6-21-2002

CropWatch No. 2002-14, June 21, 2002

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

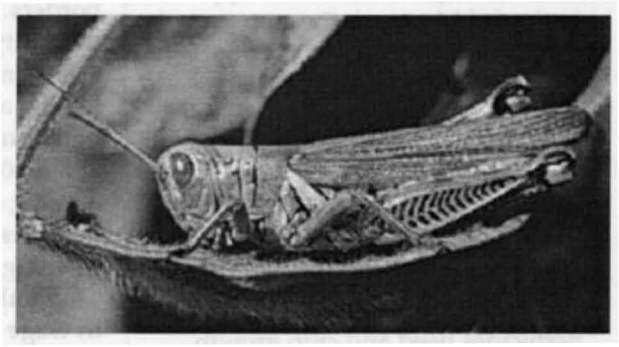
No. 2002-14
June 21, 2002

Adult control measures are less effective

Treat grasshoppers now, before they mature

Significant populations of newly hatched grasshoppers are showing up all across the state in grasslands and in areas bordering crop fields. During the early stages after hatching, grasshoppers can have very high mortality if conditions are cool and wet. However, conditions across the entire state have been ideal for these young hoppers to survive very well. As a result, we are apt to be dealing with these insects for a good deal of the summer. **The best approach to this problem is to try to control the grasshoppers while they are small, relatively easy to control and concentrated in their hatching beds before they spread throughout the crops.**

Because grasshoppers move into cropland from untilled hatching beds around field borders and in grasslands, grasshopper surveys should be conducted in these adjacent untilled areas early in the season. If grasshoppers have already invaded the field, they can be sampled to determine if control is warranted. With lots of dry grasses in these hatching areas this year, hoppers will likely move to adjoining crops earlier in the summer.



Sampling /thresholds

Estimating grasshopper densities is difficult and can only be done accurately with some practice. The best method for determining grasshopper density in field borders or hatching areas is to count the number of grasshoppers by using the square-foot method. With

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Stretching limited water supplies in parched, western Nebraska

In the midst of a severe drought, irrigation is like life support. If the plug gets pulled, the farm might go with it.

As limited precipitation, scorching temperatures and high winds parch the western Nebraska plains, reservoir inflows dwindle to historic lows and bring little hope for surface irrigation to quench withering crops, a University of Nebraska irrigation engineer said.

Panhandle irrigation districts will deliver water for only 35 to 40 days if current conditions persist, said Dean Yonts, Institute of Agriculture and Natural Resources irrigation engineer at the Panhandle Research and Extension Center in Scottsbluff. Districts are just beginning to release water to canals, hoping to stretch

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Inside

GDD and ET data

Daily updates of growing degree day (GDD) and evapotranspiration (ET) data provided by the NU High Plains Climate Center are available on the *CropWatch* web site at: ***http://cropwatch.unl.edu/weather/GDD-ET.html***

Updates

Management tips June 21-July 5

Gather complete field notes: To make informed decisions using site specific management, keep detailed notes of what was done in a field (management), what happened in the field (nature), the crop growth stage at the time, and most importantly, where it occurred. This detailed field information is especially important to help explain why yield differences shown on the yield map occurred where they did and what can be done to address them. Important examples at this time of year include: postemergence herbicides used and crop growth stage when applied; crop stresses due to hail, heat, drought, cultivation, insects, weeds, or other causes and crop growth stage at the time; and amounts and timing of irrigation or rainfall.

Grass seed harvest is just around the corner—are the sickles on the swathers and the combine ready? It looks like most bluegrass fields will be in the swathing stage during the first ten days of July.

Common stalk borers have been moving into corn from nearby grassy areas and damage is now visible. Common stalk borer damage is occasionally confused with corn borer damage (see last week's issue for corn borer information) but is usually confined to a few rows that border grassy areas. See the May 24 *CropWatch* for further information on stalk borer control.

Black light insect trap reports for several sites are available on the Department of Entomology Web site at: ***http://entomology.unl.edu/fldcrops/index.htm***

Reports are available for fields near the following cities: Concord, Clay Center, North Platte, Hastings, Kearney, and Aurora.

Field updates

Keith Jarvi, Extension Assistant, Northeast REC: I have been receiving a large number of calls the last two days about hatching grasshoppers. Some consultants are already advising to spray field borders. There will be some natural mortality, but with the volume of calls coming in I'd say we are having a hopper year. Our corn borer one night catch last night was about 106. There will be some treating of non-Bt corn in the northeast this year. Corn borer scouting should be in full fling now.

Paul Hay, Extension Educator in Gage County: Crops in southeast Nebraska look quite good – irrigation season should probably begin next week. Moisture has lowered yields for the second cutting of alfalfa. After a short first cutting it appears that total yields will be lower this year. Combined cool soil temps through the third week in May and dry weather in late May and early June have challenged the performance of numerous herbicide treatments to hold grass in check. Good post products in corn and soybeans are helping producers buy their way into control. Milo producers are really being challenged and turning to cultivation for at least partial control.

Ron Seymour, Extension Educator in Adams County: Crops look very good in much of the county. There has been some rainfall and the warm but not extremely hot temperatures have provided excellent growing conditions. Some areas have experienced severe weather that has resulted in some leaf damage to corn and some downed wheat.

Windy conditions have subsided, allowing farmers to complete herbicide applications that had been delayed. Field corn plants are in the 5- to 6-leaf stage and look good. First cultivation is complete and ridging is underway. Soybeans are in the first to second tri-foliate leaf stage and plants look good. First cultivations are underway. Alfalfa fields continue to recover out of the first cutting. Grasshoppers are present, but severe populations are scattered. Wheat fields continue to ripen. The berries are in the soft dough stage in most fields. Pasture grasses continue to ripen and summer grasses are growing well.

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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Grasshoppers (Continued from page 127)

practice, this approach can provide good estimates of hopper density. To use this method, randomly select an area several feet away and visualize a one-square foot area around that spot. Walk toward this spot while watching this square-foot area and count the number of grasshoppers that you see in or jumping out of this area. Repeat this procedure 18 times and divide the total number of grasshoppers you saw by two. This will give you the number of grasshoppers per square yard (9 square feet). Counting sites should be chosen at random. Just after hatching, when grasshoppers are small, they will be difficult to see and you likely will underestimate the true hopper density. When sampling, vary the vegetation in the count area, and sample both north and south facing slopes.

To sample for grasshoppers within fields where grasshopper density will be lower, use the same method except visualize and count the hoppers in a square yard area. Because of the difficulty of seeing hoppers in this larger area, counts will be somewhat less accurate. Take 18 samples and divide the total by 18 to arrive at the average number of grasshoppers per square yard.

When the number of grasshoppers per square yard has been estimated, use Table I to determine if treatment is necessary. While sampling it is important to determine the species present and the approximate stage (instar) of the grasshoppers. This is best done by using a sweep net to allow capture of a representative sample of hoppers.

Grasshopper control in cropland

Grasshoppers are easiest to control in the 3rd and 4th instar stages before they become adults. The size of these stages will be less than ½ inch in smaller species and 3/4 inch in larger species. Numerous insecticides are labeled and effective for grasshopper control on various crops. These are summarized in the NebFact: *A Guide to Grasshopper Control in Cropland.* Most of these will be effective when grasshoppers are immature. Tremendous variability in control will occur later in the summer when the grasshoppers are adults. If a range of rates is listed for a given insecticide, the higher rates generally should be used once adults are present. Always follow the recommended label rates, application directions, and restrictions.

Grasshoppers are easiest to control in the 3rd and 4th instar stages before they become adults.

Often border treatments are used to protect cropland from grasshoppers. However, in years like this when populations may be extreme, border treatments may not provide season long control. The size of the border treatment needed is difficult to determine. It may be effective with as little as 150 feet or as much as 1/4-1/2 mile may be needed if the grasshopper source area is large. A border spray should be effective for at least 7-14 days, depending on re-infestation pressure. Also, the residual activity of the treatments will vary with the chemical and environmental conditions. It is important to monitor the border areas and crop margins after treatment to make sure grasshoppers do not re-enter the field. When spraying borders adjoining cropland, be sure to read and follow harvest and grazing restrictions.

When treating borders, it is often necessary to treat the edge of the crop to reduce hopper numbers that have already moved into the field margin. One of the biggest problems with these treatments is that few insecticides are labeled for treating both crops and the surrounding areas, whether it be rangeland/pasture or non-crop areas. Malathion (e.g. Atrapa) and carbaryl (e.g. Sevin) are labeled on most crops along with range/pasture and non-crop areas. Acephate (e.g. Orthene) is labeled for non-crop use, but the only crop it is labeled for is dry beans. Dimilin is labeled on range/pasture and for non-crop use, but it's only additional label is on soybeans. One advantage of Dimilin as a border spray around corn would be the lowered impact on natural enemies,

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Table 1. Treatment guidelines based on number of grasshoppers (nymphs and adults) per square yard.

Grasshopper population	*Within fields*	*Field borders*	*Treatment necessary?*
Non-economic	0-2	5-10	No
Light	3-7	11-20	Questionable, depends on size, species, type of crop
Moderate	8-14	20-40	Probably
Abundant	15 or more	41 or more	Yes

Do row crops benefit from cultivation?

In the past, tillage and row crop cultivation were integral parts of the weed control program. Producers often said the crop responded to cultivation to the extent that you could see a growth difference overnight. In low fertility soils, this response was typically from the release and oxidation of nutrients tied up in the soil and its organic materials (a breaking down and mining of the soil). Today, however, most weed control programs use some sort of herbicide application, usually a pre-emergence at planting time and, quite often, a postemergence treatment. Fertility programs are better and producers wonder if row crop cultivation is needed, even if the crop does not have weeds.

Over 20 years of research at the Rogers Memorial Farm, east of Lincoln, showed no yield benefit from cultivation of soybeans in no-till, except for one year when there was a shattercane problem. Over the same 20 years, cultivation of no-till grain sorghum averaged about a 7 bu/A yield loss except in two years where it was needed for shattercane control. When needed for weed control, properly selected and timed postemergence herbicides are used on this no-till farm to provide more economical weed control than cultivation. Also, it has been observed that the harvest of soybeans is easier and much cleaner without cultivation.

Various sources put the machinery and labor cost of cultivation around $5 an acre. Paul Hay, extension educator in Gage County, has a "True Cost of Cultivation" handout that puts the cost of cultivation near $28 an acre in dryland, terraced production. This cost includes the machinery, labor, fuel, amount of crop run over during turning, and soil moisture losses.

George Rehm, Extension soils specialist at the University of Minnesota, is showing yield decreases from cultivation in Minnesota on poorly drained soils where some say cultivation is needed to open up the soil. On those poorly drained soils, he recommends ridge plant systems without cultivating every year. (Don't take off much of the ridge at planting time, use Roundup Ready soybeans, re-ridge only in corn).

Cultivation only for the sake of stirring the soil is a waste of fuel, labor, and valuable soil moisture, especially in a dry year like this one. Crop roots near the surface are pruned, crop residue is buried, and the soil is left in a condition that is prone to erosion and crusting. The drying and loosening of the soil reduces root growth near the soil surface, making nutrients in this surface layer less available to the

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Grasshoppers (Continued from page 129)

especially those effective on spider mites. Perhaps the best product for this type of treatment is Asana, because it is labeled for non-crop use and for use on several crops (corn, soybeans, sugar beets, dry beans, sunflowers, and potatoes). Of these five products, Asana will provide better control once grasshoppers have become adults, but again control of adults may be variable.

Grasshopper control in rangeland

Only three insecticides are labeled for control of grasshoppers in rangeland, and none of them will be very effective after they reach the adult stage. The two traditional insecticides used for grasshopper control in rangeland are malathion and carbaryl. A newer product that has shown good efficacy is Dimilin. This chemical is a growth regulator that inhibits the molting process in grasshoppers. It will not affect adult grasshoppers, but likewise, it will not affect adult natural enemies. The label states that it should be used while the majority of hoppers are in the 2nd and 3rd instars (about 1/4-1/2 inch). Mortality will be delayed until the treated insects begin to molt, usually in three to seven days. These three products do not have grazing restrictions for rangeland treatments and can be applied while the cattle are still grazing.

Low cost treatments using these products have been developed by the University of Wyoming in a program called Reduced Agent and Area Treatments (RAATs). This program has been effective at reducing cost of treating rangeland by 50% or more. Cost estimates are about $3 per acre with treatments on alternate swaths (50% untreated area). This brings overall costs to about $1.50 per acre. This program should be investigated if rangeland treatments are being considered. Timing and application details are critical to the success of this program. (See University of Wyoming website below.)

Further information

Pesticide registrations are constantly changing. Updated lists of pesticide registrations for various crops can be found at the University of Nebraska Department of Entomology Web site at *http://entomology.unl.edu/fldcrops/pestipm.htm*

The following Web sites contain extensive information on grasshoppers and grasshopper management:

- University of Wyoming: http://www.sdvc.uwyo.edu/grasshopper/
- USDA-ARS: *http://www.sidney.ars.usda.gov/grasshopper/index.htm*

Gary Hein, Extension Entomologist, Panhandle REC

Reservoirs, irrigation *(Continued from page 127)*

water use for critical crop times.

Irrigation districts will have to strictly monitor and track water use due to the limited supply, Yonts said.

"The problem will be trying to dole out the amount of water available," he said. "Once a grower has used (his or her) allotment, there's no choice but to shut the gates down."

That's what frightens growers like Monty Flock, who farms 400 acres of corn, sugar beets and dry beans near Morrill.

"It's got us scared to death," he said. "I think we're in trouble because what crop we do get is going to be worthless. If they turn off the water in mid-August, our plants won't mature. We'll have nothing to sell."

Drought conditions are most severe in southwest Nebraska, where some irrigation districts will not deliver water at all this summer. That includes the Hitchcock and Red Willow Irrigation District, which draws water from Enders Reservoir, and all districts feeding from Swanson

Reservoir, said Susan France, Nebraska Department of Natural Resources' division manager for water rights administration. Several other districts will deliver substantially less water than normal during a shorter time.

Projected allocations range from 4 to 9 inches of water for less than 45 days. Many of these districts normally receive at least 12 inches of water May through September.

Water available for irrigation in the Panhandle and Republican River Basin is limited because of near-record and record low spring inflows that left Colorado, Wyoming and western Nebraska reservoirs well below capacity. Reservoirs in the Republican River Basin are exceptionally low, filled at 29% to 55% capacity. North Platte River Basin reservoirs are moderately low, filled at 52% to 78% capacity, said Mike Hayes, climate impacts specialist at NU's National Drought Mitigation Center.

At Lake McConaughy on the North Platte River near Ogallala, water levels are down significantly but there is enough water for this year's irrigation allocations. McConaughy's water is used by irrigators in the Central Nebraska Public Power and Irrigation District.

The major concern for Panhandle farmers is the extremely dry North Platte River, in which inflows are projected to be 30% of average through September, Hayes said. South Platte River inflows are projected to be 25% to 46% of average through September, Hayes said. Minimal inflows mean minimal water for crops.

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"In the 44 years I've been farming, I've never witnessed anything like this," said Robert Busch, a farmer near Mitchell. "People don't realize yet what's coming. The economic loss is going to be devastating."

Busch and his son farm 1,100 acres of corn, dry beans, sugar beets and alfalfa. Corn is three weeks behind schedule and only about 4 inches tall, Busch said. To make matters worse, irrigation allocations in the Gearing-Fort Laramie district are expected to be less than 50% of the normal supply, he said. The district receives water from Seminoe and Pathfinder reservoirs in Wyoming.

"In today's environment, you need a good crop every year," he said. "If you don't get that, you're in big trouble."

Sensible water management will be critical to salvaging crop yields, Yonts said.

"Water means crop growth," Yonts said. "In many times during drought and water restrictions, our crops haven't been too bad because we tried to use water more efficiently and make changes faster. But I've never been through anything like this."

Some growers who rely on surface water for irrigation may already be suffering the drought's consequences. Alfalfa in the Panhandle might only yield two cuttings, reducing yields by as much as 50%, Yonts said. Corn and dry bean yields could drop 25%.

"It all depends on how far the water will stretch," Yonts said.

The limited water supply might require growers to make sacrifices, Flock said.

"We're such optimists," he said. "I think we're making a big mistake by not abandoning a percentage of our crops and stretching the water across what's left."

To help stretch water, furrow irrigators can surge irrigate, or alternate water back and forth for a shorter time to reduce infiltration rates, and use polyacrylamide to stop erosion in furrows to increase water supplied to evenly irrigate fields, Yonts said.

He also suggested shutting off water once it reaches the bottom of a field to reduce unnecessary runoff. Stressing crops at times when water is less critical also may help.

"It's going to hurt," Flock said. "Everybody's going to hurt in the whole valley. Many of us are going to go bankrupt. I'm afraid my wife and I might not farm next year."

Flock and Busch represent many western Nebraska farmers who worry about the future of their farms — a future that seems as fallow as their dusty fields.

"This is the worst I've seen it," Flock said. "We've all been going through times when we're depressed and want to give up. But we know we can't do anything about it."

Shannon Hartenstein
IANR Newswriter

Water tour to examine North Platte River issues

The University of Nebraska/ Kearney Area Chamber of Commerce Summer Water and Natural Resources Tour will view drought conditions in the North Platte River watershed from headwaters in Colorado to Lake McConaughy.

The tour leaves Kearney's Ramada Inn Motel Monday, July 22, and returns there Thursday, July 25.

"Nebraska, Wyoming and Colorado are highly dependent on irrigation water and hydropower generated in the North Platte River watershed, and with the current drought conditions in those areas the tour should be very timely and enlightening," said tour co-organizer Michael Jess, acting director of the UNL Water Center.

In addition to current drought conditions in the watershed, tour stops and speakers will address North Platte River water use, interstate compacts and the recent settlement of litigation between Nebraska and Wyoming, irrigation development, and history.

On July 22 Sharon Whitmore of the U.S. Fish and Wildlife Service will discuss how water releases from Lake McConaughy are used to augment fish and wildlife habitat requirements in Nebraska and members of the Sidney Chamber of Commerce will address irrigation, agribusiness and farming concerns in the area. The first night's stop is in Fort Collins, Colo.

On July 23 buses pass over the Continental Divide and through Cameron Pass en route to North Platte River headwaters at Walden, Colo., and from there north to Wyoming. John Lawson and Ken Randolph of the U.S. Bureau of Reclamation will discuss irrigation and hydroelectric issues at Seminoe Dam, the first of a series of North Platte River reservoirs the tour will visit in Wyoming.

Before overnighting in Casper, Wyo., tour participants also will view Pathfinder, Alcova and Gray Reef dams. As buses head toward Nebraska the following day, Glendo and Guernsey dams will be viewed, including hydro-electric operations at Guernsey and Glendo.

At the Wyoming-Nebraska border buses will stop at the Mitchell-Gering diversion dam to discuss allocation of stream flows

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Cultivation *(Continued from page 130)*

crop. Cultivating wet soil smears the soil layer below the cultivator sweeps, increasing runoff and erosion.

Cultivation for broad spectrum weed control may be needed if the weed pressures are above thresholds such that they would be causing yield reductions. Considering the root pruning and soil moisture loss from cultivation, however, specific weed problems may be more economically addressed using a properly selected and timed postemergence herbicide.

In wet years or under no-till conditions where the residue holds the soil moisture near the soil surface, root pruning is greater since there are more active roots near the soil surface. Cultivation, when performed, should be shallow to undercut the weeds so that they dry down quickly (usually within hours). Operating deep may leave too many weed roots intact in moist soil, leave a furrow which concentrates runoff and accelerates erosion, and dry the soil out to the depth of tillage. That is why the new style cultivators have wide, flat sweeps. Cultivation in ridge plant systems is different and requires barring off disks (cut away disks) for weed control on the sides of the ridge.

Cultivation is an integral part of the ridge plant system and must be performed early to control weeds and loosen the soil without slabbing (root pruning is reduced). A second cultivation (or an irrigation ditching) later rebuilds the ridge and provides some additional weed control. The cost of the cultivation is offset partially by using a band application of herbicides at planting time (or no herbicide at all) and no tillage for next year's crop.

Some people may think the soil needs to be loosened to allow the crop roots to grow. The crop roots are already a foot or more into the soil so stirring the top inch or two won't make much difference. Others think that the corn needs "hilling" so that it stands up. The hybrids used today stand much better than those of the past and rootworm control has improved such that corn doesn't need much propping up. With a proper planting depth (around 2 inches), the brace root formation is such that hilling is not needed, especially when the soil is moist. However, shallow planted corn may not properly form brace roots in dry soil near the surface so hilling may help if the cultivation operation does not further dry the soil.

To save trips across the field, some producers use the cultivator for herbicide application (not advised usually because the cultivation stresses the weeds, making the herbicides less effective), for rootworm or corn borer insecticide application, or for sidedressing fertilizer. These trip-saving approaches may be okay if you can minimize the negatives of cultivation listed above or if you needed cultivation for weed control or ridging. Otherwise, there are other options in many cases to apply the pesticides or nutrients. In a dry year like this one, the soil drying from cultivation needs to considered when performing these "piggy-backed" operations.

Paul Jasa
Extension Engineer

Scout alfalfa for potato leafhoppers

Potato leafhoppers have had ample opportunity the last couple of weeks to ride southerly air masses into Nebraska and some have probably become established. It's time to begin regular scouting for these pests.

Potato leafhoppers are small, even compared to a penny.

These small (1/8 inch long), green, wedge shaped insects *(Fig 1)* may cause severe damage to alfalfa by injecting a toxin into the plant as they feed. This feeding results in a distinctive yellow or purple triangle shape at the tip of the leaf. First year spring planted alfalfa fields are particularly attractive to and vulnerable to potato leafhoppers, as are fields planted last year. In older fields, these insects are usually a problem on second and third cuttings. Newly developed resistant varieties provide fairly good protection from potato leafhoppers, but alfalfa in the seedling stage may still be damaged. All fields should be scouted because large numbers of leafhoppers can still cause a problem, even in resistant variety fields.

Treatment decisions are based on numbers captured by sweep net, the only only reliable way to scout for potato leafhoppers. Use the tables to help determine whether treatment is recommended. Note that it doesn't require a great number of leafhoppers to cause a problem. Most insecticides registered for potato leafhopper will give good control. A table of insecticides registered for control of potato leafhoppers is on page 134.

Keith Jarvi
Extension Assistant
Integrated Pest Management
Northeast REC

Table 1. Dynamic treatment thresholds for potato leafhoppers (average number per sweep) on alfalfa that is 1 to 4 inches tall.

	Cost of insecticide application (per acre)					
Value of hay (per ton)	**$8**	**$10**	**$12**	**$14**	**$16**	**$20**
$ 60	0.4	0.5	0.6	0.7	0.8	1.0
$ 80	0.3	0.4	0.5	0.5	0.6	0.75
$100	0.25	0.3	0.4	0.4	0.5	0.6
$120	0.2	0.25	0.3	0.35	0.4	0.5
$140	0.2	0.2	0.25	0.3	0.3	0.4
$160	0.15	0.2	0.3	0.3	0.3	0.4

Table 2. Dynamic treatment thresholds for potato leafhoppers (average number per sweep) on alfalfa that is 4 to 8 inches tall.

	Cost of insecticide application (per acre)					
Value of hay (per ton)	**$8**	**$10**	**$12**	**$14**	**$16**	**$20**
$ 60	0.7	0.8	1.0	1.0	1.3	1.7
$ 80	0.6	0.6	0.75	0.9	1.0	1.3
$100	0.4	0.5	0.6	0.7	0.8	1.0
$120	0.3	0.4	0.5	0.6	0.7	0.8
$140	0.3	0.35	0.4	0.5	0.6	0.7
$160	0.25	0.3	0.4	0.4	0.5	0.6

Table 3. Dynamic treatment thresholds for potato leafhoppers (average number per sweep) on Alfalfa that is 8 to 12 inches tall.

	Cost of insecticide application (per acre)					
Value of hay (per ton)	**$8**	**$10**	**$12**	**$14**	**$16**	**$20**
$ 60	2.0	2.4	2.8	3.0	3.9	5.0
$ 80	1.8	1.9	2.2	2.7	3.0	4.0
$100	1.2	1.5	1.8	2.1	2.4	3.0
$120	0.9	1.2	1.5	1.8	2.1	2.4
$140	0.9	1.0	1.2	1.5	1.8	2.0
$160	0.8	0.9	1.0	1.2	1.5	1.8

See *Table 4, Insecticides registered for control of potato leafhoppers* on page 134.

Rescue treatments for postemergence weeds

Unexpected breakdowns, rain or delays may have kept you out of the field when you would have liked to have been in it. If that's the case, *Table 1* provides some herbicide rescue treatments that you can use for corn greater than 12 inches tall. Remember that all products control smaller weeds best and a certain herbicide may not have much impact on large weeds.

When deciding whether to spray, consider the potential for successful weed control and the chance of crop injury.

Brady Kappler, Extension Weed Science Educator

Table 1. Late season weed control in corn greater than 12 inches

Accent – Up to 36-inch corn. If taller than 20 inches, use drop nozzles.
Aim -- Up to 8-leaf corn (approximately 30 inches).
Callisto -- Up to 8-leaf corn (approximately 30 inches).
Clarity – Up to 36-inch corn. Use caution with nearby sensitive broadleaf crops. Use directed application if possible.
Distinct – Up to 24-inch corn. Use at 4 oz /A rate.
Liberty – Up to 36-inch corn; requires Liberty Link corn.
Lightning – 45 days before harvest; requires Imi/Clearfield corn.
Option -- Up to 36-inch corn. If taller than 16 inches, use drop nozzles.
Roundup UltraMax -- Up to 30-inch corn. If greater than 20 inches, use drop nozzles. Requires Roundup Ready corn
2,4-D amine – Up to tasseling. Use drop nozzles for corn taller than 8 inches. Use caution with nearby sensitive broadleaf crops.

This information is intended only to be a guide. Always read and follow label directions.

Potato leafhoppers *(Continued from page 133)*

Table 4. Insecticides registered for control of potato leafhopper

	Product name	*Common name*	*Rate*	*Restrictions/comments*
R	Ambush 2 E or			6.4 oz or less,
	Ambush 25 W or	permethrin	3.2 -12.8 oz/acre	no phi*
	Ambush 25W WP			Over 6.4 oz -- 14 day phi
R	Baythroid 2	cyfluthrin	0.8 -1.6 oz/acre	7 day phi
	Cythion 5	malathion	1.5 - 2.0 pts/acre	0 phi
	Cythion 8	malathion	1.25 - 1.5 pts/acre	0 phi
R	Furadan 4 F	carbofuran	1.0 - 2.0 pts/acre	1.0 pt -- 14 day phi
				2.0 pt -- 28 day phi
	Imidan 70-WSB	phosmet	1.3 lbs/acre	7 day phi
	Lorsban 4 E	chlorpyrifos	0.5 - 1.0 pts/acre	0.5 pt -- 7 day phi
				1 pt - 14 day phi
R	Mustang	zeta-cypermethrin	2.4 – 4.3 oz/acre	3 day phi
	Malathion 57 EC	malathion	1.5 - 2.25 pts/acre	0 phi
R	Penncap-M	methyl parathion	2 - 3 pts/acre	15 day phi
R	Pounce 3.2 E	permethrin	4 - 8 oz/acre	4 oz - 0 phi
				Over 4 oz --14 day phi
R	Pounce 25 WP	permethrin	6.4 to 12.8 oz/acre	6.4 oz - 0 phi
				Over 6.4 oz -- 14 day phi
R	Pounce WSB	permethrin	0.1 - 0.2 lb/acre	0.1 lb - 0 phi
				Over 0.1 lb -- 14 day phi
	Sevin 4 F	carbaryl	1.0 qt/acre	7 day phi
	Sevin 50 W	carbaryl	2 lbs/acre	7 day phi
	Sevin 80 WSP or 80 S	carbaryl	1.25 lbs/acre	7 day phi
	Sevin XLR	carbaryl	1.0 qt/acre	7 day phi
R	Warrior	lambda- cyhalothrin	1.92 - 3.2 oz/acre	7 day phi

PHI - Preharvest interval
R - Restricted Use

Water tour

(Continued from page)

among irrigators in Nebraska and Wyoming. From there the tour will visit subsurface drip irrigation research projects at NU's Panhandle Research and Extension Center research plots near Mitchell. Overnight will be at Scottsbluff.

On the final day, local irrigators will discuss conjunctive water use tensions in the Pumpkin Creek valley in Banner and Morrill counties. After a stop at the new visitors center at Lake McConaughy and discussion of UNL dissolved oxygen research at Lake Ogallala, tour buses return to Kearney.

Tour cost is $450 single occupancy or $400 double occupancy. Registration includes all food, motel, and motorcoach expenses. Registration is through the Kearney Area Chamber of Commerce at (800) 652-9435. Registration deadline is July 5.

Other sponsors are Central Nebraska Public Power and Irrigation District; Nebraska Public Power District; Nebraska Association of Resource Districts; Gateway Farm Show; Nebraska Water Conference Council and NU's Institute of Agriculture and Natural Resources, Conservation and Survey Division, Water Center and Panhandle Research and Extension Center.

Steven Ress, Communications Coordinator, UNL Water Center

EPA to reissue proposed pesticide drift labeling

The EPA has withdrawn its proposal regarding pesticide drift labeling. It is planning to seek discussion and conduct stakeholder workshops to solicit additional input and will then prepare another draft pesticide registration notice for public comment.

Huge public response resulted in one of the largest number of comments submitted to the EPA on a specific item. The draft proposal drew 5,249 public comments, of which 1,771 were unique and about 3,500 were the result of information campaigns.

Parts of the proposal drawing the most comments were: proposed wind speed restrictions, application height (especially for aerial applicators), enforcement issues (too vague to enforce), and economic hardships on small farms due to new equipment purchases. Seventy-four percent of the comments were from farmers, agri-business, and commercial applicators.

The proposed action was intended to help control pesticide drift from spray and dust applications in order to protect human health and the environment. A draft Pesticide Registration Notice is available for review at *http://www.epa.gov/opppmsd1/PR_Notices/prdraft-spraydrift801.htm*

For ground boom applications, the PR Notice proposed a maximum nozzle height of four feet, a maximum wind speed of 10 mph as measured by an anemometer, and a resultant droplet size as per label requirements (fine, medium, coarse, very coarse, etc.) Proposed aerial applications required a maximum boom width of 755% of the wingspan (90% of rotary blades), an allowable wnd speed range of 3 to 10 mph, and resultant droplet size as per label requirements.

For more information on the draft proposal, see the December 2001 issue of The Label, a UNL Cooperative Extension pesticide education newsletter available on the web at *http://pested.unl.edu/thelabel/tldec01.htm.*

From the June 2002 issue of *The Label.*

Larry Schulze
Extension Pesticide Coordinator

Assessing hail damage and stand loss

Recent hail storms around the state have pummeled row crops and wheat, leaving producers to determine whether replanting or planting to another crop is a viable option.

Preliminary estimates to the state Farm Service Agency (FSA) office indicate that more than 300,000 acres in central and eastern Nebraska were damaged by high winds and hail in mid-June thunderstorms.

In Buffalo County, Extension Educator Ralph Anderson reported that damage ranged from minimal to extensive in a storm swath two miles wide that cut diagonally through the county. One field had 90% defoliation of six- to eight-leaf corn and growing points just barely above ground.

"The plants look really bad now. Some of these fields will recover, but there are going to be yield losses."

Such storms are likely to occur for the next six to ten weeks.

For many producers, their options may be limited by previous herbicide selection, timing (in some areas it's too late to replant corn), and wet fields. In many areas, with the hail came heavy rains which have made planting impossible until the soil dries further. Producers will need to consider potential yield loss of the existing crop vs. replanting costs and potential reduced yields. In some cases, the reduced yield of a hail-damaged field may be higher than the potential yield from replanting.

It's almost too late to replant corn for grain and replanting soybeans now could mean up to a 25% potential yield reduction. Estimated yield losses for sorghum are slightly less than for soybeans at this time.

Hail damage assessment and management options vary according to plant stage, however the procedures are fairly similar from crop to crop and stage to stage:

- **estimate the growth stage;**
- **assess the damage; and**
- **consider options if yield potentials are low.**

Three NebGuides — for corn, soybeans and sorghum — offer valuable information on assessing hail damage and estimating potential yield losses at various stages. Correct assessment of potential yield is essential when determining continued inputs (herbicides, tillage, irrigation, etc.)

Check with your local Cooperative Extension office or on the web at *http://www.ianr.unl.edu/pubs* for copies of:

Assessing Hail Damage to Corn, (G86-803), which includes illustrations and tables from the National Crop Insurance Association's Corn Loss Instructions;

Soybean Yield Loss Due to Hail Damage (G85-762), which includes stand loss tables and a worksheet to calculate total actual loss; and

Sorghum Yield Loss Due to Hail Damage, (G86-812), which also includes illustrations, tables and a worksheet to calculate total actual loss.

When possible, wait 7-10 days following the storm to determine loss. By that time, regrowth of living plants will have begun and discolored dead tissue will be apparent. Also, some plants initially surviving a storm may soon die because of disease infection entering at the site of plant damage.

The corn NebGuide addresses losses due to stand reduction and defoliation as well as when the plant is most susceptible to damage.

With soybeans, yield loss predictions are based on: stage of growth and degree of plant damage, including leaf defoliation, stand reduction, stem damage and pod damage. Stand reduction refers to the number of plants actually killed by hail; defoliation is measured as a percentage of the leaf area destroyed by the storm; and stem damage covers stem cutoff (stems completely cut off and removed from the plant) and stems bent over or broken.

With sorghum, yield loss predictions are based on two factors: growth stage and plant damage. Plant damage may be either direct (stand reduction, stalk damage and head damage) or defoliation.

Roger Elmore Extension Crops Specialist, South Central REC

Countering the potential for greensnap in young corn

Following recent high wind storms, greensnap was reported in some corn fields. Fred Roeth, Extension weeds specialist at the South Central Research and Extension Center, noted that several factors can contribute to corn plants being vulnerable to greensnap at early growth stages. These factors, which can act alone or in combination, include the recent use of a growth regulator herbicide, crop variety, and environmental factors.

Growth regulator herbicides often are not recommended when corn is past the 6-inch stage because they can cause gooseneck or brittleness, making the plant more vulnerable to high winds. In sorghum applying a growth regulator herbicide during the fast growth stage can cause the plant to become limp, complicating cultivation.

Sometimes, however, there may not be another herbicide choice. In these cases, direct the application to keep the herbicide out of the whorl. In addition, considering the particularly windy conditions this year, be careful to avoid potential herbicide drift problems.