.

Controlling redcedar in pastures requires integrated, multi-pronged approach

Eastern redcedar (*Juniperus virginiana L.*) is one of 13 juniper species native to the United States. It is the most widespread tree-sized conifer and is native to every state east of the 100th meridian. Throughout this vast range, eastern redcedar grows on many soils and under varying climatic conditions. On grasslands eastern redcedar can be a serious problem because it competes very effectively with pasture species for light and nutrients, reducing forage production. Heavy tree infestations also will interfere with livestock handling.

These adverse effects often lower rental rates or sale prices of infested grassland. On many sites complete coverage by eastern redcedar can be expected, resulting in total loss of production.

Control measures should be initiated as soon as possible to improve effectiveness and reduce total costs. In most cases, a single control measure won't provide long-term management; however, an integrated management approach combining manual, mechanical, cultural, biological and chemical control methods will work.

Manual control involves pulling or digging trees. It can be very effective for small areas and is most efficient on trees up to 2 feet.

Mechanical control methods include cutting or mowing trees at the soil surface or below the lowest branches. Short trees can be mowed off as part of the regular cutting and haying process. Red cedar trees cut low should not regrow. If the goal is to just reduce the overall number of trees and reduce further spreading to better manage the wildlife habitat), cut only female trees (those producing berry-like fruits).

Biological weed control involves the use of natural enemies to reduce weed populations to economically acceptable levels. Goats

Weed profile

are known browsers and can be effective bio-control agents for trees up to 3 feet tall. Seventy-five percent of their diet consists of non-grassy species, so they don't compete with cattle for grass. They also can help control many noxious weeds, especially leafy spurge.

Prescribed burning is an inexpensive and effective method of controlling smaller trees; however, its effectiveness declines as tree size increases. Adequate fine fuel (usually last year's dead grass) is necessary for satisfactory results. Safety also is a concern with prescribed burning.

Chemical control should be viewed as just another tool in the integrated control tool box. Herbicides can be used for both individual tree spraying and broadcast application.

Individual tree treatments

Several herbicides are suggested for individual tree treatments in spring or fall, including Tordon 22K, Velpar-L and Spike 20P. Tordon 22K can be used as a spot gun application of soil around the tree before rainfall. Rainfall will aid chemical uptake. The recommended rate is about 1 cc (ml) per foot of tree height. Cost of Tordon 22K is about $85 per gallon. It would cost about $65 per acre plus labor ($15 /hour) to spray 1,500 two-foot trees.

Velpar-L also can be used through a spot gun in spring at the rate of 4 cc's (ml) per inch of tree diameter. Cost of Velpar is about $65 per gallon. Spike 20P is another alternative but can only be used in non-crop areas as a total vegetation control at the rate of 0.5 oz per every inch of stem diameter. Spike 20P costs about $9 per pound.

Treatment trials

We also have conducted a preliminary study of individual tree treatments at two locations (Center and St. James) in northeastern Nebraska. Excellent tree control (more than 90%) was achieved with Plenum at 1.5% volume per volume (v/v), Grazon P+D at 2.0% (v/v) and Tordon 22K at 1.0% v/v (*Table 1*). All other treatments provided poor control (less than 50%). Grass injury in the form of temporary yellowing and burning of top growth was evident among all treatments, especially Tordon 22K (*Table 1*). Cost of Grazon P+D and Tordon 22 K was $11-$16 per acre (*Table 1*). Plenum and Garlon are experimental and not available for purchase.

Application tips

Here are a few practical hints:

1) To determine volume per volume basis, for example the 1% v/v equals 1 gallon of product per 100 gallons of water (e.g. in large tanks). For smaller back pack sprayers use an equivalent of 1.3 oz of product per gallon of water.

2) Apply about 1.5 oz of the above prepared spray solution per every foot of tree height. Walk around the tree and spray enough to get a glisten (shine) on the leaf surface. Solution dripping off the tree indicates a rate that is too high and a waste of time and money.

3) As an example, we calculated that 1 gallon of spray solution should cover 15 individual trees that are 6 feet tall at 20 PSI and nozzles XR8002.

Broadcast treatments

In general the taller the trees, the poorer the control. Excellent control (more than 90%) of up to 1-foot trees was achieved with

(Continued on page 119)

Red cedar *(Continued from page 118)*

Plenum (5 pts), Grazon P+D (6 pts and 8pts) and Tordon 22K (2 pts) at both locations (*Table 2*). The same treatments, however, provided poor control (less than 50%) of trees taller than 2 feet. Plenum at 4 and 5 pts per acre provided good to excellent control of up to 2-foot tall trees. All other treatments provided poor control (less than 50%) regardless of the tree height (*Table 2*). Physical removal provided the best control (100%), however it was the most expensive method.

Cost of Grazon P+D and Tordon 22 K ranged from $21-$26 per acre. Plenum and Garlon are experimental products and can not be purchased. Cost of physically removing a tree was about $120 per acre, assuming that 8 hours of work was needed to cut 1,500 trees, 2 feet tall, per one acre and an hourly labor cost of $15. For illustration purposes, 1,500 trees per acre is equivalent to one tree per three square yards. Grass injury in the form of temporary yellowing and burning of top growth was evident among all treatments.

Noxious weeds

(Continued from pae 124)

at your local Cooperative Extension Office and the sixth is expected in June.

The seven weed species designated as noxious weeds in Nebraska are musk thistle, Canada thistle, plumeless thistle, spotted knapweed, diffuse knapweed, leafy spurge, and purple loosestrife. The NDA encourages the public to report noxious weed infestations to their county weed control authority. If infestations go uncontrolled, legal action is set in motion by the county weed control authority.

For more information on Nebraska's noxious weed program, contact your county weed superintendent or Mitch Coffin at NDA's Bureau of Plant Industry at (402) 471-2394.

Standing dead trees

A commonly asked question is: What should you do with the trees that died as the result of herbicide application. This is especially true for taller trees over 4 feet. Cut the trees at ground level. The stumps won't regrow, but they can puncture tires. Standing dead trees will reduce the aesthetic value of the land, however there are several benefits of leaving dead trees for several years: 1) they will protect the grass to regrow and re-establish on those individual spots, 2) help against soil erosion and 3) protect against wind or snow. Trees that are 4-8 feet tall do not have much red heartwood tissue so they will naturally deteriorate in 3-6 years.

Stevan Knezevic
Extension Weeds Specialist

Table 1. Percent red cedar control and grass injury at 100 days after treatment in an individual tree study at two locations (Center and St. James).

			Center	St. James	Center	St. James
Product*	Dose (%v/v)	$$/acre**	Cedar Control (%)		Grass injury (%)	
Plenum	0.5	-	30	3	22	15
Plenum	1.0	-	84	69	37	42
Plenum	1.5	-	96	89	66	45
Garlon EV	1.0	-	25	14	13	7
Grazon P+D	2.0	11	90	90	44	52
Tordon 22K	1.0	16	94	92	74	64
Untreated check			0	0	0	0

*Treatments 1-4 are experimental premixes
**Cost per acre not available for treatments 1-4 because they are not on the market yet.

Table 2 Percent control of eastern red cedar at two locations (Center and St. James) as influenced by the tree height in broadcast study at 100 DAT.

			Tree height at Center			Tree height at St.James			
Product*	Dose/A	$/A**	0-1ft	1-2	2-4ft	0-1ft	1-2ft	2-4ft	>4ft
Plenum	3 pt	-	40	33	13	40	33	26	12
Plenum	4 pt	-	-	96	60	73	59	27	15
Plenum	5 pt	-	95	85	43	87	70	23	5
Garlon GS	4 pt	-	15	8	37	33	19	7	4
Garlon EV	4 pt	-	15	12	10	30	20	11	7
Garlon EV	6 pt	-	12	20	10	30	16	8	4
Grazon P+D	6 pt	21	95	47	18	93	53	40	16
Grazon P+D	8 pt	26	96	76	33	88	86	40	18
Tordon 22k	2 pt	22	95	50	16	79	63	42	25
Physical removal***		120	100	100	100	100	100	100	100
Untreated check			0	0	0	0	0	0	0

*Treatments 1-6 are experimental premixes
**Cost per acre not available for treatments 1-6 because they are not marketed products yet.
***Physical removal was done by handheld saw, assuming labor cost of $15/hour

NU Crop Management Clinic: timely, unbiased information, field trials to help you improve profits

Agribusiness professionals and crop producers will learn from taking a close-up look at field conditions, research and cropping practices at a July 10 NU Crop Management Clinic. The training will be held at the NU Agricultural Research and Development Center near Mead. Registration begins at 7:30 a.m. with the clinic starting at 8 a.m.

The clinic is designed to help participants stay informed about today's constantly changing world of crop production while providing information to help them improve crop profitability. Speakers from the NU faculty and agricultural industry bring an unbiased approach and hands-on opportunities for learning. Participants also will view field research and learn how findings may be implemented on their farms.

Last year's participants estimated they received an average of $3.89 per acre in added profits, due to information from the program. Those just out of school, well-seasoned producers and crop production professionals will benefit from this clinic and be able to use information from it daily.

Early diagnostic clinic registration is $115 until July 3. After that, registration is $165. Approximately nine Certified Crop Advisor credits are expected to be available in soil and water (3), soil fertility (3), and pest management (3).

This is one of three clinics to be offered in summer 2003. An end of season clinic August 20 will include field crop diseases, late season insects, fall nutrient management, and implications of fall tillage. An introductory precision farming clinic will be held September 3. Watch CropWatch for more details on these programs or check the ARDC Web site at *http://ardc.unl.edu/training.htm.*

NU Cooperative Extension, a division of the Institute of Agriculture and Natural Resources, is sponsoring the clinic. To register, call (402) 624-8000 or (800)529-8030, via fax at (402) 624-8010, via e-mail at cdunbar2@unl.edu, or write to NU ARDC, CMDC Programs, 1071 County Road G, Ithaca, Neb. 68033.

Registrants signing up for the e-mail list will save $10 on the registration fee.

Keith Glewen, Extension Educator

Program topics and speakers

Herbicide, Disease, Insect Diagnostics and Agronomic Challenge Plots

Learn to diagnose field problems for troubleshooting calls and how to use symptom distribution as an indicator; learn how agronomic cultural practices impact crop growth; and how to differentiate disease, herbicide, and insect problems in the field.

Speakers: Dale Flowerday, Agronomist; Loren Giesler, NU Plant Pathologist; Brady Kappler and Jennifer Chaky, NU Extension Educators; Alex Martin, NU Extension Weed Specialist; John Watkins, NU Plant Pathologist; and Bob Wright, NU Extension Entomologist.

Irrigation Scheduling

Learn irrigation strategies using ET and soil moisture data; crop growth stage and deficit irrigation scheduling strategies; and the pros and cons of soil moisture monitoring equipment and how it works

Speaker: Steve Melvin, NU Extension Educator.

Manure /Nutrient Management

Learn how to determine agronomic rates for land application of manure for corn and soybean production; potential nitrogen losses from unincorporated surface application of manure; and in-season soil and plant testing for nitrogen. Also includes an introduction to record keeping requirements for Comprehensive Nutrient Management Plans.

Speaker: Charles Shapiro, NU Extension Soils Scientist

Soil Moisture Conservation

Understand the importance of soil moisture conservation by reducing tillage trips; crop residue in soil moisture conservation; and the role of crop residue and no tillage in developing soil structure

Speaker: Paul Jasa, NU Extension Engineer.

Soil Yield Potential and Problem Soils

Learn about soil structure, organic matter, water conservation, and nutrient availability; differences between high pH and calcareous soils, managing high and low pH soils; sampling analysis; managing alkali spots and correcting saline and/or sodic soils; and learn how compaction affects root growth and nutrient uptake

Speaker: Charles Wortmann, NU Extension Agronomy Nutrient Management Specialist, and Dale Flowerday, Agronomist.

Rootworms and the Root Rating System

Observe the effectiveness of transgenic hybrids and insecticide control methods and learn how to dig roots and scout for rootworm larvae.

Speaker: Tom Hunt, NU Extension Entomologist

Seed Treatments and Corn Rootworm Control

Guidelines for seed treatment fungicides and the diseases they control; demonstrations of insecticide seed treatments on soybean; zone of activity -- how long and where activity occurs; learn if insecticide seed treatments affect fungal diseases and how to manage bean leaf beetle and bean pod mottle virus

Speakers: Loren Giesler, NU Plant Pathologist; Tom Hunt, NU Extension Entomologist; and Amy Ziems, Plant Pathology Graduate Research Assistant