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Lisa Brown Jasa
University of Nebraska-Lincoln, ljasa@unlnotes.unl.edu

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Warm, dry weather increases potential for serious Russian wheat aphid outbreaks

It has been several years since we have seen serious Russian wheat aphid problems in western Nebraska. This year the Russian wheat aphid is widely present in winter wheat in the Panhandle; however, infestations are mostly sub-economic. Growers need to be aware of the aphids' presence because the greatest potential for damage exists over the next few weeks. The obvious symptoms of aphid feeding are the tightly curled whorl leaves, and purpling and/or yellow striping of the infested tillers.

Russian wheat aphid populations can be very explosive, especially during warm dry weather. If conditions are optimum, infestations can double in a week, resulting in a rapid onset of economic infestations and damage. Aphid damage will be most dramatic when the flag leaf and head are emerging. Damage (discoloration or striping) to the flag leaf will result in reduced ability of the wheat plant to produce photosynthate to supply to the filling head. Even more dramatic can be the impact of the tightly curled flag leaf as the head is trying to emerge. If the awns of the head become caught in the curled flag leaf, the head can become distorted and seed set on the resulting curved head will be reduced and seed yield reduced. Damage by the aphid can continue through the dough stage, but the severity of the damage will be lessened once the heads have emerged. After heading, economic thresholds for treatment increase dramatically, and serious damage after heading will likely occur only if conditions are dry with no rainfall, the wheat is seriously stressed, or both. Rainfall during the heading stages tends to keep aphid populations from becoming extreme.

Economic thresholds for the Russian wheat aphid vary with the potential return for the crop and treatment costs. Economic thresholds are expressed in the number of tillers sampled that are infested with one or more Russian wheat aphids. The formula (above) can be used to calculate the aphid threshold for wheat prior to heading.

For example, a $12/A control cost, 30 bushel/A expected yield and an estimated $2.50/bu price would yield a threshold of 32%. If 32% or more of the tillers sampled in a random sampling are infested with Russian wheat aphids, treatment of the field would be economically beneficial. It is extremely important that all samples taken for reaching these economic decisions be taken completely at random.

Low wheat prices make it particularly important to evaluate the true yield potential before treating for Russian wheat aphids.

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Jim Peterson, Extension educator in Washington County: Corn planting is progressing well here. Over 50% of the corn has been planted with many producers likely to finish planting by the end of this week (May 5). We have not heard of any insect or disease problems at this time. Alfalfa will be ready to cut in 10-14 days. Rainfall this week was limited and only accounted for a small trace. There is moisture to plant the crop in, but it is important to have rainfall in the next couple of weeks if the crop is to maintain itself.

Ralph Anderson, Extension educator in Buffalo County: Corn planting has progressed well but halted over the weekend with 0.5-1 inch of rain. I checked several alfalfa fields with a sweep net last week and could find both aphids and weevils, but not near economic infestations.

I found a mediocre wheat field which averaged about 22 stems per foot of row in eight-inch rows. The producer’s options were to leave it, which would require immediate spraying for broadleaf weeds, or destroy it and plant dryland corn. The insurance would give him about seven bushels (of a twenty-seven-bushel potential) if he destroyed it now. I calculated about a 20-bushel yield, which may still be better than dryland corn this year.

Keith Glewen, Extension educator in Saunders County: Corn and soybean planting is progressing at a fast pace. A few pivots are running to activate soil-applied herbicides. Some dryland operators have stopped planting corn and have moved over to soybeans in an effort to spread their risk with corn. Soybeans which had been treated with a fungicide and planted no-till at the Agricultural Research and Development Center near Mead March 11 look good. Those without a fungicide did not emerge. Excessive tillage is quite prominent throughout the county. Rumor has it that the government once again this year will not pay operators for how good their fields look after planting.

Gary Hall, Extension educator in Phelps County: Some corn has emerged near Holdrege and a few early planted fields can be rowed now. Much of the corn was planted last week in Phelps County and a good amount was planted in Gosper County. Attention is now being turned toward planting soybeans. We received about an inch of rain, which couldn’t have come at a more opportune time for the newly planted corn.

Ralph Kulm, Extension educator in Holt and Boyd counties: Weekend moisture ranged from .10 to 1 inch. About 75% of the corn acreage is planted. Winter wheat that received rain is looking okay; however, fields missed by the rains are showing stress. Stands of oats are poor in most situations due to dry soils. Pastures and alfalfa are developing very slowly due to dry soil and low overnight temps.

Randy Pryor, Extension Educator in Saline County: I examined three alfalfa fields damaged by aphids, which is somewhat unusual here. In one field beneficial insects were present in higher numbers. Weevils were present in two of the three fields at 1/2 weevil per stem in 8-inch alfalfa. There were a lot of small larvae in the field. While the (Continued on page 66)
Wheat streak mosaic virus visible in western Nebraska wheat fields

Some western Nebraska wheat fields are showing obvious signs of wheat streak mosaic in addition to high levels of the wheat curl mites which transmit the virus. Reports have been from scattered fields within several high risk areas where hail was prevalent late last June. At least some of these fields will be totally lost to wheat streak mosaic; however, the full extent of the problem in Cheyenne, Kimball, Deuel and Garden counties and perhaps other areas will not likely be known for several weeks. The onset of the warm temperatures over the last two weeks and continued warm weather will increase the incidence and severity of virus symptoms in fields where wheat streak is a problem.

It is also becoming apparent that wheat curl mite populations came through the winter in very good condition as those fields which were severely affected have very high mite populations. High mite populations will have little consequence on the current disease situation since the current problem results from virus infections that began last fall.

Serious wheat streak problems can be traced back to poor control of volunteer wheat in surrounding fields, early planting of winter wheat in the threatened areas or both. Growers will need to decide what to do with infected fields since severe outbreaks of wheat streak mosaic can make these fields not worth harvesting. If fields are showing serious signs of suspected wheat streak damage, it is important to verify the cause of the problem. Several other production problems can be confused with wheat streak, especially in the early stages of symptom development. Yellowing wheat can be due to poor fertility or to other diseases (e.g. root and crown rot, barley yellow dwarf).

If serious wheat streak is suspected, growers must contact their insurance agent so fields can be adjusted. If the insurance adjustor releases the field, the grower can decide future uses of the field. If it becomes apparent that the field will be lost to wheat streak and the field is released for insurance, destroy the wheat as soon as possible to preserve soil moisture. This is important whether you’re planning to grow a summer crop or fallow the field until fall winter wheat planting.

Because of the likelihood of reduced soil moisture in these fields, it is advisable to use adjoining fallow fields for summer crops and saving the destroyed wheat acreage for winter wheat planting this fall.

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**USDA research updates**

**Maize cuts mycotoxin levels**

Recent USDA research found that BT maize had 30- to 40-fold lower levels of fumonisin and other mycotoxins compared to non-Bt maize varieties.

Environmental conditions and the specific Bt maize hybrid both affect the actual reduction, but maize varieties expressing Bt throughout the plant, rather than in just specific areas, showed the most significantly lowered fumonisin levels. Mycotoxins like fumonisin, a potential cancer-causing agent often present at elevated levels in insect-damaged maize kernels, are both health and export concerns.

**Soil water model released**

Researchers, engineers, extension specialists, and students worldwide can now better understand how water and chemicals move through soil with HYDRUS, a state-of-the-art computer model.

The model allows users to simulate, in one or two dimensions, water moving from the soil surface to groundwater. They can also use it to visualize how pesticides would be transported in different soils.

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**Russian wheat aphid** (Continued from page 63)

yield potential of the crop at the current time.

Control of the Russian wheat aphid can be difficult because of the secluded location of the aphids on the plant. Two treatments have been shown to be the most effective against this pest. These are Lorsban 4E-5G and Disyston 8E. Both of these products should give good control of the aphid. Refer to use restrictions for these chemicals on the label.

Control of the Russian wheat aphid can be adversely affected by environmental conditions and the aphid population level at the time of treatment. Extremely severe infestations are more difficult to control and can rebound much more quickly.

For more on this pest, check the NU Extension publication, *Russian Wheat Aphid*, G89-936, available at local Extension offices.

*Gary Hein, Extension entomologist Panhandle REC, Scottsbluff*
Correct identification key to successful control; let the NU Plant and Pest Diagnostic Clinic help

The University of Nebraska Plant and Pest Diagnostic Clinic (P&PDC) provides a one-stop center for diagnosis of plant and pest problems. The NU plant pathology, entomology, weed science, and horticulture disciplines cooperate in the unified clinic.

Samples and inquiries can be submitted to the Clinic, which will direct them to the appropriate specialist or diagnostician.

Currently, Mrs. Jane Christensen is coordinating the clinic on a part-time basis while a permanent director is being sought.

Summer hours for the Clinic are 7:30 a.m. – 4:30 p.m. Monday through Friday. Mrs. Christensen is available 8 a.m. to 4 p.m. Tuesdays and Thursdays and 8 a.m. to 11 a.m. Fridays.

Samples should be sent to:

Plant & Pest Diagnostic Clinic
448 Plant Sciences Hall
P.O. Box 830722
Lincoln, NE 68583-0722
(402) 472-2559

Packing and submitting samples

When submitting a sample, please include some basic information that includes: 1) History of the problem area (i.e. planting date, location, cultural practices, chemical history, and when symptoms occurred);

1) Name and variety/hybrid (if known) or the host plant, and
2) Other pertinent information that might be useful in diagnosing the problem (include a photograph if available).

A fresh plant or insect sample of good quality and representative of the problem will make diagnosis easier and quicker. Follow these tips on preparing and sending your sample:

1) Please don’t just send dead plant material. Often a single symptomatic tree branch is sufficient to provide both healthy and problematic tissues, but crop plants may require several plants being submitted.
2) Package your sample carefully to ensure that it arrives in good condition. Always place plant samples in plastic bags to keep them from drying out. **Do not add extra water to the bag!**
3) Ship samples early in the week – no later than Thursday morning – so they don’t spend the weekend in the post office. Use overnight or next day express mail to ensure good sample quality.
4) If leaves are wet, add paper towels to remove excess moisture.
5) Send the entire plant whenever possible. The symptoms may be above ground but the cause below ground.
6) When sending plant leaves, send several. (One is not enough).
7) Place field samples in a cooler with ice until you can place them in a refrigerator or ship them. Samples can be held in the refrigerator for several days before shipping, but always indicate the sample collection date.

Loren J. Giesler
Extension Plant Pathologist

Field updates (Continued from page 64)

levels are too low to justify treatments, the fields need watching and scouting. With warm weather soybean planting is and will pick up considerably.

In an established alfalfa field I could not get the soil probe to go into the soil deeper that 4 to 5 inches (I weigh 200 lbs with both feet on the probe!) The 0.40 of moisture over the weekend will not be enough to compensate for the extremely dry soil in this field. Alfalfa needs 6 inches of moisture to make a ton of hay per acre. We can only account for 3 to 3.50 inches of soil and precipitation for first cutting. Most fields are only 8 inches tall.

**Tom Dorn, Extension educator in Lancaster County:** With the recent moisture, most wheat is looking pretty good but we will need consistent rains to maintain what we have. Some wheat fields obviously germinated late and will not have many tillers. Over half the wheat is jointing. Alfalfa is about a foot tall. Alfalfa weevils and pea aphids have been reported in alfalfa and at least one field was sprayed for pea aphids.

According to records from the NU High Plains Climate Center for Lancaster County we have received eight inches less rainfall than normal since July 1, 1999. I could only probe the top two feet of soil in dryland soybean and corn stubble fields that have not been tilled. I must assume that is about how far off-season moisture has penetrated. Moisture in the top two feet is estimated by hand-feel at about 70%-80% of field capacity. That would translate to 2.8 to 3.6 inches of moisture above the wilting point and only 1.4 to 1.8 inches above the point where crops would begin to experience moisture stress, (given a two-foot root zone).

**Terry Gompert, Extension educator in Knox County:** Recent rains brought up to 1/4 inch, leaving the soils still very short of moisture. Producers are involved with tillage and planting this week.
Black cowpea aphids identified in alfalfa

Pea and cowpea aphids have been identified damaging an alfalfa field near Maxwell. While a relative newcomer to the alfalfa pest lineup in Nebraska, cowpea aphids were identified in Knox County last year by Tom Hunt, NU Extension entomologist at the Haskell Ag Lab.

Cowpea aphids, *Aphis craccivora*, have been found in alfalfa in Kansas periodically the last few years. They’ve also been identified in Missouri, Oklahoma, Illinois, and California alfalfa fields.

Cowpea aphids have a shiny black body with white bands on the legs and range in size from 1.5-2.5 mm long. They are pear-shaped and have antennae shorter than their body. Adults may be either winged or wingless.

Dr. Phil Sloderbeck, Extension entomologist at Kansas State University, Garden City, has compiled some information on cowpea aphids at [http://www.oznet.ksu.edu/dp_entm/extension/Current/CPA2.html](http://www.oznet.ksu.edu/dp_entm/extension/Current/CPA2.html)

Sloderbeck reports that cowpea aphids were reported in a field in southeast Smith County in Kansas. With 50-125 aphids per stem, there was noticeable yellowing, stunting, and some wilting. There also were reports from Gray and Kearny counties in southwest Kansas.

Early this spring aphid samples from Kansas were sent to Susan Halbert at the University of Florida, who determined they were the cowpea aphid. While these are not common in alfalfa, she noted that the Chinese common name for *A. craccivora* means “alfalfa aphid.”

While treatment thresholds have not been established for Nebraska, it is thought to be similar to other aphids.

A 1990 Oklahoma report noted that: “Cowpea aphids damage alfalfa and feed on the plant [in a way] similar to the pea aphid; therefore, thresholds are likely similar. On alfalfa less than 10 inches tall, 50 aphids/stem should be used as a threshold. On alfalfa taller than 10 inches, 100 aphids/stem may be used.”

A variety of insecticides are labeled for control of aphids on alfalfa in Nebraska. A list is available at [http://www.ianr.unl.edu/ianr/entomol/instabls/aphids.htm](http://www.ianr.unl.edu/ianr/entomol/instabls/aphids.htm)

Bob Wright
Extension entomologist
South Central REC

Weed tour dates set for June

The itinerary has been set for the 2000 Nebraska Weed Tour. The tour, which will begin at the Haskell Ag Lab near Concord, provides a hands-on look at University research herbicide trials. While most participants are from the agricultural chemical industry, the tour is free and open to the public. Individuals may attend all or part of it. The itinerary is:

**Monday – June 19**
1 p.m., Concord, Haskell Agricultural Laboratory

**Tuesday – June 20**
9 a.m., Lincoln, Havelock Research Farm
3 p.m. Clay Center, South Central Research and Extension Center

**Wednesday – June 21**
9 a.m., North Platte, West Central Research and Extension Center
3 p.m. (MDT), Sidney, High Plains Agricultural Laboratory

**Thursday – June 22**
8:30 a.m. (MDT), Scottsbluff, Panhandle Research and Extension Center

Jeff Rawlinson, Extension Technologist, Weed Science

Alfalfa weevil predictor

Growing degree day accumulations as of May 1 using a 48° base. Alfalfa weevils usually begin causing noticeable damage at 375 GDD so damage is now possible throughout the state where alfalfa is grown.
Row spacing and planting options

Producers often wonder what row spacing is best for soybean and grain sorghum production. They also wonder if they should use a planter or a drill to plant these crops. Hybrid drills with planter units under a drill box and corn planters with interplant units give producers even more options for narrow row crop production. The better depth control and better seed-to-soil contact that a planter unit has to offer gives these options an advantage over conventional drills for narrow rows.

To help answer producer's questions and to evaluate different machinery management options regarding row spacing and planting method, research is being conducted at the University of Nebraska Rogers Memorial Farm, 10 miles east of Lincoln. Different planting methods and row spacings are being evaluated in a dryland no-till soybean/grain sorghum rotation. A 30-inch planter was used at half population to double seed the 15-inch planter plots to simulate a 15-inch planter. A 7.5-inch drill was used at double population with half the openers plugged to seed the 15-inch drill plots. The same population was dropped for all planting methods each year for each crop. The plots were replicated three times and harvested with a combine and weigh wagon. Research continues this year.

With the grain sorghum data (and some corn data at the same site), it appears that a 15-inch planter results in the best yield. The soybeans were the least sensitive to the different planting methods. Other Nebraska data shows little yield advantage for narrow row soybeans in areas of good soybean production as population uniformity usually isn't the yield limiting factor; water at pod-fill is.

By spreading the cost of the 15-inch planter across all three crops (and not having a drill), the machinery management decision becomes easy. By raising up and not using the interplant units, corn could be planted in 3-inch rows using the same planter.

Paul Jasa
Extension Engineer

### National corn, soybean plantings up

Planting intentions for the eight major U.S. field crops (corn, soybeans, wheat, barley, sorghum, oats, cotton, and rice) total 252.6 million acres in 2000, up about 1 million from last year's planted area. On the eve of planting decisions, farmers faced mixed price signals for major field crops—prices were up for corn, soybeans, and cotton from a year earlier, but down for winter and spring wheat.

Farmers intend to plant a record 75 million acres of soybeans and the largest cotton area (15.6 million acres) since 1995. Nationwide corn plantings are expected to expand 1 percent to 78 million acres in 2000. U.S. farmers have indicated their intention to modestly cut back the biotech share of planted acreage.

USDA Economic Research Service Report