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With a mild winter and more corn flea beetles

Stewart’s Wilt likely to increase

Stewart’s Wilt of corn is widespread in the Corn Belt and until 1999 generally extended only as far west as Iowa. By the end of the 1999 growing season, however, Stewart’s Wilt had been reported in at least 17 counties in eastern Nebraska. Prior to last year, it had only been confirmed once in Nebraska (1995) and had not been a concern. Now, however, its extension into the state may affect corn exports. This disease is caused by a pathogen on the Nebraska Department of Agriculture’s quarantine list and export of seed from contaminated fields to many countries may be restricted.

Most dent corn and popcorn hybrids planted in Nebraska have at least moderate resistance to Stewart’s Wilt. It is most serious on sweet corn and some inbred lines for popcorn and hybrid seed production. The bacterium that causes Stewart’s Wilt (\textit{Pantoea stewartii}); previously named \textit{Erwinia stewartii}) overwinters within and is dispersed by the corn flea beetle (\textit{Chaetocnema pulicaria}). Several other insects can transmit the bacterium, including the beetle stages of root worms; however, the corn flea beetle is the most important insect to the epidemiology of Stewart’s Wilt disease. The incidence of Stewart’s Wilt can be predicted based on the overwinter survival of the beetle vector. When the winter is mild, the population of flea beetles will be high and the potential for Stewart’s Wilt will be correspondingly high. The weather conditions of the 1999/2000 winter season were very mild and resulted in high surviving populations of the corn flea beetle, which has been identified across eastern Nebraska (see March 10 and May 12 \textit{Crop Watch} issues). Insecticide management of the flea beetle population early in the season does not effectively prevent Stewart’s Wilt disease from developing on susceptible hybrids.

There are two phases of Stewart’s Wilt disease. The first phase causes lesions on seedlings (Figure 1), the resulting wilting and blight (Figure 2) often causes seedling death. The second phase of Stewart’s Wilt occurs after tasseling. Depending on the susceptibility of the hybrid or

(Above) Fig. 1 Elongated lesions on leaf blades typical of early symptoms of Stewart’s Wilt found in a Lancaster County field. (Below) Fig. 2 Advanced stages of Stewart’s Wilt.

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Jim Schild, Extension educator in Scotts Bluff County: We had a fairly widespread freeze Saturday morning. Temperatures at Scottsbluff were 29 for about three hours; producers in the northern part of the county reported temperatures in the low 20s. A lot of the wheat is in the boot stage so there is a potential for some damage here. The replanted sugarbeets were just starting to come up. This is a critical time when the plants can be frozen so we may lose some sugarbeet acres from the freeze. In some areas corn froze, but the growing point was still below the ground.

Bob Wright, Extension entomologist, South Central Research and Extension Center, Clay Center: Bean leaf beetles are damaging soybeans as they emerge. Early planted fields are often most heavily damaged as the beetles will fly around and concentrate in early emerging fields. Higher than normal bean leaf beetle populations are expected due to the mild winter. See the April 21 Crop Watch for a complete discussion of scouting, economic thresholds and control options.

Terry Gompert, Extension educator in Knox County: Alfalfa weevil is at extreme levels with most fields in the county affected. Alfalfa is in the late bud stage and immediate harvest or treatment is recommended. Alfalfa height ranges from 4 to 18 inches. First cutting alfalfa will be very light. The corn is popping right out of the ground. Soybean planting is in its last week. Range and pasture looks slow. Drought signs are everywhere.

Ray Weed, Extension educator in Kimball and Banner counties: We experienced freezing temperatures in Kimball-Banner counties as low as 21 degrees F Saturday morning. Our winter wheat crop is farther along in maturity than usual for this time of year, and wheat in the joint to boot stage may be damaged. Along with the Russian wheat aphid and wheat streak mosaic virus, we also are seeing greenbugs in many wheat fields. This is unusual, especially this early in the season. The cold temperatures also damaged at least the top growth of alfalfa plants and may impact replanted sugarbeet seedlings. Field peas are a relatively new crop here and appear not to have been affected by the freezing temperatures.

Jim Peterson, Extension educator in Washington County: We had .15 to .20 of an inch of rainfall this past week; however, that certainly will not end the drought in eastern Nebraska. Most of the corn has emerged and is doing well at this time. Rainfall is needed to keep it going. About 75% of the soybeans are planted. We have had some reports of alfalfa weevils in alfalfa fields, but have very few other insect complaints at this time.

Ralph Anderson, Extension educator in Buffalo County: Most of the corn is planted and soybeans are going in fast. The first cutting of alfalfa is on the ground in some areas. Planting conditions were very good this year and resulted in excellent seedling establishment. There has been some wireworm damage in limited areas. Although we could use a lot more rain, most of our fields have had enough to activate the herbicides and early weed control generally has been good. Cutworm infestations have been patchy and only a few areas have needed treatment. Flea beetle populations are below treatment thresholds.
Begin scouting soon for stalk borers

Producers may want to begin scouting for stalk borers in corn soon, according to insect development projections based on GDD accumulation models.

The stalk borer life cycle begins in the fall when moths lay their eggs on grassy plants and ragweed. Often these are in fence rows, grass waterways or terraces bordering crop fields. These eggs hatch in late April or early May and larvae bore into the grasses or other weeds such as ragweed and begin feeding. As the stalk borers grow or if the plants are mowed or burned down with herbicides, they move into adjacent corn plants to complete their development.

Common stalk borer economic injury levels (% injured plants) (Assumes 80% insecticide efficacy, and $2 bu/acre grain value).

<table>
<thead>
<tr>
<th>Corn leaf stage</th>
<th>Control costs/acre</th>
<th>125 bu/acre yield potential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$7</td>
<td>$10</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>14</td>
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<tr>
<td>4</td>
<td>11</td>
<td>16</td>
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<tr>
<td>5</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>7</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Common stalk borers are rather distinctive in appearance, with three white stripes on a brownish-purple background. The two stripes on the side stop just behind the three pairs of true legs, then continue about half-way down the length of the caterpillar. Feeding damage by stalk borers may kill the growing point if the caterpillar bores into the base of the stalk, or may produce ragged feeding holes in the leaves, if feeding starts in the whorl and then moves down into the stalk.

As of May 14 we had accumulated 850-1100 degree days (base 41°F) since Jan. 1 (see map, page 82). Based on research at Iowa State University, stalk borer egg hatch begins at about 575 degree days and should be complete by 750 degree days. Scout corn for common stalk borers when about 1,300-1400 degree days have accumulated. Updated degree day maps will be published in future issues of Crop Watch.

Check corn plants bordering grassy areas to determine the percentage of plants with stalk borer injury when 1300-1400 degree days (41°F base) have accumulated since Jan. 1. Examine several sets of 10 plants. Look for feeding damage and insect damaged plants to see if live larvae are present. If weedy grasses were common throughout the field last year, the whole field may need to be scouted for common stalk borers. Use the information below to determine the economic injury level.

To be effective, insecticides must be applied before common stalk borer larvae have entered the stalk. In cases where stalk borers begin feeding on grassy weeds or other vegetation in field edges, control is most effective if timed between 1400 and 1700 degree days (base 41°F), which corresponds to the first half of the period that stalk borers are migrating from weedy hosts into corn. If the infestation is restricted to the field margin, use a border treatment.

In cases where there is a history of field-wide stalk borer damage at a site, insecticides applied to corn and timed for egg hatch may reduce damage. The disadvantage of this approach is that there is no effective way to sample for stalk borers at this time, so treatments are made without knowledge of whether an

(Continued on page 82)
Weeds ahead of schedule in soybeans

Just as soybeans are going in the ground earlier and faster than usual, weeds are emerging earlier than usual.

Many producers already have noticed several weed species that normally do not move in until June. For example, several warm season annual grasses have been reported in eastern Nebraska corn fields. Many of these species are germinating ahead of normal due to higher than normal soil temperatures this winter and spring.

With increased weed numbers possible due to warmer soil temperatures and the possibility of less than stellar performance from some preemergence herbicides on dry land, postemergence weed control will be very important this year. While timing of weed control is a big issue, treatment selection is just as important.

Roundup Ready fields will be right at home this year. As long as the herbicide application is timely, growers should be able to control weeds early and possibly have to treat again later. If this sounds like it offers growers a lot of flexibility, it should.

In conventional fields, many tactics are available to control even the most stubborn weeds. Cultivation is still effective between rows and can be even more effective in a dry year with dry soil conditions. Unfortunately, it also will dry the soil, further limiting soil moisture available to the plant. There are no free lunches.

Growers should consider several factors when choosing a postemergence herbicide, including crop safety. Many soybean herbicides used for broadleaf control are cell membrane disrupters. Herbicides such as Blazer, Cobra, Resource, and Flexstar will do well on many broadleaf weeds, especially waterhemp, but also will cause some burning on the soybean leaves. With dry weather conditions, many labels will call for crop oil to increase efficacy. This may cause even more leaf burn. Research has shown there is little to no yield impact from this burn in early growth stages of soybeans; however, once soybeans begin blooming, watch out. Grass control is not a problem with soybeans since Poast, Fusion, Fusilade, and Select will easily control annual grasses. One slight problem, however is that these grass herbicides require crop oil and when tank mixed with cell membrane disrupters for broadleaf control, things can really heat up.

Problematic weed species

Broadleaf weeds

Black nightshade: Problematic in many soybean stands mid to late season. Achieve control with Cobra at 10-12 oz/a, Blazer/Status at 1-1.5 pt/a, Reflex/Flexstar at 1 pt/a, Liberty on LL soybeans at 20-28 oz/a, Pursuit DG at 1.44 oz, a, Raptor at 5 oz/a, and Roundup Ultra in RR soybeans at 32 oz/a. Because nightshade moves in late in the season, cell membrane disrupters may not be a feasible treatment, especially during blooming.

Kochia: Roundup Ultra in Roundup Ready soybeans at 32 oz/a. Herbicides offering less control, in the 80% range, include Basagran at 2 pt/a, Pursuit DG at 1.44 oz/a, Raptor at 5 oz/a Liberty in LL soybeans at 28 oz/a, and Synchrony in STS soybeans at 0.5 oz/a. Many

Producers should begin scouting corn for common stalk borers when 1,300-1,400 growing degree days have accumulated, using a 41 F base.

Stalk borers (Continued from page 81)

Insecticide treatment would be profitable that year.

Insecticides may be mixed with fast-acting herbicides being used to burn down early season weeds, or applied several days after use of slower-acting herbicides. Check the label for compatibility of different insecticide and herbicide mixtures.

A variety of foliar insecticides are labeled for control of common stalk borers in corn, including Ambush 2E (6.4-12.8 oz per acre), Asana XL (5.8-9.6 oz per acre), Lorsban 4E (2-3 pints per acre), Pounce 3.2EC (4-8 oz per acre), Capture 2EC (2.1-6.4 fl. oz per acre) or Warrior 1EC (2.56-3.84 oz per acre).

Bob Wright
South Central REC, Clay Center

(Continued on page 85)
Western Nebraska wheat suffers low temps, benefits from rains

Some Western Nebraska wheat fields are beginning to show the effects of last week’s temperature extremes — from highs in the mid 90s one day to lows in the 20s several days later (Saturday, May 13). And, as if this wasn’t challenge enough, precipitation has been variable and some fields are becoming moisture stressed.

Damage from the cold temperatures is not widespread through western Nebraska but is quite evident from field to field, depending on a variety of factors, including fertility, moisture, planting date, geography, and variety. Rains following the cold front may have helped recovery in some areas.

While fields may appear ugly and badly damaged, Extension specialists at both the West Central and Panhandle research and extension centers recommend producers wait five to 10 days before fully assessing damage and deciding how to proceed.

“T’m a believer in patience,” said Dave Baltensperger, Extension crop breeding specialist. At the Panhandle REC. “You’d be kidding yourself to be able to truly estimate the damage right now. Wheat’s ability to recover is fairly high.”

The wheat damage developed after temperatures in western Nebraska took a dive and hovered in the mid to upper 20s for several hours last Saturday (May 13), damaging some lowland or early maturing wheat fields which ranged in development from boot to the milk stage (southern Nebraska). Fields in the later stages of development were most susceptible to cold temperatures. Fields still in the early stages of development may exhibit leaf burning, but are more likely to recover. Fields in later stages may sustain damage to the head and male flower parts while leaves may appear relatively undamaged. Producers may want to open the flowers in the head and look for damage to the anthers, which will affect pollination, recommended Bob Klein, Extension cropping systems specialist at the West Central REC.

If the heads are white or turning brown, damage is serious and producers may want to consider other options. In some cases there may have been enough damage to cause the head to become trapped, especially when the heads were higher than the rest of the canopy. Some plants may appear healthy now but have stems that break more readily once the heads become filled.

(Continued on page 85)

Temperatures that cause injury to dehardened wheat at spring growth stages and symptoms and yield effect of spring freeze injury.

<table>
<thead>
<tr>
<th>Growth stage</th>
<th>Approximate injurious temperature (two hours)</th>
<th>Primary symptoms</th>
<th>Yield effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tillering</td>
<td>12 F</td>
<td>Leaf chlorosis; burning of leaf tips; silage odor; blue cast to fields</td>
<td>Slight to moderate</td>
</tr>
<tr>
<td>Jointing</td>
<td>24 F</td>
<td>Death of growing point; leaf yellowing or burning; lesions, splitting, or bending of lower stem; odor</td>
<td>Moderate to severe</td>
</tr>
<tr>
<td>Boot</td>
<td>28 F</td>
<td>Floret sterility; head trapped in boot; damage to lower stem; leaf discoloration; odor</td>
<td>Moderate to severe</td>
</tr>
<tr>
<td>Heading</td>
<td>30 F</td>
<td>Floret sterility; white awns or white heads; damage to lower stem; leaf discoloration</td>
<td>Severe</td>
</tr>
<tr>
<td>Flowering</td>
<td>30 F</td>
<td>Floret sterility; white awns or white heads; damage to lower stem; leaf discoloration</td>
<td>Severe</td>
</tr>
<tr>
<td>Milk</td>
<td>28 F</td>
<td>White awns or white heads; damage to lower stems; leaf discoloration; shrunken, roughened, or discolored kernels</td>
<td>Moderate to severe</td>
</tr>
<tr>
<td>Dough</td>
<td>28 F</td>
<td>Shriveled, discolored kernels; poor germination</td>
<td>Slight to moderate</td>
</tr>
</tbody>
</table>
After Saturday’s temps in the 20s

Assessing wheat damage

Winter wheat goes through a complex process of cold hardening during the fall that increases its resistance to cold winter temperatures. Its cold hardiness is quickly lost when growth resumes in spring, or in some cases late winter, leaving it little resistance to freezing. The degree of injury to wheat from spring freezes is influenced by the duration of low temperatures as well as the low point they reach. Prolonged exposure to freezing causes much more injury than brief exposure to the same temperature. Temperatures at which injury can be expected are shown in the following table, and are for two hours of exposure to each temperature. Less injury can be expected from shorter exposure times, while more injury might be expected at even somewhat higher temperatures from longer exposure.

Several characteristic freeze symptoms develop at each growth stage. It is important to know which plant parts are most vulnerable at each growth stage, where they are located on the plant, and their appearance when they are normal as well as after injury. Most of the wheat in western Nebraska was at the boot to heading stage Saturday.

The following information on assessing freeze damage to wheat is from the NU Cooperative Extension publication, Freeze Injury to Nebraska Wheat, available in print from local Cooperative Extension offices and on the Web at http://ianrwww.unl.edu/pubs/fieldcrops/ec132.htm

Injury at boot stage

The boot stage of growth extends from when the head passes the third joint until the head emerges through the flag leaf. At this stage the head is enclosed in the sheath of the flag leaf. Freezing may trap the heads inside the flag leaves (boot) so they cannot emerge normally. When this happens, the heads remain in the boots, split out the sides of the boots, or emerge base first from the boots. Heads sometimes emerge normally from the boot after freezing, but remain yellow or even white instead of green. When this happens, the heads have been killed. Frequently, only the male parts (anthers) of the flowers in the heads are killed. Since wheat is mostly self-pollinated, sterility caused by freeze injury causes poor kernel set and a low grain yield. Injury can be detected soon after freezing by examining the anthers inside each floret. Anthers are normally light green and turgid when young and become yellow about the time they are extruded from the florets after flowering (anthesis). Freeze injury causes anthers to be white and shriveled and might prevent them from being extruded from the florets.

Many symptoms of freeze injury that occur at early stages might also be present at the boot stage. Leaves and lower stems might exhibit symptoms described for the jointing stage, but these plant parts are less sensitive than are the male flower parts. Freezing temperatures that are severe enough to injure leaves and lower stems are nearly always fatal to male flower parts, but less severe freezing may cause male sterility without any symptoms appearing on plant vegetative parts.

Injury at heading stage

Wheat heads usually emerge from the boots during mid-May to early June. Most symptoms of freeze injury at this stage — sterility, leaf desiccation or drying, and lesions on the lower stems — are similar to symptoms at earlier growth stages. The most apparent symptom, however, is usually chlorosis or bleaching of the awns so that they are white instead of the normal green color. Freezing temperatures that injure the awns also usually kill the male flower parts.

Partially filled wheat heads after freeze injury at flowering stage.

A light green or white “frost ring” may encircle the stems one to two inches below the heads several days after exposure to freezing temperatures. This area of yellowed chlorotic tissue marks the juncture of the stems and the flag leaves at the time of the freeze. The frost ring may be present on injured plants as well as on plants that show no other symptom of injury. It does not seem to interfere with the movement of nutrients from the plant to the developing grain. As the plants mature, however, the heads may break over at the frost ring. That is most likely to happen to heads that are well filled, particularly during windy conditions.

Injury at the flowering stage

The flowering stage is the most freeze-sensitive stage in wheat and symptoms are similar to those for the heading stage. Small differences in temperature, duration of exposure, or other conditions can cause large differences in the amount of injury. Freezing will cause complete or partial sterility and void or partially filled heads because of the extreme sensitivity of the flower parts.

Robert Klein, Extension Cropping Systems Specialist
Drew Lyon, Extension Dryland Cropping Systems Specialist
John Watkins, Extension Plant Pathologist
Corn leaf beetle identified in southern Nebraska

A new pest of seedling corn, the southern corn leaf beetle, is being found in southeastern Nebraska.

This 3/16-1/5-inch long beetle is grayish to brownish in color, often covered with soil particles. It readily falls to the ground when disturbed, and does most of its feeding early in the morning or at night, so it may not be easily found on plants. Damage by this insect can be confused with that of the black cutworm. The southern corn leaf beetle also has been reported in southern Iowa this year, and has been found in isolated areas of northcentral and northeastern Kansas in the past.

Wheat update

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"In some fields, the damage isn’t anything that a good rain wouldn’t help," said Drew Lyon, Extension dryland crops specialist at the Panhandle REC at Scottsbluff. Precipitation will be especially important over the next couple of weeks as the wheat enters the pollination and grain fill stages — periods of heavy plant water use.

If damage is significant, producers have several options, including making hay, cutting silage, destroying the field or harvesting, Klein said. If the drought worsens, hay prices will rise and that may become a very viable option for some producers looking at decimated fields, he said. In other cases, destroying the crop now will help save valuable soil moisture for next year’s crop. Or, if moisture is received, planting a later crop such as millet or sunflowers may be an option.

Most importantly, before doing anything with this year’s crop, check with the Farm Service Agency or your crop insurer, Klein said.

See story, page 84, for more information on assessing freeze damage.

Z B Mayo, NU professor of entomology, reported finding the corn flea beetle in research plots in Otoe County and Gerald Hopp, Extension educator in Richardson County, has reported damage in his area. I suspect that other southeastern Nebraska counties bordering Kansas could have isolated populations of this insect. Foliar insecticides used for cutworms on corn would be appropriate for control.

Additional information including photos can be found in 1998 and 1999 Kansas State University Entomology newsletters, available at http://www.oznet.ksu.edu/entomology/extension/KIN.htm

Bob Wright
Extension Entomologist
South Central REC

Weeds in soybeans

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areas have ALS-resistant kochia so herbicides such as Synchrony, Pursuit, and Raptor will not provide control.

Velvetleaf: Many fields already have velvetleaf escapes. Achieve control with cell membrane disrupters including Blazer/Status at 1-1.5 pt/a, Cobra at 10-12 oz/a, Reflex/Flexstar at 1 pt/a, as well as Basagran at 2 pt/a, Classic at 0.5-0.75 oz/a, Pursuit DG at 1.44 oz/a, Raptor at 5 oz/a, Synchrony in STS soybeans at 0.5 oz/a, Roundup Ultra in RR soybeans at 32 oz/a, and Stellar at 6 oz/a.

Waterhemp: Because much of the waterhemp is ALS-resistant, only a handful of herbicides will provide satisfactory control. These include cell membrane disrupters such as Blazer/Status at 1-1.5 pt/a, Cobra at 10-12 oz/a, Reflex/Flexstar at 1 pt/a, as well as Stellar at 6 oz/a and Roundup Ultra in RR soybeans at 32 oz/a.

Grass weeds

Most annual grasses can be readily controlled with Assure II at 7-8 oz/a, Fusilade at 10-12 oz/a, Fusion at 6 oz/a, Liberty in LL soybeans at 28 oz/a (will not control volunteer LL corn), Poast Plus at 1.5-2.25 pt/a, Select at 6 oz/a, and Roundup Ultra in RR soybeans at 32 oz/a (will not control volunteer RR corn). Limited control can be had with Pursuit DG at 1.44 oz/a and Raptor at 5 oz/a, but will not control volunteer IMI or IR corn. Pursuit and Raptor will not control ALS resistant shattercane.

Again, keep in mind that the interaction between spray additives and various tank mix partners may increase soybean leaf burn. Spray weeds when they are small for maximum herbicide efficacy. As always, read, understand, and follow the herbicide label provided with each product.

Jeff Rawlinson
Extension Technologist
Alex Martin
Extension Weed Specialist

Stewart’s Wilt

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inbred, extensive leaf blight can develop on the upper leaves resulting in significant yield reduction.

If corn flea beetle feeding damage is evident on plants and lesions begin to develop on leaves, submit samples for diagnosis. Samples can be sent to the Plant & Pest Diagnostic Clinic in Lincoln (448 Plant Sciences, University of Nebraska, Lincoln, NE 68583-0722) and confirmed serologically ($25/sample). As with any disease, correct diagnosis is critical to the development of an effective management plan.

Jim Stack
Extension Plant Pathologist
South Central REC
Purple loosestrife —
Nebraska’s newest noxious weed

Noxious weed, by definition, is a plant species that is detrimental or harmful to the economic, social or aesthetic well being of a resident of the state. Noxious weeds cause significant crop and pasture losses, reduce land value, can be poisonous to man, livestock or wildlife and are hard to control. That’s why state law requires that such species be controlled and establishment prevented.

Currently there are six noxious weeds in Nebraska, including Canada thistle, plumeless thistle, musk thistle, leafy spurge, spotted knapweed, and diffuse knapweed. Purple loosestrife will be added to the list Jan. 1, 2001.

Purple loosestrife (Lythrum salicaria) was introduced to North America from Europe in the 1800s. Since then, it has slowly invaded wetlands and waterways, starting from the northeastern United States to the Great Lakes region and spreading into the prairie states including Nebraska. It is estimated that about 15,000 acres of Nebraska’s wetlands are infested with this plant, mostly along the main rivers. This highly competitive weed needs to be controlled.

The irony is that several loosestrife species [purple loosestrife, wand loosestrife (L. virgatum) and hybrid crosses] are still innocently sold across Nebraska as a home landscape species. The flowers of those species are beautiful, and the claim is that they are “male sterile”. This means that they do not produce pollen, however, they can be cross-pollinated with the ‘wild’ types and produce viable seeds. This is why this species should not be planted in landscapes and why the State of Nebraska is making it a noxious weed. Once this species becomes a noxious weed, it will be illegal to grow and sell.

Lost wildlife

When wetlands are taken over by loosestrife, the natural habitat is lost and the productivity of native plant and animal communities is severely reduced. Song birds will not feed on loosestrife seeds. Muskrats can not use roots for food or shelter. Waterfowl are affected when dense impenetrable stands of loosestrife eliminate nesting sites and open water. Nearby water bodies are also likely to be affected by this or other types of habitat destruction. There is no room for displaced wildlife. The local fish and wildlife population that can not move is lost forever.

Lost water ways

By growing vigorously in irrigation canals, ditches, stream banks and reservoirs, purple loosestrife will clog them. The result will be less water carried to the crop land and further negative effects on agricultural production and the end user, the consumer.

Loss of recreational land

The loss of wetlands and wildlife directly influences other activities of everyday life, especially summer recreation activities. Funds spent controlling this weed could be more effectively spent on improving wildlife habitats, boat ramps, camping grounds, etc. With the loss of recreational land, the local communities will also lose tourism revenues.

A perfect plant

Purple loosestrife can colonize and thrive easily because it is a prolific seed producer and has a strong perennial root system (rhizome). Each plant can produce up to two million seeds in one season. Seeds can be carried far away by water, wind, and birds and can remain viable for many years. The rhizome grows well in marshy soils, and can help spread of the species if washed away by river water.

Purple loosestrife is a highly competitive plant. It grows fast and quickly traps nutrients and sunlight. A soft muddy floor of wetlands becomes a woven mat of tough roots with no significant food value for many wildlife species. Few birds, fish or animals feed on purple loosestrife. They feed, however, on other plant species that grow around purple loosestrife. By doing this, indirectly, the wildlife population "eats themselves out of house and home". As native vegetation is consumed, more space is created for purple loosestrife to spread and produce new plants.

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Purple loosestrife (Continued from page 85)

How to recognize it?

Purple loosestrife is relatively easy to identify, however, there are several native species that produce purple flowers and can be mistakenly identified as purple loosestrife. American germander is one of those species. It is a commonly found native weed along rivers, creeks and ditches in northeastern Nebraska. It is flowering at the same time as loosestrife and because of its purple flowers it can be easily mistaken for loosestrife. However, the shape of the leaf can be used as a distinguishing feature. Purple loosestrife has a rounded or heart-shaped leaf base and a sharply pointed tip (see photo). The leaf of the American germander is ovate in shape and has serrate leaf margins (see photo). American germander is readily consumed by wildlife, including prairie chicken, pheasants and occasionally deer, and should not be controlled.

In general, purple loosestrife can grow 3-9 feet tall with several, square stalks per plant. These stalks are tough and often appear to be woody at the base. Leaves are on opposite sides of the stalk, thin and sharply pointed with the base rounded or heart-shaped. In Nebraska, it will flower from July to September. Flowers can range from red to rose-purple in color. The flowers are arranged on 1- to 3-feet long spikes. The fruit is a small oblong capsule with two valves containing many small seeds. There are many capsules within a spike. There are several spikes per plant and each spike can produce up to one hundred thousand small seeds. The tiny, light seeds are readily moved by wind. Seeds are also extremely viable and will easily germinate when exposed on bare soil. The plant's root system is very strong and when mature, the root branches become thick and woody. Infestation of loosestrife often follows a pattern of establishment, from a low number to a dramatic population increase. When the native species is suppressed, the area becomes a monoculture of purple loosestrife.

Can we control it?

Purple loosestrife has no natural enemies nor other plant competitors in North America so it's hard to stop it from spreading. A single control measure can't provide long-term, sustainable, management; however, if control practices are integrated in a systematic manner, significant advances can be achieved. The biggest challenge is how to stop the spread of the weed from the 15,000 acres of infested wetland in Nebraska. Control methods must be based on an integrated management approach, which includes:

1. Prevention and education:
   Educating the public is a major factor in preventing the spread of loosestrife. Many people are not even aware of this weed. For example, several duck-hunters reported that last fall they used 'some plants' with 'purple flowers' to build their duck-blinds and to camouflage their boat. Of course, the boat was used to travel up and down the river. Obviously these duck hunters did not know that the plant was purple loosestrife and that they were actually helping spread the weed. Remember, one plant can produce one to two million seeds.

   2. Manual control: Pulling and digging plants can be very effective for small areas. Pulling is most effective on plants one to two years old. Loosestrife spreads vegetatively from stems, therefore, regeneration from discarded plants is likely. Discarded plants should be dried and burned.

   If pulling is not feasible, flower head removal helps reduce the spread of the seeds. Simply cut the head in July and August before the flower sets seeds. Seed formation starts at the bottom of the flower and progresses to the tip. Before cutting the seed head off, check to see that there are no ripe seeds.

   3. Cutting: Cutting can actually spread loosestrife if the cuts are not removed because the cut stalk portions can sprout. Therefore all cuts must be removed and burned. Make sure that all plant parts are in a carton or protected site so that they can dry completely without danger of being spread by wind, water, human or animal activity.

   Additional control measures will be discussed in Part II of this story.

Stevan Knezevic, Integrated Weed Management Specialist
Haskell Ag Laboratory, Concord
Wheat disease and insect survey

Southern Panhandle faces pest pressures

A wheat disease and insect survey was conducted in the Nebraska Panhandle May 9-10. Much of the wheat was in the boot to early heading stage for most locations except for the higher elevations in Kimball County and eastern Wyoming. The northern Panhandle has had relatively good moisture and the wheat looked good in the area surveyed in Box Butte County. Most fields had a background infestation of Russian wheat aphid and incidence of wheat streak mosaic. This area did not receive the hail that the southern Panhandle did in 1999, consequently the incidence of wheat streak mosaic was low. No other diseases of significance were found in the northern Panhandle survey.

The southern Panhandle was definitely drier and the incidence and severity of wheat streak mosaic was much higher than up north. Several fields with severe wheat streak mosaic were found. In all instances the severely infected fields were close to a volunteer wheat field that resulted from hail in 1999. This was classical epidemiology in which the failure to control volunteer wheat that emerged shortly after the hail resulted in the nearby fall-seeded wheat becoming infected early. The mild winter probably contributed in that the virus and mites remained active during much of the winter.

Growers with fields in which wheat streak mosaic is severe should contact their crop insurance representative. Based on past experience, when wheat streak mosaic is severe, yields are usually significantly reduced. Under these circumstances additional inputs into these fields would probably not be cost effective. The weather between now and maturity also will impact wheat yield, including those fields with severe wheat streak mosaic. Yields will be less affected by the disease if the next six weeks are cool and fields receive timely rains than if the period were hot, dry and windy. Under the latter scenario, yields of mosaic-infected fields will be greatly depressed.

The decision to destroy a field with severe wheat streak mosaic rests with the grower and his insurance representative. If these fields are destroyed within the next week, they could be summer fallowed, provided weeds are controlled, and then planted to wheat in September if adequate moisture is present. An alternate crop could still be planted this May in those fallow fields that would have been planted to wheat this fall.

The key factor for wheat planting this fall will be adequate moisture this summer.

Russian wheat aphid levels were mostly at low background levels through the entire Panhandle with slightly higher levels in eastern Wyoming. No infestations were found that would be economical to treat; however, one field had some spots of very high Russian wheat aphid infestations. Less than 10% of the field was affected and a large portion of the field also had some serious wheat streak concerns. It is important for the grower to evaluate the yield potential, accounting for all factors including wheat streak infestations, before going forward with aphid treatments.

John Watkins
Extension Plant Pathologist
Gary Hein
Extension Entomologist

Alternative Ag Expo to be Aug. 29

The second annual Alternative Ag Expo will be held Aug. 29 in Sioux City, Iowa.

Designed for both ag producers and consumers, topics will include our nation’s health, nutrition, developing a transition mindset, organics, legalities of direct marketing, rabbits, identifying your market, aquaculture, pheasants, meat and poultry inspection, soils, economics, managing an alternative ag enterprise and more. Three roundtables will address transitioning from traditional agriculture, pork production and rotation grazing.

For more information contact Darrell Geib, Sioux Rivers Resource, Conservation and Development, at 712-943-7882, darrell.geib@ia.usda.gov

Light trap reports: European corn borer moth flight begins

The European corn borer moth flight has begun in Nebraska. On May 16 a light trap at the Northeast Research and Extension Center at Concord recorded three males and two females.

On Wednesday (May 17) Andy Christiansen, Extension educator in Hamilton County, reported that their light trap had had one European Corn Borer on May 16 and four on May 17. Daily updates to the Hamilton County report are available on the Web at http://ianrweb.unl.edu/ianr/triad/count.htm