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Crop Watch No. 2004-14, July 2, 2004

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

UNIVERSITY OF
Nebraska
Lincoln

No. 2004-14, July 2, 2004

Start scouting for western bean cutworm eggs

Western bean cutworm moth flight began in mid June in south central Nebraska, and scouting should be underway across the state for the white, dome-shaped egg masses.

Moth numbers will continue to increase until mid to late July and then will decrease. There have been many reports of increased numbers of these pests in the region, with infestations reported throughout northeastern Nebraska and into South Dakota, Minnesota and Iowa. Infestations can be cyclical in eastern Nebraska and at this time appear to be increasing.

Farmers and crop consultants throughout Nebraska should begin to scout fields for the white masses of western bean cutworm eggs. Female moths preferentially search out pre-tassel corn and later, if available, move to dry edible beans to lay their eggs. These eggs are laid in clusters of five to 200 on the top surface of the upper most leaf of a corn plant and on lower leaf surfaces of dry beans. The eggs require five to seven days to develop, during which

Soybean aphids also found

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time the egg color changes to tan and then to 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 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

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Preharvest wheat sprouting affecting elevator prices

With the recent cool, wet weather in southwest Nebraska, wheat in some fields is sprouting, complicating harvest and marketing for growers and elevators.

One elevator in southwest Nebraska reported that they received wheat with 75% damage from preharvest sprouting. Anything over 20% damage is classified as feed wheat. This same elevator estimated they were averaging about 20% damaged wheat kernels from preharvest sprouting. Producers are allowed 2% and at this present time are discounted 2¢/bushel above the 2% up to 20%. This price structure may change with the amount of wheat that is being found damaged. Future weather conditions will determine if this will increase, stay the same or decrease.

Wheat head sprouting is a relatively new phenomenon in western Nebraska where one

elevator employee said he hadn't seen it in the 27 years he'd been at the elevator.

This kind of damage should be classified as "damaged kernels" rather than "foreign material." If reported as foreign material, a producer will not be eligible for crop insurance.

Wheat in Nebraska usually ripens under warm, dry conditions that favor development of quality grain for bread making. With moist conditions, which delay harvest, the mature grain can sprout in the spike. Rain, heavy dew, and high humidity stimulate preharvest sprouting.

Moisture swells wheat kernels and activates enzymes that break down proteins, starches, lipids, and other constituents in the endosperm. Flour milled from the

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UNIVERSITY OF NEBRASKA, COOPERATING WITH COUNTIES AND THE U.S. DEPARTMENT OF AGRICULTURE

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Ag briefs

Ralph Kulm, Extension Educator in Holt and Boyd counties: We had about six inches of precipitation from September to May, but more than seven inches since then. Corn and beans look great, and potatoes have recovered well from the May 14 frost. Producers who harvested the first cutting of alfalfa early have a second cutting nearly ready. For others, who delayed their first cutting, the rains have made it difficult to work with windrowed or downed hay. Weeds are doing very well in pastures, but at least there is something there. Insects are generally not a problem although hoppers are still serious in some localized areas. Irrigators are happy not to be using a lot of expensive diesel fuel to pump water.

Doug Anderson, Extension Educator in Fillmore, Nuckolls, and Thayer counties: Wheat harvest is in full swing in Nuckolls and Thayer counties with yields in the 30s and low 40s with test weights about average. Rust and other diseases haven't been a problem, however, the lack of moisture last fall and in early spring and wide temperature swings are likely to have an effect. Corn is growing rapidly and looks good. Irrigators haven't had to run the pivot much with just enough moisture to keep them from cultivating and hilling; however, this may complicate things later since the corn is almost too tall to hill now. Beans were planted late and look like it, but are making some headway now. Some milo fields were just planted. There are rumors of some producers trying to double crop this summer by planting milo after the early harvested wheat. There's no sign of disease and generally insect pressure is light, although small grasshoppers have been making their presence known in the last seven to ten days.

Jennifer Chaky, coordinator of the Plant Pest Diagnostic Clinic: Corn in south central Nebraska generally seems to have grown out

of the bacterial leaf disease reported in the June 18 Web version of *CropWatch*. Last week in the clinic we received several samples of corn that was roping or had twisted whorls. This may be due to herbicides, weather or environment, depending on individual circumstances. (For more information, see the June 11 *CropWatch*.)

In soybeans I'm seeing much bacterial blight, especially in samples from eastern Nebraska. Leaves have purplish, brown lesions with yellowish margins. If the disease is severe, leaves can become rather yellowed and diseased areas can fall out of the leaf, giving it a tattered appearance. The disease prefers cool, wet weather so when conditions warm up, it should stop spreading. Windy rainstorms can favor disease development, as the leaf tissue is damaged and the wet conditions allow for spread of the bacteria.

We've also received samples of soybeans with *Pythium* and *Phytophthora* diseases. These are favored by wet soil conditions and cooler temperatures. I am also seeing a bit of *Rhizoctonia* disease in stem lesions. *Rhizoctonia* is often associated with stress in soybean plants.

Del Hemsath Extension Educator in Dakota, Thurston and Dixon counties: The second cutting of alfalfa is being harvested and a few fields are reported to have aphids. The corn is just beginning to enter the fast growing stage at the 10 - 11 leaf emergence. Soybeans are very yellow, with a rust like appearance and leaf mosaic symptoms and very slow to grow. Most fields have been sprayed for weeds. Oats are being harvested for hay and pastures look good from the cool and wet weather.

Gary Zoubek Extension Educator in York County: In general our crops are looking good. Producers are finishing up hilling and unless we receive rains soon, we'll see pivots beginning to run. Western bean cutworms are flying so producers need to be scouting. We've also seen some bacterial top rot/bacterial stalk rot in some irrigated corn fields. Information about this disease is at the University of Nebraska Plant Pest Diagnostic Clinic Web site: <http://pdc.unl.edu/corn/bacterialstalkrot/>

John Watkins, Extension Plant Pathologist: Scab (*Fusarium Head Blight*) is present in a range of

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Lisa Jasa, Editor; Email: ljasa1@unl.edu

Western bean cutworm *(Continued from page 127)*

infestation on one ear tip is so great that the larvae become crowded, a few individuals may move outside the ear and begin to feed on the side of the ear. They will chew through the husks and eventually begin to feed on the developing kernels, causing extensive damage.

Western bean cutworm that hatch on dry 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.

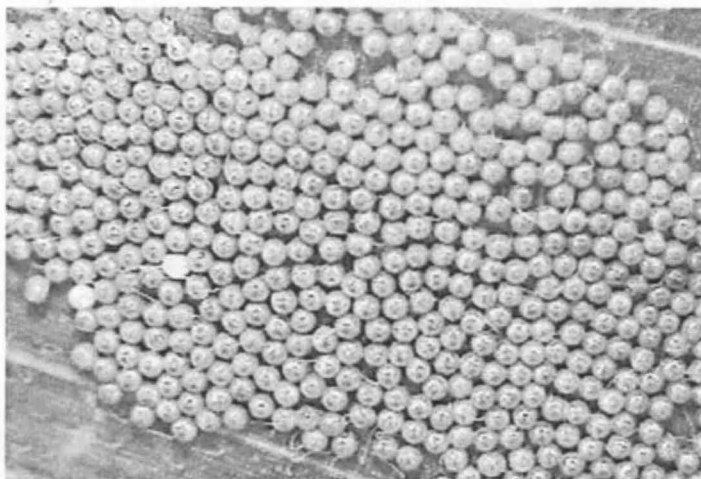
In corn

Even though field scouting for western bean cutworm in field corn should begin when the first moths are caught, control decisions should be made shortly after the moth flight peaks. The moth flight usually peaks between July 10 and July 24.

When scouting for western bean cutworms 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, leaf axil or ear tip. If 8% of field corn plants, 5% of seed corn plants or 5% of popcorn plants have egg masses or larvae, consider applying an insecticide.

Western bean cutworm moths prefer to lay eggs in corn plants that are in the late whorl stage compared to those that have completely tasseled. Pay particular attention to later planted fields or those with uneven development. Western bean cutworm eggs that hatch when corn plants are in the whorl stage of growth have a high rate of survival. The larvae are well protected in the whorl or tassel.

If an insecticide treatment is warranted in corn fields, it should be made when 95% of the plants in a field have tasseled. This timing of the application increases the chance that the worms will be exposed to the insecticide resulting in better control. It is also important to make insecticide applications before the larvae reach the silks. Once the



Corn and dry bean producers should be scouting for the white, dome-shaped egg masses typical of western bean cutworms.

larvae reach the silk zone they quickly move to areas under the husks where they are more protected from insecticide treatments.

It is important to recognize that only Herculex™ I Bt corn hybrids which contain the Cry 1F Bt gene would be expected to have efficacy against western bean cutworms. Other Bt hybrids contain different Bt genes and do not have efficacy against western bean cutworms. They should be scouted for western bean cutworms, and treated with an insecticide if threshold levels are found.

In dry edible beans

Milk jug type pheromone or scent traps are recommended to monitor potential western bean cutworm infestations in dry edible beans. Mount traps 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 NebGuide, "Western Bean Cutworm

in Corn and Dry Beans" (G98-1359), available at <http://ianrpubs.unl.edu/insects/g1359.htm>

Check traps every few days until the number of collected moths begins to decline. When the traps are checked, the moths should be removed, counted, and liquid should be added. If the number of moths accumulated up to the peak of the moth flight totals less than 700, the risk of significant damage is minimal. The risk of 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, use the infestation in a nearby corn field as a decision-making guide. If the adjacent corn needs an insecticide treatment for western bean cutworm, the beans also should be treated. Bean fields should be treated 10-20 days after peak moth flight.

Information on insecticides labeled for use against western bean cutworms in corn and dry beans may be found at <http://entomology.unl.edu/fldcrops/pestipm.htm>

Bob Wright

Extension Entomologist

Ronald Seymour, Extension Educator in Adams County

**Gary Hein, Extension Entomologist
Panhandle REC**

Expect alfalfa prices to spread; harvest for quality

Rainy, hay-damaging weather and competition from other feed products are greatly affecting hay prices this summer. When I recently reviewed the hay situation in Nebraska and the rest of the country, I saw conditions that may be setting the stage for the largest

Soybean aphids found at two sites

This week soybean aphids were found in soybean fields near Kearney and just north of Lincoln. Producers should be scouting their fields for aphids now and monitoring any populations they find. In Nebraska, any aphid colonies found on a soybean plant can be assumed to be soybean aphids.

Near Kearney in Buffalo County a crop consultant with Central States Agronomics, Inc. of Kearney found a small area of soybean plants with aphids, some with up to 250 aphids per plant. In Lancaster County a single soybean aphid was found on a soybean plant north of Lincoln.

In general, during 2003, if aphid populations reached the economic threshold (250 aphids per plant) and farmers treated in late July or early August, they benefitted from treatment. If treatment occurred in mid August, benefit was variable and depended on aphid population size, population dynamics, and predator levels (primarily lady beetles).

For more information about pest thresholds and treatment recommendations, see the May 28 *CropWatch* or the Extension publication, *Soybean Aphid Management in Nebraska*, NF04-599, available at your local Cooperative Extension Office or on the Web at

Tom Hunt
Extension Entomologist
Haskell Ag Lab, NEREC

spread in hay prices in history. For the producer, this may mean market opportunities or pitfalls.

Dairy hay markets look very strong. Rain in the Midwest, Northeast, and Pacific Northwest wiped out most dairy quality hay production during first cutting. Combine this potential shortage with high milk prices and strong demand from dairy producers for hay that produces lots of milk, and you get excellent prospects for high dairy hay prices.

The grinding hay and stock cow hay picture, though, is just the opposite. With the increased use of alternative feeds in feedlots and by cow-calf producers, demand for low

Sprouting wheat

(Continued from page 127)

discounted heavily. More than 4% damaged kernels — including sprouted kernels — causes grain to be rated Grade 3 or lower and unacceptable for bread making. Grain that is slightly sprouted might be blended with sound grain for making flour, but grain that is severely sprouted usually is used for livestock feed.

Ripe grain is dormant and must pass through a period of afterripening before it can germinate, even under favorable conditions. The length of the afterripening period is highly variable, ranging from a few days in some varieties to a month or longer in others. Differences in the length of the afterripening period, or dormancy, greatly affect susceptibility of wheat varieties to preharvest sprouting.

In southwest Nebraska the degree of sprouting is varying widely from one variety to the next, with some of the newer red wheats showing as much sprouting as some of the best white wheats.

Robert Klein, Extension
Cropping Systems Specialist

quality hay is decreasing. With the economical corn byproducts now available, feedlots have cut their alfalfa use almost in half and cow-calf operations are using them as a good winter supplement for added energy and protein. In addition, ongoing drought conditions have taught many folks how to use other alternative roughages in their feed mixes. I expect prices for this kind of hay to undergo a downward trend.

All this means is that if you plan to sell hay, do all you can to make dairy hay. Cut early. Make square bales even if you must hire it done. And store under cover.

It wouldn't surprise me to hear of \$150 dairy hay and \$30 roughage hay this winter. If this develops, which one do you want to be selling?

Bruce Anderson
Extension Forage Specialist

CRP acres released for grazing

On Wednesday the USDA approved emergency grazing of Conservation Reserve Program (CRP) acres in 11 Nebraska counties. Part or all of the following counties are included: Arthur, Banner, Box Butte, Cheyenne, Dawes, Garden, Kimball, Morrill, Scotts Bluff, Sheridan and Sioux.

According to a June 30 press release from the Nebraska FSA Office, emergency grazing is authorized until Sept. 30. Emergency haying — mechanically cutting and baling hay — is not currently authorized but will be permitted in affected counties after the primary nesting and brood rearing season.

There are approximately 3,100 CRP contracts and over 333,000 acres enrolled in CRP in the 11-county area.

See *CropWatch* on the Web at cropwatch.unl.edu for more details.

In soybean

Potential profit from foliar fertilizers examined

Foliar fertilizer can be applied easily with glyphosate, making foliar fertilization of soybean a feasible practice. Foliar application of N-P-K during the vegetative stage (V4 to V6) and during podfill (R2 to R5), as well as micronutrient application during vegetative growth stages is of interest. Is it profitable?

We address this question by presenting results from several studies.

In 48 trials conducted in Iowa in 1994 to 1996 (see *Journal of Agronomy* 90:763-769), the mean yields were:

- 51.3 bu/A with no foliar application;
- 52.1 bu/A with 3-8-15 applied at 1.5 gal/A at V5 and again at V8; and
- 52.1 bu/A with 3-8-15 applied at 3.0 gal/A at V5.

More nutrient combinations applied at V5 were tested in Iowa in 18 small plot trials. The greatest mean yield increase (1.4 bu/A) was with 3 gal/A of 3-8-15 (*Table 1*). The occurrence of yield response was not found to be related to soil properties.

In eight strip trials conducted on farmers' fields in Iowa in 1997-8 (*Journal of Agronomy* 93:1220-1226), the mean yields were:

- 54.5 bu/A for the control
- 54.4 bu/A for 3-8-15 applied at V5 at 3 gal/A.

Dr. George Rehm, extension soil scientist at the University of Minnesota, studied foliar application for soybean at three locations in southern Minnesota. Foliar application did not result in increased soybean yield at any of the three locations (*Table 2*).

In South Dakota, a statistically significant response to foliar applied fertilizer was not observed at Aurora and Beresford in 2002 and 2003 (*Table 3*).

Table 1. Effect of V5 foliar fertilization on soybean yields for 18 small plot trials in Iowa conducted in 1997 and 1998 (*Journal of Agronomy* 93:1220-1226).

Treatment ¹	Control	3-8-15	3-8-15-1	10-4-8	10-4-8-1	10-8-1-micro
Yield, bu/a	47.0	48.4	47.6	47.3	48.2	47.1
Yield increase		1.39	0.58	0.31	1.22	0.11

¹All fertilizers were applied at 3 gallons per acre.

Table 2. Influence of foliar application of fertilizer at podfill on soybean yield at three Minnesota locations. (Foliar Fertilization of Corn and Soybeans, Minnesota Crop eNews, June 2003).

Nutrient Applied				Location		
N	P ₂ O ₅	K ₂ O	S	Waseca	Becker	Rosemount
Foliar application rate, lb/ac				Soybean yield, bu/ac		
0	0	0	0	57	53	59
40	4	12	3	56	54	57
80	8	24	6	59	50	59
80	8	24	6+micros	54	45	56

Table 3. Foliar applications (R3) of fertilizer at two locations for two years in South Dakota (SDSU Dakota Dirt, March 17, 2004).

	Aurora, 02	Beresford, 02	Aurora, 03	Beresford, 03
Check	44	44	37	37
Crop Boost (1 qt/A)	44	43	39	34
Crop Boost (2 qt/A)	44	45	--	--
Foliar Plus, 2 gal/a	--	--	39	38
Herbolyte	--	--	35	39

Crop Boost is 3.2% Mn, 2.1% Zn, 0.3% Fe, 0.2% B, 0.01% Mo.
Foliar Plus is 4-16-4 plus 0.10% Fe and 0.25% Zn.

A recent article in *Soybean Digest* reported 3-9 bu/ac increases with foliar application of 3-18-18 plus trace in Indiana, but the article gave no details on the experimentation that produced these results.

Results from 29 trials conducted in Wisconsin, Illinois, Ohio, and Missouri showed an average of 1.4 bu/ac, or 3%, increase in yield with boron applied at 0.25 lb/ac at initial flowering.

In short, early season foliar application of N-P-K results in an average of about 1-1.5 bu/ac soybean yield increase. Out of hundreds of trials conducted in the United States to test foliar application during podfill, yield increases of up to 8 bu/ac have been observed in a very few cases, but yield

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Drought continues in western Nebraska; precipitation/temperature forecasts uncertain

Abundant rain has continued to fall across the eastern half of Nebraska, while western areas continue to battle the long-term effects of drought. The June 24 National Drought Monitor showed most of the western third of Nebraska to be in a severe to extreme drought, with a sliver of exceptional drought confined to the Platte River valley near the Wyoming border.

Drought conditions have improved slightly in west central and central Nebraska as severe to moderate drought conditions are being felt in an area bounded by the Kansas and South Dakota border between North Platte and Kearney. Abnormally dry conditions continue up to 45 miles east of this area. For the remainder of the state, near normal to excessively wet conditions are being felt.

The contrast in precipitation totals across the state is striking. In the six months since January 1, areas of the Panhandle have received less precipitation than their eastern counterparts have received in the last 30 days. For example, Scottsbluff has received 4.46 inches of precipitation since January 1, making this the sixth driest comparable period (January 1 - June 20) in the last 104 years. The driest period was 1893 with 2.41 inches, followed by 2002 with 2.49 inches. Other Panhandle stations with exceptionally dry conditions in the last 100

plus years are: Chadron second driest; Hay Springs second driest; Harrisburg fifth driest; and Sidney fifth driest.

Temperatures during the last 30 days have been slightly above normal in northern Nebraska and slightly below normal across southern Nebraska.

The upper air ridging pattern so prevalent across the western United States during the last few years has not been a major factor in recent weather. Upper air low pressure has been able to slide into the northern and central Rockies and spin up surface lows into the central United States. Abundant moisture from the gulf of Mexico and Caribbean have been pulled northward into these systems, resulting in heavy rainfall from eastern Nebraska through Ohio.

Much of the abundant moisture from our south was tapped by surface lows too far east to have a significant impact on western Nebraska producers. Therefore, soil profiles continue to have ample room to store any moisture, while eastern soils need a brief drying period to minimize the flooding potential. The Platte River west of Columbus is averaging less than 10% of its normal flow, while east of Columbus above normal flows are common as river basins feeding the Platte continue to release excessive moisture. River forecasts indicate that the Platte will be completely dry before July 14 west of Columbus, barring a series of significant precipitation events.

Severe storms have been common the last 30 days, but storm damage has been minimal in comparison to the benefits the precipitation has provided to the corn crop.

The real attention this year will continue to be across the western half of the state. In the short term, models indicate numerous chances

for moisture during the next 14 days. This should allow some temporary relief for irrigators trying to keep up with crop moisture demands, however a return to drier conditions will quickly use up this moisture. More questions than answers remain for the rest of the summer. Models continue to advertise a strengthening ridge across the western United States. The good news is that it hasn't happened yet. The bad news is that good rains will be needed in the short term to help mitigate the impacts of an extended hot period if the ridge does develop.

Forecast

The Climate Prediction Center (CPC) July and July-September outlooks indicate no defined trend for precipitation during the respective forecast periods. During July, CPC is forecasting below normal temperatures across the eastern half of the state and equal chances of below normal, normal, or above normal temperatures across the western half of the state. During the July-September period, above normal temperatures are expected across the Panhandle and southwestern corner of Nebraska. The greatest probability for above normal temperatures will occur in August-September. There is no defined temperature trend in the July-September period for the remainder of the state.

As a side note, AccuWeather released their summer forecast and they are predicting that the entire United States, with the exception of the Pacific Northwest, will experience above normal temperatures for the remainder of the summer. Based on these two forecasts, what is certain is that there is a considerable amount of uncertainty for the remainder of the growing season.

Allen Dutcher
Extension State Climatologist

Field update

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severities in wheat in eastern Nebraska. If producers know scab is present in their fields, they should turn up the air flow in the combine to blow out the infected shriveled kernels. This will also help reduce the potential of mycotoxin being present in the grain.

Corn blotch leafminers in central Nebraska

Corn blotch leafminers are reported to be causing injury to whorl stage corn in Hamilton County and in Phelps County near Funk. Corn blotch leafminers are immature stages of a fly which tunnel inside corn leaves, leaving hollowed out whitish tunnels where they have fed. High populations may kill several of the lower leaves of whorl stage corn.

There are several generations per year in Nebraska, but typically the first generation on corn does the most injury. Field reports indicate that this first generation is near the end of its feeding. As corn matures the leaves thicken and the maggot tunnels in only the lower or upper half of the leaf, causing less damage.

Foliar insecticides are not recommended for these insects. The adult flies emerge over several weeks and would be difficult to economically control with insecticides. The egg and immature stages are inside the leaf and protected from insecticides.

For more information see NebFact 374, *Corn blotch leafminer* at <http://ianrpubs.unl.edu/insects/nf374.htm>

Bob Wright
Extension Entomologist

Foliar fertilizers

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increases are inconsistent, generally small (e.g. < 1 bu/ac) and not do not leave much, if any, room for profit. It's more important to ensure adequate soil phosphorus and potassium levels with fertilizer application according to soil test results before planting.

Charles Wortmann
Extension Nutrient
Management Specialist
Richard Ferguson
Extension Soils Specialist

Purple loosestrife -- controlling the newest noxious weed

Purple loosestrife (*Lythrum salicaria*), was introduced to North America from Europe in the 1800s. Since then, it has slowly invaded wetlands and waterways across the Midwest and is now one of seven state-proclaimed noxious weeds in Nebraska. About 12,000 acres of Nebraska's wetlands are infested with this highly competitive plant.

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. Wildlife is displaced and fish and wildlife who can't move to other areas may be lost forever.

Clogged waterways: Purple loosestrife grows vigorously in irrigation canals, ditches, stream banks and reservoirs, limiting the amount of water available for crops.

Loss of recreational land: The loss of wetlands and wildlife directly influences other activities of everyday life, especially during summer. The funds spent on controlling this weed could be more effectively spent on improving wildlife habitats, boat ramps, camping grounds, etc. If recreational lands are lost, local communities will lose tourism revenue.

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 2 million seeds in one season. Seeds can be carried far away by water, wind, some birds and can remain viable for many years.

Few birds, fish or animals like to 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 get consumed, more space is created for purple loosestrife to spread and produce new plants.

In general, purple loosestrife can grow 3-9 feet tall with several, square stalks per plant. 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, which are red to rose-purple, are arranged on a 1- to 3-foot long spikes.

The fruit is a small oblong capsule with two valves containing many small seeds. There are many capsules within a spike. Also there are at least 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. The root system is very strong and when mature, the root branches become thick and woody.

Integrated control options

Purple loosestrife has no natural enemies nor other plant competitors here in North America, therefore its spreading is hard to stop. A single control measure can't provide long-term, sustainable, management of this weed. However, if control practices are integrated, significant advances can be achieved.

1. Prevention and Education.

Landowners need to recognize the plant as a very competitive weed to know to begin control measures.

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

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Purple loosestrife *(Continued from page 133)*

If plant pulling is not feasible, *flower head removal* helps reduce the spread of the seeds. Simply cut the heads 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 no ripe seeds are present.

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

4. Herbicides: Herbicides alone can not provide economical control, however, they are a necessary part of an integrated approach. Herbicides are especially important for 'spot spraying' and control of this weed along road sides and ditches.

Recommended herbicides include Rodeo (4-6pts), Habitat (1 pt/a) Garlon 3A (3-5pts), Escort (2-4oz/acre), and 2, 4-D (3-5pts/acre), and Arsenal under special circumstances (see further). Before using any herbicide, check the label for recommended rates, additives and plant species sensitivity. Each recommended herbicide has benefits and risks.

Garlon or 2,4-D, or a mix of the two will prevent seed production and provide short-term suppression, which means yearly applications for at least several years, but annual expenses will be low. Longer term control, which means spraying once in several years, can be achieved with Rodeo (and other aquatic glyphosates), Habitat, Escort, Arsenal and a mixture of Escort and 2,4-D. Arsenal should be used for specifically targeted and controlled sites. Due to non selective nature of these herbicides, they should be used as part of an integrated and site specific approach. Furthermore,

these non-selective herbicides should not be used at the same site for more than two to three years in order to allow the native vegetation to regrow.

Four aquatic herbicides (glyphosate, aquatic 2,4-D and aquatic triclopyr (Garlon) and Habitat) are currently registered in Nebraska for use in aquatic sites (sites that are continuously under water). Do not use non-aquatic glyphosates (eg. Roundup-named products, and other generic glyphosates) to spray aquatic sites. They are toxic for aquatic wildlife (eg. fish, frogs, etc).

The best time to apply herbicide is at beginning of the flowering stage, which usually occurs from mid June to late July. Early flowering is a preferred application time for several reasons: a) easy identification by landowners (purple flowers), and b) it is one of the most vulnerable stages for chemical control of perennial species. Herbicide solutions can be applied using a back-pack sprayer, tractor-mounted or pulled sprayer, from a boat or aerial application in solutions ranging from 10-20 gallons per acre.

For those who want to 'spot spray' with a back pack sprayer, consider using 1 pint of Rodeo + 3 oz NIS per 3 gallons of water. The spray solution volume is on a spray-to-wet basis. The product is non-selective, therefore, avoid injuring native vegetation. As always, read and follow label directions.

6. Biological control: Using insects does not eliminate target weeds, but in general, it can suppress weed populations to a non-significant level. Bio-control agents alone can not provide long-term control of purple loosestrife, however they are a necessary part of an integrated approach. Several insect species were introduced from Europe, where the loosestrife originated. The list of insects includes: 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 plant species, so called natural competitors, have historically kept loosestrife under control at the European continent.

It is believed that insects alone can not provide adequate control of purple loosestrife here at the North American continent. Experience from other parts of the United States and Canada suggest that it takes 7-15 years to observe some effect of insect feeding. If you are interested in rearing biocontrol agents, see NebGuide (G01-1436-A), "*Rearing and Releasing Galerucella Beetles to Control Purple Loosestrife.*"

Rearing and releasing insects, however, is just one step in the biocontrol process. Monitoring insect establishment, spread, and impact is crucial for the success of the biological control program. Monitoring programs will determine the effectiveness of *Galerucella* beetles throughout Nebraska to optimize the beetle release program. For more information see Extension Publication (EC02-175) "*Biological Control of Purple Loosestrife: Monitoring Galerucella Establishment and Impact.*"

7. Monitoring: Monitor problem sites for several years. New shoots may come up from plant remnants.

Summary

Purple loosestrife is a serious, perennial, weed found in Paririe wetlands. Due to major characteristics of the loosestrife habitat (e.g. marshy land), it is believed that neither herbicides nor biocontrol agents alone can provide long-term control. However, if they are integrated with other weed management methods, long-term and cost effective control may be achieved.

**Stevan Knezevic. Integrated Weed Management Specialist
Haskell Ag Lab, NEREC**

Forage options following wheat harvest

Wheat growers may want to pursue some forage options after harvest this year. For example, an early maturing corn may be one possibility, although yield probably won't be high. Forage sorghum might be a better choice if chinch bugs and other insects aren't a problem. When available, use hybrids that are high grain producers. The best choice of all for short-season silage might be sunflowers, which survive light frost and yield well under many conditions.

If you want hay instead of silage, plant sorghum-sudan hybrids, pearl millet, or foxtail millet when chinch bugs aren't a problem. A hay crop exceeding one and one-half ton per acre still can be grown if planted soon and rain is timely. Another hay or silage alternative is solid-seeded soybeans. A couple tons of good forage can be grown from taller, full season varieties planted after wheat. Oats planted in early August are another option. Yields over two tons are possible if moisture is good, fertility high, and a hard freeze is a little late. The cheapest option might be to drill bin-run corn real thick if you have good germination and a drill that can handle the kernels.

Also consider planting oats and turnips in late July or early August for fall pasture. They're cheap to plant and with a few timely rains in August and September, both can produce high quality feed in a short time.

Bruce Anderson
Extension Forage Specialist

Be harvest safe. Be physically and mentally rested and prepared before operating the combine or truck.

Nebraskans urged to prepare for soybean rust

While soybean rust hasn't been detected in the continental United States, producers need to be on the lookout for the soybean leaf disease, a University of Nebraska plant pathologist said Tuesday. Early detection and fungicides are the only management tools currently available to treat soybean rust, said Loren Giesler, Extension plant pathologist.

Giesler and USDA representatives discussed soybean rust during a North Central Region Integrated Pest Management teleconference June 29 at the Agricultural Research and Development Center near Mead.

Giesler said soybean rust probably won't reach the United States this year.

"I'd be very surprised," he said. "However, it's important to learn about soybean rust before it comes and be prepared."

Soybean rust first was reported in Japan in 1903 and was confined to the Eastern Hemisphere until it was documented in Hawaii in 1994. Since then, the disease has occurred on most continents where soybeans are grown, including Asia and Africa. Most recently, the disease was detected in South America. Like other, more familiar crop rusts, it is spread by airborne spores.

Giesler said soybean rust is likely to show up somewhere else in the United States before it hits Nebraska. Soybean rust defoliates soybean plants and can reduce yields up to 90% in untreated fields. Soybean leaves with rust will have tan to dark brown or reddish lesions 2 to 3 millimeters in diameter that are most abundant on the under surface of the leaves. The disease starts at the bottom of the plant and moves up. Without treatment, soybean plants with soybean rust prematurely defoliate and die.

When scouting, it's important to distinguish other diseases from soybean rust. Soybean rust looks a

lot like *Septoria brown spot*.

"However, with brown spot, there isn't as much defoliation and with soybean rust there will be more of a burning reaction on the plant when the disease is severe. With brown spot there is more yellowing," Giesler said.

Soybean rust also can be mistaken for bacterial blight or bacterial pustule, Giesler said. Soybean rust's pustules are a lot smaller than those of other rust diseases.

"When we think of rust, we think of corn or wheat rust where you can rub off spores with your fingers," Giesler said. "With this rust, that won't happen."

Giesler hopes more resistant or tolerant soybean varieties eventually will become available

Several fungicides are labeled for soybean rust, including chrothalonil, azoxystrobin, myclobutanil and propiconazole products. More are being made available for use in the United States. Cost for U.S. soybean growers to apply these fungicides is estimated at \$15 to \$18 an acre.

In the future, management may include a combination of fungicides and plant resistance, Giesler said.

Plants suspected of having soybean rust can be sent to the university's Plant and Pest Diagnostic Clinic, 448 Plant Sciences, P.O. Box 830722, Lincoln, NE 68583-0722.

For more information about sending in a sample or to request a sample form, contact Jennifer Chaky at (402) 472-2559, e-mail jchaky2@unl.edu or visit the clinic's Web site at <http://plantpath.unl.edu/ppathdiagnostic.htm>.

For more information about soybean rust, visit the USDA's North Central Integrated Pest Management Web page at: <http://ncipmc.org/soybeanrust/>.

Sandi Alswager
IANR Newswriter

How are fuel prices affecting irrigation costs?

Question. Diesel prices have increased about \$0.40 per gallon in recent months. What effect will this have on the cost of pumping irrigation water?

The cost to pump an acre-inch¹ of water depends on the total head the pump must produce to deliver the water. The total head has two components. The lift from the groundwater in the well to surface and the system pressure measured at the discharge head of the pump. Of course, the greater the volume of water pumped (acre-inches), the greater the cost per acre will be. The table presents several scenarios of typical irrigation situations in Nebraska.

Thomas Dorn
Extension Educator
Lancaster County

Reducing energy use for irrigation

Energy prices have increased sharply this spring which makes it even more important that irrigation pumping plants operate efficiently. For more information on this topic, see the May 2, 2003 issue of *Crop-Watch*, which featured an article on testing and improving pumping plant performance. It's on the Web at http://cropwatch.unl.edu/archives/2003/crop03-8.htm#irrigation_pump

Be sure to visit *Crop Watch* on the Web for additional crop production and pest management information as well as AgNews stories related to general agriculture and rural living in Nebraska.

cropwatch.unl.edu

Increased irrigation fuel cost for a \$0.40 per gallon increase in diesel price.²

Irrigation System	Nebraska Location	Lift (feet)	Pressure (PSI)	App. Depth (in)	Fuel cost (per acre \$0.90/gal)	Fuel cost (per acre \$1.30/gal)	Increased fuel cost \$/ac
Pivot	Eastern	125	35	12	\$20.78	\$30.02	\$9.23
Pivot	Northeast	150	40	12	\$24.37	\$35.20	\$10.83
Pivot	Northeast	150	65	12	\$30.04	\$43.39	\$13.35
Pivot	Central	150	40	16	\$32.49	\$46.93	\$14.44
Pivot	Western	175	40	18	\$40.24	\$58.11	\$17.87
Gtd. Pipe	Eastern	125	10	15	\$19.23	\$27.78	\$8.55
Gtd. Pipe	Central	150	10	20	\$29.73	\$42.95	\$13.22
Gtd. Pipe	Platte Val.	40	10	22	\$12.91	\$18.65	\$5.74
Gtd. Pipe	Western	150	10	22	\$32.71	\$47.25	\$14.54

¹ Acre-inch is the volume of water needed to cover one acre one inch deep or 27,154 gallons.

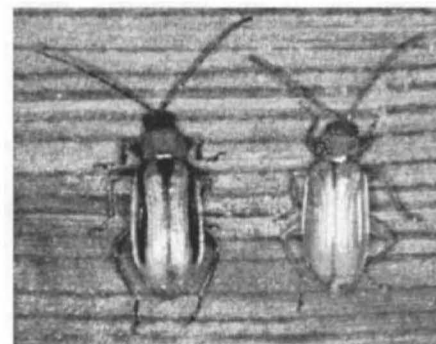
² Irrigation costs were calculated using Irrigcost, an Excel worksheet written by Thomas Dorn, Extension Educator at the University of Nebraska. Irrigcost is available for download at no cost on the web at: <http://lancaster.unl.edu/ag/crops/irrigate.htm>.

Rootworm beetles emerging in central Nebraska

Western corn rootworm beetle adults were found at Clay Center starting June 25 and likely will begin emerging soon in southern and central Nebraska corn fields. This is a little earlier than average. I will discuss rootworm beetle scouting recommendations fully in the next issue of *Crop Watch*.

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

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



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

As silks emerge beetles will concentrate in the first silking fields to feed on silks and pollen. Complete information on rootworm beetle scouting and thresholds is available in "Corn Rootworm Management" (EC 1563).

Bob Wright
Extension Entomologist