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Deja vu?

Some areas moving toward drought

Recent precipitation trends, coupled with excessive heat are pointing toward a reestablishment of drought conditions across western Nebraska. At present, it appears that the hardest hit area of the state is within an area bounded by Chase, Dundy, Hayes, and Hitchcock counties. This area has consistently missed the generous rains that much of the state shared in April and May.

In addition to this area in southwest Nebraska, abnormal dryness developed across most of the state in June. Only southeast and north central Nebraska have received normal to above normal precipitation during the last 30 days. In fact, much of central and south central Nebraska received less than 40% of normal precipitation during June.

The National Drought Monitor is currently reflecting abnormal dryness across southwestern Nebraska and the southern Panhandle. If good soaking rains fail to materialize during the next 7-10 days, the area will probably be classified as being in a moderate drought. Abnormally dry conditions are likely to expand as far east as Grand Island.

With the corn crop advancing toward pollination, water requirements have increased dramatically. For example, corn which emerged May 14 at Champion was estimated to be using .47 inch of moisture a day. Corn which emerged at North Platte on May 22 was

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Wheat equipment quarantined

State Agriculture Director Merlyn Carlson Tuesday (July 2) placed a quarantine on all wheat seed and custom harvesters coming into Nebraska from areas known to have the kamal bunt fungus.

“No confirmed cases of kamal bunt have ever been reported in Nebraska,” Carlson said. “But I feel it is important to implement this precautionary measure to protect our Nebraska producers.”

Harvest is underway in southern Nebraska and more than 90% of the state’s crop had turned color by Sunday.

Carlson issued the quarantine in support of the federal kamal bunt quarantine.

Kamal bunt is caused by the fungus, Tilletia indica, and is spread by spores, primarily through movement of infected or contaminated seed. While it does not threaten human health, flour made from heavily infected wheat has an unpleasant odor and taste, and jeopardizes its marketability.

Perhaps the most harmful impact of the disease, Carlson said, is the economic loss it can cause. Eighty countries ban imports of wheat grown in infected regions.

The recent discovery of kamal bunt in Texas prompted the quarantine.

Nebraska Department of Agriculture officials and Carrier Enforcement will begin checking custom harvesters at the state borders this week to make sure any equipment used in quarantined areas has been issued special USDA certification. Combines and other equipment used in infected fields are steam cleaned to eliminate kamal bunt spores.

In addition, NDA officials will collect statewide wheat samples which will be part of a nationwide survey for the disease.

“This survey is important so that we can help maintain our pest-free areas and export markets,” Carlson said.

On May 31, kamal bunt was found near the Brazos River in Texas. Since then, four more Texas counties have been added to the federal kamal bunt quarantine including Acher, Baylor, Throckmorton, and Young counties.

Wheat harvested from these infected fields has been quarantined at elevators or farms to prevent its movement.

Kamal bunt was first discovered in India and in 1996, was discovered in the United States in Arizona.
Gary Zoubek, Extension Educator in York County: Producers are busy with a variety of activities — laying out gravity irrigation, cultivating and hilling fields, and scouting for insects. Producers are also making needed herbicide applications, primarily in soybeans, but also in corn. We have not received much rain this week, so irrigating will be a major activity.

Doug Anderson, Extension Educator in Valley County: We are experiencing one of the best bug years in recent memory — alfalfa weevil, alfalfa caterpillar, cutworms and army worms in alfalfa and thistle loopers in soybeans, although not many have required treatment. Grasshopper pressure continues to increase with large populations moving from weedy areas to crops or gardens. Early Sunday rains provided some relief for increasingly drier soil conditions, crops and pasture. Pastures had been looking weaker and there is still some worry about the rest of the grazing season. Alfalfa is now in its second cutting, which had been delayed due to pest problems and the lack of moisture after the first cutting.

Gary Hall, Extension Educator in Phelps and Gosper counties: Pests seem to be the big news in our area. Producers are fighting grasshoppers, yellow woollybear, red admiral and thistle caterpillars while trying to irrigate. We have tons of grasshoppers and it looks like we may be dealing with them all season long. Crops look surprisingly good in spite of a serious lack of rainfall. The only good thing about this dry spell is that we have avoided any hail damage, for which we are thankful. Crop water use has been very high. Wheat yields are expected to be at or below average.

Duane Lienemann, Extension Educator in Webster County: Webster County experienced hail and strong winds a couple weeks ago that stretched along Highway 4 from Campbell to Lawrence. Reports of losses ranged from 20% to 100%. "Buggy-whipped" and "hail-bruised" crops may lead to further problems later. Several producers have disked down or shredded what was left and replanted if earlier fertilizer and pesticide applications allowed it. Several wheat fields were hit hard so have been involved with swathing and baling. Several followed with a secondary crop, mostly sorghum.

Several insects are now at or above normal levels, including the thistle caterpillar, alfalfa butterfly and larvae, and an early group of woollybears, all mostly in soybeans. Grasshoppers are everywhere and starting to do some damage. We also have seen quite a few white-striped sphinx caterpillars, but mostly in gardens and especially in potatoes. The effects of little or no moisture are becoming especially apparent in the top soil profile. Some drought-ravaged pastures from last year are starting to show their vulnerability.

Ralph Kulm, Extension Educator in Holt and Boyd counties: Thistle, red admiral and woolybear caterpillars continue to feed on soybeans. High numbers of yellow butterflies in alfalfa fields this week signal the need to watch for feeding. The timing of the second cutting of alfalfa could be a big factor here. About 2 inches to over 3 inches of rain fell in the past week, tremendously improving the outlook for pastures and hay as well as dryland crops. A high percentage of area oat fields are being cut for hay.

Ron Seymour, Extension Educator in Adams County: Corn is in the (Continued on page 143)
Field updates
(Continued from page 142)

7- to 9-leaf stage with most fields in good condition. Soybean plants are in the 3- to 4-trifoliate stage, with the plants beginning to bloom in a few fields. Thistle caterpillar larvae were noticed in most fields at in infestation of one per 5-20 row feet. Defoliation has been variable ranging from 5% to 40%.

Wheat fields are ripening with the kernels in the soft to hard dough stages. Second cutting of alfalfa is underway on a few irrigated fields. Portions of some dryland fields are starting to show moisture stress. Recently hatched grasshoppers were numerous on the edges of a number of fields. Reports of fully developed white-lined sphinx moth larvae moving through lawns and gardens have been numerous.

Gary Hein, Extension Entomologist at the Panhandle Research and Extension Center, Scottsbluff: Insect activity is high in the Panhandle. We saw a very heavy flight of sugarbeet webworms last week and may begin to see larval feeding over the next week or so. We also have seen isolated instances of heavy hornworm populations. Potato psyllid populations have been reported in Colorado and some nymphal populations are developing in Scottsbluff. Thistle caterpillars have been causing extensive defoliation in sunflower fields. Their feeding will continue as newly emerging painted lady butterflies have been observed. The variety of insect problems that continue to develop underscores the need to be regularly scouting fields.

Jennifer Chaky, coordinator of the NU Plant and Pest Diagnostic Clinic: The following diseases were diagnosed June 18 - June 29:

- in soybean – Rhizoctonia seedling disease (Thayer County);
- in wheat – scab and stripe rust (Otoe County).

There also have been several corn and soybean samples with nutrient problems and chemical injury.

Controlling trouble weeds after wheat harvest

The 2001 winter wheat crop varies from poor to good. Dry conditions last fall made for difficult seeding conditions. Some of those who planted early, planted deep to place the seed into moisture. This is especially a problem with short coleoptile winter wheat varieties. The rains washed soil over the seed, resulting in the seed being too deep and leading to poor emergence and stand development. Growers who planted early also had difficulty firming the seedbed because of dry soil conditions.

These stands emerged erratically and were prone to winter kill and crown and root rot infection. For others who waited for moisture to seed wheat, planting was late and there was little growth or tillering in the fall. These stands were susceptible to winds and cold temperatures. Wheat no-till seeded into good crop residue fared better than wheat seeded into bare soil conditions. This is probably because of the firmer seedbed conditions found in no-till, increased wind protection, and greater snow catch. Also this spring there was less tillering. These thin wheat stands, if not treated with herbicides this spring, have a high number of weeds.

Controlling these weeds after winter wheat harvest will be a challenge. Surveys taken after winter wheat harvest in western and southwest Nebraska usually show barnyardgrass and green foxtail as the leading summer annual grasses infesting winter wheat fields. Other grassy weeds include sandbur, stinkgrass, and witchgrass. This year many of the broadleaf weeds such as kochia, lambquarters, morningglory, common sunflower, toothed spurge, and wild buckwheat also will create post-harvest problems.

The effectiveness of post-harvest weed control is influenced by production practices associated with the previous wheat crop, such as winter wheat variety selection, fertilizer practices, row spacing, planting date, and seeding rate. Other factors influencing weed control include: weeds that are too large; cutting off weed tops with the combine; crop rotation; temperature when spraying; rain the day of spraying; streaks caused by sprayers, terraces, dust, straw, chaff, and weed seed distribution.

If only large broadleaf weeds are present after harvest (and these were not controlled with a harvest aid treatment), Gramoxone Extra plus atrazine should be applied soon after harvest. A mixture of Gramoxone Extra plus atrazine offers good control of both small and mature barnyardgrass, but is less effective on medium or large plants. It provides poor control of barnyardgrass when sprayed during the tillering to boot stage; however, once barnyardgrass has headed, the mixture again provides good control. Spraying after the grass has headed allows seed production and should be avoided when possible. In addition, the longer the weeds grow, the more soil water is used.

Several options are available for using nonselective herbicides with difficult-to-control weeds. With Gramoxone Extra use a minimum of 2 pints of X-77, or equivalent surfactant, per 100 gallons of solution. Use 2 quarts of X-77 / 100 gallons of spray solution if using less than 20 gallons of carrier. Sufficient surfactant is included in Roundup Ultra, Roundup Ultra Max, and Landmaster BW. Many other brands of glyphosate also need a surfactant. Check labels. For all brands of glyphosate add ammonium sulfate (spray grade) at 17 lb per 100 gal of spray solution. The ammonium sulfate is the first item put into the spray tank. Ammonium sulfate is also available.

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Weed control
(Continued from page 143)

It may be difficult to recognize weed stress; therefore, it's wise to always add ammonium sulfate. Improve control by increasing the rate of glyphosate. Allow at least six hours for the glyphosate products to become rainfast. Some weeds require more time than others. Barnyardgrass control may require as much as 24 hours without rain for maximum control. A spray volume of 5 to 10 gallons per acre should be used with the glyphosate products.

Our research and field surveys suggest that atrazine combined with either Gramoxone Extra or a glyphosate product is an effective treatment if applied before weeds are too large. Use the glyphosate products plus atrazine on grasses from tillering to the boot stage. Atrazine antagonizes glyphosate so the glyphosate rate must be increased to at least 28 oz./A. If barnyardgrass is present, increase the glyphosate rate when mixed with atrazine. If weeds are mature, use the Gramoxone Extra plus atrazine combination. Do not use glyphosate products on days that it will rain or when temperatures reach 95°F.

Split treatments have been especially effective. With the split treatment, apply the glyphosate products alone (surfactant if needed plus the ammonium sulfate) as the first application in July or early August. A second application in September should contain at least ½ pound per acre of atrazine and possibly Gramoxone Extra (add surfactant), depending on the amount and size of volunteer winter wheat, downy brome or jointed goatgrass present. The atrazine rate varies with soil and rainfall patterns. In southwest Nebraska use at least 2 quarts per acre of atrazine, but in the Panhandle, ½ quart per acre is often the maximum in one season. Be careful not to exceed the label rate for atrazine with the two combined treatments.

The advantage of split treatments is that they provide excellent control of volunteer winter wheat and other winter annual grasses. Control of volunteer wheat is especially helpful in reducing the spread of wheat streak mosaic. Using one quart or less of atrazine before September 10 allows winter wheat to be planted 12 months later in most areas. If sufficient soil water is available the next spring, corn could be planted or if moisture is limited, the field could be fallowed and winter wheat could be planted in the fall. Many options besides increasing herbicide rates are available for weed control after wheat harvest. It takes a total package to obtain maximum weed control. Stands of vigorous winter wheat will compete better with weeds, allowing you to concentrate on weed control in the fallow. Preparing a good firm seedbed, controlling weeds in a timely manner, fertilizing if needed, proper seeding, planting during the optimum time, selecting a competitive winter hardy winter wheat variety, and weed control in the growing wheat offer the best chance of reducing weed population and vigor after harvest. In addition, it's essential that you watch closely and spray at the proper time to control weeds. Most labels state that weeds must be treated before they are 6 inches tall. If weeds are under severe drought stress, wait for rain and spray about a week later.

If downy brome is a problem and a winter wheat-fallow rotation is being used, till immediately after harvest to plant the seeds and ensure maximum weed germination during the fallow period. If jointed goatgrass and/or rye is a problem, use a rotation where wheat is not planted for at least three years under good moisture conditions and even longer under dry conditions.

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GDD and ET data updates

The "weather" page on the Crop Watch web site at cropwatch.unl.edu/weather.htm provides daily updates to GDD, ET, and precipitation data for 19 Nebraska sites. Information is provided for several emergence dates for corn, soybeans and sorghum. Information is organized by districts in the state and by towns.

Drought
(Continued from page 141)

estimated to be using 33 inch of water a day. Without rainfall, dryland crops will rapidly deteriorate. Due to the situation, the Governor's Climate Assessment Response Committee has set a tentative meeting date for July 19. It appear that the southwestern monsoonal flow may be developing and may provide some aid to western Nebraska. Typically, moisture increases in the southwestern desert region of the United States in mid to late July until late August often move into western Nebraska. Numerical models indicate that some of this moisture may reach Nebraska this week. This would be several weeks earlier than normal, but could definitely provide short-term relief. Long range models continue to indicate above normal precipitation for everything east of the Panhandle from July to September. Eastern Nebraska has the best odds for receiving any above normal precipitation.

Because of the volatile nature of the current dry pattern, continuous updates will be provided in Crop Watch in upcoming weeks.

Al Dutcher
State Climatologist
Defoliation is the most common type of insect injury observed by Nebraska soybean producers and can occur from emergence to harvest. A variety of insects defoliate soybeans in Nebraska including bean leaf beetle, imported longhorned weevil, grasshopper, woollybear caterpillar, thistle caterpillar, green cloverworm, and a few others. Rarely does any single species reach population levels that defoliate soybean enough to cause economic damage, although last year (and this spring) we did see some fields where woollybear caterpillars reached economically damaging levels. It may be more likely that the combined injury of two or more defoliating insects can result in economic damage. We observed this in 1997 when the combined defoliation from grasshoppers and bean leaf beetles reached 50% in reproductive stage soybean near Mead. When this occurs multiple-species recommendations should be used. These can be multiple-species economic threshold tables, or more general ‘catch-all’ defoliation level recommendations. Because our multiple-species economic threshold tables do not cover all of the different species of insect defoliators we have been seeing this year, we would like to discuss the more general soybean defoliation thresholds.

Insect defoliation and yield loss

Soybean plants have a great capacity to compensate for insect defoliation. Research over the last 15 years has established that the key factor driving yield losses from defoliating insects is the degree that defoliation reduces light interception of the soybean canopy. Soybean can lose tremendous leaf area without yield loss if the remaining leaves are still intercepting at least 90% of the incident light. So, in making pest management decisions about defoliating insects, a crucial consideration is the size of the remaining soybean canopy. Small canopies cannot tolerate as much leaf loss as large canopies. Another consideration is when defoliation occurs. Unless severe, defoliation in vegetative stages usually doesn’t cause yield loss. For example, seedling soybeans can withstand about 50% (in some cases 60%) defoliation before economic damage will occur. Reproductive stages are more sensitive, with full bloom being the most sensitive stage. Growing conditions are the final factor. When environmental conditions are very favorable for soybean development (e.g. adequate water), plants have a greater capacity for regrowth and compensation.

General guidelines can be used for defoliating insects that lack species-specific thresholds or when two or more different defoliating species are present. In vegetative (pre-flowering) stages consider treatment if the insects are

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Insect defoliation levels of soybean leaflets. Soybean defoliation is notoriously difficult to estimate and is almost always overestimated because the injury is so dramatic and often not all parts of the canopy are considered.
Integrating control of purple loosestrife

Purple loosestrife is a serious, perennial, weed found in wetlands of the prairie states, including Nebraska. Due to its habitat, it is believed that neither herbicides nor biocontrol agents alone can provide long-term control; however, integrating control methods will likely provide a cost-effective, long-term solution. This is the second of two articles on identifying and controlling purple loosestrife; the first was in the June 8 Crop Watch. Part II continues with a discussion of control methods.

4. Herbicides: Herbicides alone can not provide long-term control of this weed due to the complexity of the wetland habitat; however, they are a necessary part of an integrated approach to stop the expansion of currently infested acres. Herbicides are especially important for “spot spraying” and weed control along road sides and ditches.

Herbicide evaluation trial

A preliminary study was conducted of several herbicides on wetlands along the Missouri and Niobrara rivers in northeastern Nebraska. The research sites contained a natural stand of various plant species including loosestrife, which accounted for approximately 50-80% of the stand. The other species present included cattail, partridge pea and American germander.

Defoliation (Continued from page 145)

present and feeding and defoliation will reach 40%. In pod-forming or pod-filling stages consider treatment if the insects are present and defoliation will reach 20%. These percentages can vary 5% to 10% according to the stage or type of insect(s) present, environmental conditions, the specific stage of the soybean, and the size and condition of the canopy. Experience will have to be your guide when using these thresholds.

It should be pointed out that defoliation is notoriously difficult to estimate. It is almost always overestimated. This is because the injury is so dramatic and all parts of the canopy often are not considered when making defoliation estimates. Some insect species primarily feed in the upper part of the canopy (e.g. bean leaf beetle), and some feed lower in the canopy. Different portions of the canopy will suffer different levels of injury. When estimating defoliation, the entire canopy, not just the injured portion, must be considered.

In order to predict if defoliation will reach 40% or 20%, the current injury must be estimated. The following steps are suggested:
1. Remove a trifoliolate leaf from the top, middle, and lower third of 10 randomly selected plants.
2. Discard the most and least damaged leaflet from each trifoliolate leaf. This will leave you with 30 leaflets.
3. Compare the 30 leaflets with the leaflets in Figure 1 and determine the average level of defoliation.
4. Repeat Steps 1-3 at four or more randomly selected locations in the field.

If defoliation approaches 40% (vegetative soybean) or 20% (pod-forming or pod-filling soybean), treatment may be warranted if the insects are actively feeding and defoliation is expected to increase. If treatment is warranted, identify the defoliating insect(s) and use the insecticide guides found on the NU Entomology Department website at http://entomology.unl.edu. Most of our commonly used foliar insecticides (e.g. Pounce, Warrior, Asana, Lorsban, and Sevin) are effective against most soybean defoliators.

Herbicides tested included: Rodeo at 4 and 6 pts/acre, 2,4-D at 2.5 and 5 pts/acre, Garlon 3A at 3 and 5 pts/acre, Arsenal at 4 and 6 pts/acre, Escort at 2 and 4 oz/acre, Krenite at 3 and 5 gall/acre, and of Garlon 3A at 3pts + 2,4-D at 2.5pts, and Escort at 2oz. + 2,4-D at 2.5 pts. Herbicides were applied around the flowering time of the weed. This timing was selected for two reasons: a) easy identification of the plant (purple flowers are apparent) and b) flowering time is one of the most vulnerable stages for chemical control (Table 1). Visual rating of percent control was conducted at 70 days and 365 days after treatment (DAT). It was based on a scale from 0 to 100 (where 0 = no injury and 100 = plant death).

Data from an evaluation at 70 DAT suggested that the best control (96%) of purple loosestrife was achieved with Rodeo at the rate of 6 pints per acre (Table 1). This treatment was the most consistent across the sites and is suggested for use as a 'spot treatment' of highly infested areas. Rodeo also provided ‘total control’ of the ‘good species’ in this test. For example there was a total kill of Partridge pea (100% control); however, since Rodeo does not have soil activity there was a good regrowth of many of those “good species” the next year. This also indicates that Rodeo did not have detrimental effects on the wildlife habitat, contrary to the common belief. Additional studies will be conducted to determine the long-term effects of Rodeo use on “good species”.

The most economical treatment was 2,4D amine (2.5 pts/acre), which costs about $4/acre. It provided 63% control of purple loosestrife and 47% of cattail, indicating potential for a selective control of a loosestrife in a stand of cattail. Furthermore, this suggests the potential for an integrated approach to loosestrife suppression; the use of a low dose of a cheap herbicide combined with biological controls agents (e.g. leaf defoliators such as G. calariensis and G.

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Leon Higley, professor, NU

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Western bean cutworm moth flight begins

Western bean cutworm moths are being caught in many Nebraska light traps. As moth numbers increase, mating will commence and the females will begin laying eggs on corn and bean plants. The appearance of the first moths is a signal to farmers and crop consultants to scout fields for these white, dome-shaped eggs.

Western bean cutworm moths lay eggs in clusters of five to 200 on the top surface of the upper most leaf of corn plants and on any bean leaf surface. The eggs require five to seven days to develop during which time the egg color changes to tan and then purple immediately before they hatch. After the small, dark brown larvae hatch on corn plants they move to the whorl or tassel to feed on the tender yellow leaf tissue or on the tassel itself. Once the tassel emerges or if it has already emerged when the eggs hatch, the larvae will move to the green silks. The developing larvae will continue to feed on the green silks moving down the silk channel until they reach the ear tip. The larvae will feed in the ear tip until they are fully developed.

If the infestation on one ear tip is so great that the larvae become crowded, a few may move outside the ear and begin to feed on the side of the ear. Western bean cutworm that hatch on bean plants, feed on blossoms and young, tender leaf material. The larvae will attack bean pods as they develop, eventually feeding on the developing seeds.

When scouting for western bean cutworm in corn, check 20 plants in at least five areas of each field. Look for eggs on the top surface of the upper most leaf or look for larvae in the tassel. If 8% of field corn plants, 5% of seed corn plants or 5% of popcorn plants have egg masses or larvae, consider an insecticide application. If 8% of field corn plants, 5% of seed corn plants or 5% of popcorn plants have egg masses or larvae, consider an insecticide application.

edible beans. Traps should be mounted on a post, about 4 feet above the ground, on the north and south edges of each field. The traps should be located in areas with at least some vegetation around them. The pheromone source should be pinned to the underside of the milk jug lid. A mixture of four parts water and one part antifreeze with a few drops of liquid soap should be placed in each cut out milk jug. Instructions for constructing a milk jug trap and where to buy moth pheromone may be found in the University of Nebraska NebGuide: Western Bean Cutworm in Corn and Dry Beans (G98-1359) or from the UNL Department of Entomology Web site: http://www.ansi.unl.edu/anr/entmol/entdept.htm.

The traps should be checked every few days until the peak of the moth flight. When the traps are checked, the moths should be removed, counted, and liquid should be added. If the number of moths accumulated at the peak of the moth flight totals less than 700, the risk of significant damage is minimal. The risk of seed damage is moderate if 700-1000 moths are accumulated in each trap. The risk of damage is significant if more than 1000 moths are collected from the initiation to the peak of the moth flight.

If the moth flight is moderate, the infestation in a nearby corn field should be used as a decision making guide. If the adjacent corn needs an insecticide treatment for western bean cutworm, the beans should also be treated. Bean fields that require an insecticide application should be treated 10-20 days after peak moth flight.

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Grasshopper numbers growing severe

Heavy infestations of grasshoppers have been reported in field margins and farmlands, mostly in the eastern third of Nebraska. Due to the cool spring, grasshopper hatch was delayed considerably this year. These reports of high grasshopper populations are coming later than normal, and most of the reports have been of numerous smaller hopper nymphs. It will be important to evaluate the potential severity of these infestations and control them in the next week or so in order to achieve the best control. Once the grasshoppers become adults they are much more difficult to control. Treating untilled grasshopper hatching areas (e.g. ditches, field margins, wasteland areas, etc.) will help delay the movement of hoppers into cropland later in the summer.

As we near the end of the hatching period and while previously hatched grasshoppers are still relatively small it is extremely important to evaluate density of the grasshoppers in and around fields for the need to control. When the number of grasshoppers per square yard has been estimated, use Table 1 as a guideline to determine if treatment is necessary. Four species will primarily be involved in cropland grasshopper problems. These are the differential, two-striped, red-legged and the migratory grasshoppers, and some of these may be more likely to be found damaging specific crops (e.g. two-striped in sunflowers). If the grasshoppers present are rangeland species, they may never move into the adjacent crops. The best time to control grasshoppers is during the 3rd and 4th instars (stages of nymphal development). Reports indicate this is close to the current situation. At this time most of the eggs will have hatched, the young hoppers will be susceptible to the insecticide, and they will be concentrated in the hatching areas.

Grasshoppers are easiest to control before they become adults. If a rate range is listed for a chemical, higher rates generally should be used later in the season because adult grasshoppers are more difficult to control. Grasshoppers may be controlled by applying insecticides as sprays or baits. When spraying borders adjoining cropland, be sure to follow label restrictions on grazing and harvest intervals.

Several insecticides are effective for grasshopper control. Read the label thoroughly before any insecticide application, and follow the recommended label rates, application directions, and restrictions. Insecticides recommended for control of grasshoppers on various crops include:

- Asana XL: corn, soybeans, sugarbeets, sunflowers, dry beans, potatoes, non-crop usage (e.g. field margins)
- Dimethoate: alfalfa, corn, sorghum, wheat, dry beans, potatoes
- Furadan 4F: alfalfa, corn, small grains, soybeans, sunflowers
- Lorsban 4E: alfalfa, corn, sorghum, soybeans, sugarbeets, sunflowers, wheat
- Malathion (including ULV): most crops and non-crop usage. (Performs best when used on small grasshoppers.)
- Orthene: dry beans, non crop usage. (The low rate can be used for small hoppers, but higher rates are needed for larger grasshoppers.)
- Scout X-TRA: soybeans, sunflowers
- Sevin: rangeland. (Performs best when used on small grasshoppers.)
- Warrior: alfalfa, corn, sorghum, soybeans, sunflowers, wheat

As the summer progresses, movement of grasshoppers into cropland will increase, especially if the forage in grasslands is limited. Treating the areas where grasshoppers are concentrated while they are nymphs will increase the impact of the treatments. This may not eliminate the need for later treatments to protect cropland, but it will likely reduce the needs for later treatments.


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Extension Entomologist
Panhandle REC

John Campbell
Extension Entomologist
West Central REC

<table>
<thead>
<tr>
<th>Grasshopper Population</th>
<th>Field</th>
<th>Field Margin</th>
<th>Treatment necessary?</th>
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<tr>
<td>Non-economic</td>
<td>0-2</td>
<td>5-10</td>
<td>No</td>
</tr>
<tr>
<td>Light</td>
<td>3-7</td>
<td>11-20</td>
<td>Questionable, depends on size, species, type of crop</td>
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<tr>
<td>Moderate</td>
<td>8-14</td>
<td>20-40</td>
<td>Probably</td>
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<tr>
<td>Abundant</td>
<td>15 or more</td>
<td>41 or more</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 1: Treatment guidelines based on number of grasshoppers (nymphs and adults) per square yard.
Purple loosestrife (Continued from page 147)

Herbicides, their rates (product/acre) and percentage control at 70 and 350 days after treatment (DAT) applied during 1999 research project to control purple loosestrife.

<table>
<thead>
<tr>
<th>Product /acre</th>
<th>Cost $</th>
<th>70 DAT %</th>
<th>350 DAT %</th>
<th>70 DAT %</th>
<th>350 DAT %</th>
<th>70 DAT %</th>
<th>350 DAT %</th>
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<tbody>
<tr>
<td>Rodeo (4 pts)</td>
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<td>80</td>
<td>70</td>
<td>60</td>
<td>22</td>
<td>100</td>
<td>22</td>
</tr>
<tr>
<td>Rodeo (6 pts)</td>
<td>82</td>
<td>96</td>
<td>89</td>
<td>65</td>
<td>50</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Krenite (3 gall)</td>
<td>150</td>
<td>71</td>
<td>50</td>
<td>23</td>
<td>35</td>
<td>90</td>
<td>17</td>
</tr>
<tr>
<td>2,4D amine (2.5 pt)</td>
<td>4</td>
<td>63</td>
<td>43</td>
<td>47</td>
<td>15</td>
<td>80</td>
<td>23</td>
</tr>
<tr>
<td>Arsenal (4 pts)</td>
<td>130</td>
<td>83</td>
<td>82</td>
<td>48</td>
<td>67</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Garlon 3A (3 pts)</td>
<td>25</td>
<td>20</td>
<td>52</td>
<td>10</td>
<td>27</td>
<td>--</td>
<td>25</td>
</tr>
<tr>
<td>Escort (1 oz)</td>
<td>20</td>
<td>30</td>
<td>42</td>
<td>20</td>
<td>27</td>
<td>100</td>
<td>25</td>
</tr>
<tr>
<td>Escort (2 oz)</td>
<td>40</td>
<td>67</td>
<td>73</td>
<td>40</td>
<td>30</td>
<td>100</td>
<td>15</td>
</tr>
<tr>
<td>LSD =</td>
<td>33%</td>
<td>29%</td>
<td>42%</td>
<td>23%</td>
<td>20%</td>
<td>23%</td>
<td></td>
</tr>
</tbody>
</table>

Purple loosestrife. In addition, controlling purple loosestrife in any aquatic habitat requires special attention. Aquatic habitats are those that contain alive organisms such as fish, frogs, turtles, snakes, etc. Only two of the products tested during this study were registered for use in aquatic habitat — glyphosate and 2,4-D. Glyphosate-based products for aquatic habitat are: Rodeo, Aqua-Master, Aqua-Neat, Eagre, Glypro and Glyphos-Aquatic. Each one can be used at a rate of 4 pts per acre. Do not use any glyphosate products that have various formulations and trade names of Roundup (eg. Roundup Ultra, Roundup Dry, etc); they contain the surfactant that is toxic for the fish. To do ‘spot spraying’ with a back pack sprayer, use 1 pint of Rodeo + 3 oz NIS per 3 gallons of water and spray to wet. The product is non-selective, therefore, avoid injuring native vegetation. The most effective application time is at the bloom stage in July and August.

Remember to always read and follow product label directions.

6. Biological control using insects does not eliminate the target weeds, but may suppress weed population to a non-significant level. Bio-control agents alone can not provide long-term control, however they can be part of an integrated approach to stop the expansion of currently infested acres. Several insect species were introduced from Europe, where loosestrife originated. They include: root weevil (Hylobius sp.), two beetles (Galerucella sp.), and two flower-feeding weevils (Nanophyes sp.). They are highly host specific to purple loosestrife, defoliating the plant as both adults and larvae. These insects, in combination with other “competitor” plant species have historically kept loosestrife under control in Europe.

It is believed, however, that insects alone can not provide adequate control in North America. Experience from other areas of North America suggest that it takes five to seven years for some effect to be visible. An example from Nebraska is the preliminary study of leaf defoliation by the Galerucella beetles conducted at the Wayne State College (by Drs K. Alexander and M. Hammer). The study suggested that 50-100 insects per plant will be required to observe significant reduction in leaf area. Considering the current cost of insects (eg. $1 per beetle) and the fact that the stands of purple loosestrife can consist of up to several hundred plants, this biocontrol method is not economical. The use of these insects must be evaluated further.

Take action

We must all work together to control this pest and prevent further planting and natural spread, or else pay the price as taxpayers as it invades and choke vital waterways and wetlands. Pull and burn any plant, root and seed material in your landscape, and encourage others to do the same. Alternative landscape plants might include spiked speedwell, lilies, Siberian iris, spiked gayfeather and garden sage. Check with your local nursery or horticultural organization for details on alternative landscape species.

Document every infestation with a purple loosestrife report form (see page 150) and contact Stevan Knezevic, Extension weed specialist, at the NEREC at Concord (402-584-2808)
July 12 Market Journal focuses on new tax act

The recently passed Tax Reconciliation Act has many implications for agricultural producers and their families. The new tax code has changes that start immediately and others that take effect through 2010. These changes will be discussed July 12 on Market Journal with host Doug Jose, NU Extension farm management specialist, and Gary Bredensteiner, NU director of farm management operations.

The key changes in the tax code to be discussed include estate tax, income tax, child tax credit, “marriage penalty” tax, retirement plans and educational provisions.

Also appearing on the July 12 program will be Bryce Neidig, a Nebraska farmer and president of the Nebraska Farm Bureau, who will discuss his observation of soybean production in Brazil. Plattsmouth grain farmer Roy Smith and Lynn Lutgen, NU grain marketing specialist, will look at grain marketing strategies for the next four weeks.

The July 12 Market Journal will be downlinked to 20 NU Cooperative Extension county offices from 8 to 9 p.m. CDT (7-8 MDT). For information on locations contact your local Cooperative Extension office or visit the Market Journal web site at http://marketjournal.unl.edu.

The July 26 Internet-only release of Market Journal will feature a discussion on new age cooperatives.

Al Prosch, NU director of Pork Central, Sam Cordes, NU community development specialist, will talk with Stan Rosendahl, president, Family Quality Pork Processors, about new opportunities for developing agricultural cooperatives. Their cooperative is preparing to build a pork processing plant in Albion.

Managing seeding year alfalfa

Alfalfa seeded this spring is now or soon will be ready, to cut. Seeding year alfalfa is different from established stands. Stems are spindly, roots are smaller and shorter, and growth is a little slower.

You can harvest seeding year alfalfa as early as 40 days after seedlings emerge. Plants need this much time to develop their ability to regrow from the crown after cutting. If alfalfa is cut before this, at least one set of leaves must remain on the plant for it to regrow.

While alfalfa seedlings can be harvested at this time, I recommend waiting 60 to 70 days after emergence, to around early flowering. Total yield often will be higher, roots will be better developed, and plants will withstand weather stress easier with a little extra growth. This is especially true for early planted alfalfa.

By cutting early, regrowth of seedling alfalfa will become similar to established alfalfa, giving you possibly two or three cuts the first year. It also helps control many weeds.

And remember, never cut seeding year alfalfa during the four weeks before a killing freeze.

Bruce Anderson
Extension Forage Specialist