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Crop Watch No. 2005-13, June 10, 2005

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

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No. 2005-13, June 10, 2005

Wheat condition mixed; diseases common

Panhandle

A group of extension specialists from Scottsbluff and Lincoln spent Tuesday and Wednesday touring Panhandle winter wheat fields. They found a wide range of conditions ranging from superb wheat with excellent yield potential to wheat that is likely to yield very little as a result of disease.

Excellent moisture conditions over the past two weeks have, in general, been very beneficial to winter wheat condition in the Panhandle. Most of the wheat was flowering and soil moisture conditions were good. It was obvious that some growers did not spend enough money on fertility given the recent good moisture situation, as some fields showed signs of nitrogen deficiency.

The recent cool, wet conditions are favorable for pollination and grain fill, as well as development of tan spot and stripe rust. Both leaf fungal diseases were found to be a problem in a number of Panhandle

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Yellow topped, 'buggy-whipped' corn

Corn producers are reporting that some field areas have yellow leaves waving from the top of corn canopies. These are now obvious in about 5% or more of fields in south central Nebraska, based on a quick windshield survey. Conditions this spring were right for development of this condition.

Over the years, this has been described as buggy whipping, rapid growth syndrome, accelerated growth syndrome, roping, wrapped whorls, onion leafing, and twisted whorls. We talked about this briefly in a June 11, 2004 *CropWatch* article (see archives at: *cropwatch.unl.edu/archives/2004/crop04-12.htm#ag_briefs*)

A field we've been tracking at South Central Agricultural Laboratory (SCAL) started showing symptoms in mid May before the four leaf stage. More than 50% of the plants in some parts of the field were affected on May 24. The good news is that a week later in the same part of the field only 25% of the plants were still whorled. The leaves that had unfurled showed varying degrees of crinkling and scorching in the leaf tissue. These trapped, sun-starved leaves will emerge with splotches of bright yellow amongst an otherwise dark green field. By June 7 essentially all of the previously trapped leaves had emerged in the SCAL field.

"Buggy-whipped" corn near Clay Center.

An article from Bob Nielsen, extension agronomist at Purdue University, also discusses this phenomenon occurring in Indiana. In a news release this week he said that "the cause of twisted whorls can be herbicide-related; particularly from post-emergence application of growth regulators like dicamba or 2,4-D. Recovery from these causes of twisted whorls depends on the severity of the actual herbicide injury to the

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Ag briefs

Douglas Anderson, Extension Educator in Nuckolls and Thayer counties: Recent rains have helped the wheat crop, but it is still on the edge. Wheat rust continues to be present in many fields, but with the decrease in potential yield, treatment becomes less of an option. Most wheat is heading out. Corn populations and stands look good and irrigation season is underway. Most fields are at the hilling stage. Soybeans are emerging and sorghum is being planted. Pasture is warming up but will be short this year due to drought. If we continue to get timely rain, there will be some pasture, but if we run short of water, a lot of grass is going to go dormant. Insect problems have been minimal.

Keith Jarvi, Integrated Pest Management Specialist at the Northeast REC in Norfolk: I saw a very interesting occurrence in a corn field Tuesday in western Pierce County. Steve Keck, a consultant, had called and described corn that was wilting and in some cases dying from injury that looked very similar to wireworm or cutworm damage to 3 -5 inch tall corn.

In carefully examining the site and pulling apart the plant, small maggots were found feeding in or near the base of the plant. The field was planted to rye last fall and cattle grazed it from April to just before planting in mid-May. The corn was planted into the living rye and the rye was sprayed with Roundup three to four days later. The corn emerged about six days after planting. This damage was only found in half of the pivot, the north half where rye was planted. The rye was planted in 10-inch rows and the corn was planted in 30-inch rows.

Pierce County Extension Educator John Hay and I examined the field and confirmed that a maggot was feeding on the corn. I believe it is a wheat stem maggot. We also found some maggots feeding in a patch of rye not killed by the Roundup. We found maggots producing the "white head" effect on the rye. Evidently the timing was just right to allow the maggots to leave the dying rye and enter the emerging corn.

The infestation level was much higher in the rows of corn that were planted directly on top of the rye. When the corn row was more than 2 inches away from the old rye row, few plants were affected. The overall infestation was estimated at 3-5% of the field. On Wednesday, similar damage was reported in a field of popcorn in northeast Nebraska. Both fields had been treated with Cruiser, a systemic insecticide effective against common seed-attacking insects.

Bill Booker, Extension Educator in Box Butte County: There's sufficient moisture to make the wheat crop in most areas if it doesn't get hailed. Last week's wet cool weather allowed continued development of tan spot and stripe rust in most fields visited early this week. Wheat streak mosaic and Russian wheat aphid also were present. The wheat stages varied from heading to finishing pollination. This week's warmer temperatures should slow advancement of the fungal diseases in the wheat which is good since there are no chemicals labeled past pollination (Feekes 10.5). With corn, sunflower and dry beans, growers should be watching for cutworms in emerging crops. Look for small holes chewed in the leaves initially and as they mature look for whole plants chewed off. Early detection is essential because most of the cutting occurs within 7-10 days of plant emergence. The economic threshold is when five percent of the plants show damage.

The corn looks good, although some is showing some purple from having an abundance of sugars. Purple corn is generally related to stress and restricted root development and it can be hybrid dependent (anthocyanin producing genes). The stress could be from cold weather or possibly a phosphorous deficiency — the roots may not have reached the phosphorous yet. Producers also should be aware of compaction and sidewall compaction from tilling/planting in wet soils. Purpling usually goes away with the stress and growth.

Sunflower and dry bean planting is in full swing. Fields planted ahead of the rain exhibit crusting. In confection sunflower fields yet to be planted, remember that plants should be consistently spaced to insure maximum seed size.

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Adding offset rows to existing soybean stand is beneficial only with major losses

Due to some less than ideal soybean stands across the state, some producers are wondering whether it would be beneficial to increase their existing population by adding offset rows to their original stand. Although it can be tempting to add extra plants into a poor stand, it likely will not curb yield losses unless the stand is extremely poor. There is limited research looking at the effect an additional row has when planted next to an existing row. It is important to consider whether adding extra plants a few weeks after the initial planting will *help* or *harm* the existing stand.

A replant guide from Iowa State University states that producers should not replant directly into existing stands because the non-uniformity of plant sizes will create competition between the plants for light, moisture, and nutrients. Although this competition is possible between soybean plants, we were unable to find research that documented this competitive behavior relative to yield; however, research conducted in Illinois in the late 1980s across multiple sites measured the yield effect of replanting into an existing stand. They planted approximately 157,000 seeds/ac in mid-May. The average yield was 42.5 bu/ac which is similar to yields from our non-irrigated fields but low for our irrigated systems.

The Illinois researchers replanted into the existing stand 24 days after the first planting date. The early-planted soybeans were at the 2nd or 3rd trifoliate stage. They planted into stands that had been reduced, either uniformly or with gaps, by 33% and 66%. A uniform reduction gave equal spacing among the remaining plants. Gaps, on the other hand, ranged from 1 to16 feet in length, depending on the treatment. This created a situation where some plants were bunched together while others had large gaps on both sides. *Table 1* shows the final yield differences, averaged across two years, three sites, and two soybean varieties.

We can see in *Table 1*, that with a uniform stand reduction of 33% there is *no* yield advantage (or disadvantage) with adding offset rows to an existing stand. Indeed, there must be a substantial number of plants missing (66%) to see any yield increase. It is important to note though that even with a 66% stand reduction, the stand must be sporadic, having large gaps (up to 16 feet long) before there is a yield advantage. A uniform distribution of the remaining plants still produced a comparable yield to the control (39.8 bu/ac vs. 42.5 bu/ac).

Current research at the South Central Agricultural Laboratory (SCAL) in which we have *uniformly* reduced soybean stands at the 3rd trifoliate stage matches these findings from Illinois fairly well. Although we did not evaluate the effect offset rows would have on yield, we did look at the effect reduced stands had overall. Our research findings do not disagree with the Illinois research; therefore, we feel that the response Nebraska producers would see with adding offset rows to their existing stands would be similar to the research described here.

We doubt it would be beneficial

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Table 1. Yield effect of replanting soybean into an existing stand that had been reduced, either uniformly or with gaps, by 33% and 66%. Final yields are averages over three sites and two years for two soybean varieties. With a uniform stand reduction of 33% there is *no* yield advantage (or disadvantage) with offset rows. (1990, University of Illinois).

% of stand reduced	Added offset rows into an existing stand?	Stand reduction (uniform or with gaps)	Seed yield (bu/ac)	Comparison between treatments
0%	No	None	42.5	
33%	No	Uniform	41.4	
33%	Yes	Uniform	41.4	
33%	No	Gaps	40.6	With gaps (1-8 ft. in length) and 33% of the stand reduced there is *no* significant yield advantage (or disadvantage) with offset rows.
33%	Yes	Gaps	41.0	
66%	No	Uniform	39.8	With a uniform stand reduction of 66% there is *no* significant yield advantage (or disadvantage) with offset rows.
66%	Yes	Uniform	40.2	
66%	No	Gaps	32.2	With gaps (1-16 ft. in length) and 66% of the stand reduced there is a 5 bu/A yield *increase* with offset rows.
66%	Yes	Gaps	37.2	

Adding soybean rows

(Continued from page 111)

for most producers to add offset rows next to their existing stands. If your stand is substantially reduced (66% or more) with large gaps, it may be worthwhile to add offset rows because it may lessen yield loss. We would not expect many fields to warrant planting into an existing stand.

References

Soybean Replant Decisions. Iowa State University. *www.extension.iastate.edu/Publications/PM1851.pdf*

Vasilas, B.L., G.E. Pepper, and M.A. Jacob. 1990. *Stand reductions, replanting, and offset row effects on soybean yield.* Journal of Production Agriculture 3:120-123.

Lori Abendroth, Research and Extension Associate
Roger Elmore
Extension Crops Specialist

Controlling volunteer corn in soybean fields

It is not surprising to see volunteer corn in soybean since the two crops are used in rotation; however, volunteer corn is a weed and should be treated accordingly. It reduces soybean light interception interferes with harvest and makes the field look "messy." Usually corn grows faster than soybean and, if left uncontrolled, will overtop the soybean canopy. Control can be achieved by mechanical means (eg. inter-row cultivation) and herbicides.

Timing of inter-row cultivation should depend on the weed pressure. If volunteer corn is predominant, cultivation should occur at the 5-6 leaf stage of corn. Growing point of corn remains in the ground until the 6th leaf stage. If cultivation occurs earlier than that leaf stage, regrowth may occur and a second cultivation may be necessary, especially if the cultivation is shallow.

If you have Roundup Ready® soybean, Roundup® will control volunteer corn, unless you had Roundup Ready corn the previous year. Roundup will not control volunteer Roundup Ready.

Herbicides also can be used effectively to control volunteer corn. Several grass type herbicides (graminicides) can be used at their lower rates postemergence in both conventional and Roundup Ready soybean. These include: Assure (4 oz), Fusilade (4 oz), Fusion (2 oz), Poast Plus (10-16 oz), and Select (4 oz). Best control is achieved when herbicides are applied by the 3-4th leaf stage of corn. When used at full label rates, these herbicides also will control many grassy species, including barnyardgrass, green and yellow foxtail, fall panicum and sandbur.

Stevan Knezevic
Integrated Weed Management Specialist
Haskell Ag Lab, Northeast REC

'Buggy-whipped'

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Yellow leaves in "buggy-whipped" corn likely resulted from early season herbicide damage.

plant. Just as frequently, twisted whorls occur in some hybrids as the plants transition from young pre-V5 seedlings to the rapid growth phase.

The exact reason for the twisted and wrapped whorls is not known, but the good news is that the whorls of affected plants eventually unwrap with minimal, if any, effects on the yield of the plants. The younger leaves that had been trapped inside the twisted upper leaves emerge fairly yellow because they had been shaded for quite some time. By the time the affected plants reach waist to chest-high, the only evidence that remains of the previous twisted whorls is the crinkled appearance of the most-affected leaves." (See the full article at Nielsen's Web site at *www.kingcorn.org/cafe*)

We'll continue to monitor the situation at SCAL, but we don't expect to see long-term impact since the whorled leaves seem to only cause cosmetic differences.

Roger Elmore
Extension Crops Specialist
Lori Abendroth, Research and Extension Associate

Postemergence weed control in soybeans

By now, soybeans have been planted throughout much of the state and producers are gearing up for their summer weed management strategies. For some producers, the choice will be easy as they have planted Roundup Ready® soybeans and will likely choose their favorite glyphosate product. For others, the choice may not be as easy with the many products to control various weeds at different stages.

Producers who used a preemergence herbicide this year may have more flexibility in their postemergence weed management strategy. Generally, they will be able to wait longer before cultivating or applying postemergence herbicides.

Several other strategies include the use of an early postemergence herbicide with residual such as a glyphosate + Pursuit (or Extreme) tank mix, a timely postemergence application followed by cultivation, or two postemergence applications 20-30 days apart, which allows the weed growth stage to dictate application timing.

See Table of Postemergence Herbicides on *page 114*.

Regardless of which weed control strategy you use, timing is critical. Previous CropWatch articles highlighted why soybeans should be kept weed-free from the 2nd trifoliate to beginning bloom. The weed management strategy you choose should account for this and yet be flexible enough to allow for weed removal during this critical time. Management strategies largely will depend on the producer. Picking the strategy that best fits your schedule will help you maintain optimum weed management in fields this year.

Several factors should be considered when choosing a postemergence herbicide. One such issue is 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. Research has shown there is little to no yield impact from this burn in early growth stages of soybeans.

Once soybeans begin blooming, avoid spraying cell membrane disrupter herbicides. In soybeans herbicides like Poast, Fusion, Fusilade, and Select will easily control annual grasses and volunteer corn. One slight problem, however, is that these grass herbicides require crop oil and, when tank mixed with cell membrane disrupters for broadleaf control, can increase the potential for crop injury. In addition, grass control will be slightly reduced when one of these grass products is tank mixed with a broadleaf herbicide, so you may need to compensate for that loss of activity.

Brady Kappler
Weed Science Educator

Problematic weeds and their control in soybean

Black nightshade: Problematic in many soybean stands mid to late season. Control with Phoenix at 8-12.5 oz/ac, UltraBlazer at 1-1.5 pt/ac, Reflex/Flexstar at 1 pt/ac, Pursuit DG at 1.44 oz/ac, Raptor at 5 oz/ac and glyphosate in Roundup Ready® soybeans at 32 oz/ac. Because nightshade moves in late in the season, cell membrane disrupters may not be a feasible treatment, especially during blooming.

Kochia: Use glyphosate in Roundup Ready soybeans at 32 oz/ac. Herbicides offering less control, in the 80% range, include Basagran at 2 pt/ac, Pursuit DG at 1.44 oz/ac, Raptor at 5 oz/ac, and Synchrony in STS soybeans at 0.5 oz/ac. Many areas have ALS- resistant kochia, meaning that herbicides such as Synchrony, Pursuit, and Raptor will offer no control.

Velvetleaf: Control can be achieved with cell membrane disrupters including UltraBlazer at 1-1.5 pt/ac Phoenix at 8-12.5 oz/ac, Reflex/Flexstar at 1 pt/ac, as well as Basagran at 2 pt/ac, Classic at 0.5-0.75 oz/ac, Pursuit DG at 1.44 oz/ac, Raptor at 5 oz/ac, Resource at 4 oz for velvetleaf < 4", Synchrony in STS soybeans at 0.5 oz/ac, glyphosate at 32 oz/ac, and Stellar at 6 oz/ac.

Waterhemp: Because much waterhemp is ALS-resistant, only a few herbicides will provide satisfactory control. These include cell membrane disrupters such as UltraBlazer/Status at 1-1.5 pt/ac, Phoenix at 10-12 oz/ac, Reflex/Flexstar at 1 pt/ac, Stellar at 6 oz/ac and glyphosate at 32 oz/ac in Roundup Ready soybeans.

Brady Kappler
Weed Science Educator

Light trap data available

Black light trap data can help monitor timing of insect activity and suggest when to more closely monitor for pest insects. Results from black light traps operated by UNL Extension are available at *http://entomology.unl.edu/fldcrops/index.htm* Additional sites will be added later.

Bob Wright, Extension Entomologist

Postemergence *(Continued from page 113)*

Table 1. Postemergence herbicides labeled for soybeans.

Herbicide	Action	Rate per Acre	Application Timing	Additives
Assure II	Grass	7-8 oz	Grass 4"; shattercane and corn 12-18"	NIS[1] 1 qt/100 gal***
Basagran	Broadleaf	1-2 pt	Broadleaf < 4"	COC[2] 1 qt/ac***
Classic	Broadleaf	0.5-0.75 oz	NIS 1 qt/100***	
Extreme	Broadleaf + grass	3 pt	Grass and broadleaf <12"	NIS 1 pt/100 + Fert. or AMS[3]
First Rate	Broadleaf	0.3 oz	Broadleaf <10"	NIS 1 pt/100***
Flexstar	Broadleaf	1 pt	Broadleaf < 4"	NIS 1 qt/100***
Fusilade	Grass	6-12 oz	Grass 2-12"	NIS 1 qt/100***
Fusion	Grass	6 oz	Grass 4"; shattercane and corn 12-18"	NIS 1 qt/100***
Generic glyphosates**	Broadleaf + grass	Check label	Typically 32-48 oz	Grass and broadleaf <12" AMS 1-2% May need additional NIS
Harmony GT	Broadleaf	0.083 oz	Broadleaf 2-8"	NIS 1 qt/100 + UAN[4] 2-4 qt/ac
Pheonix	Broadleaf	8-12.5 oz	Broadleaf <6"	NIS 1qt/100***
Poast Plus	Grass	18-24 oz	Grass 4"; shattercane and corn 12-18"	COC 1 qt/ac***
Pursuit	Broadleaf + grass	1.44 oz	NIS 1 qt/100 + UAN 1-2 qt/ac***	
Raptor	Broadleaf + grass	5 oz	Broadleaf <4"	NIS 1 qt/100 + UAN 2-4 qt/ac***
Reflex	Broadleaf	1 pt		NIS 1 qt/ac***
Reliance STS*, **	Broadleaf	0.5 oz	Broadleaf <6"	COC 1 qt/ac***
Resource	Broadleaf	4-8 oz	Broadleaf <4"	COC 1 qt /ac***
Roundup WeatherMax**	Broadleaf + grass	22-33 oz	Grass and broadleaf <12"	AMS 1-2%
Select	Grass	6 oz	Grass 4", corn 12-24", shattercane 6-18"	COC 1 qt /ac***
Stellar	Broadleaf	5 oz	Broadleaf 2-6"	NIS 1 qt/100***
Storm	Broadleaf	1.5 pt	Broadleaf 2-6"	NIS 1qt/100***
Synchrony STS**	Broadleaf	0.5 oz	Broadleaf <6"	COC 1 qt/ac***
Touchdown Total	Broadleaf + grass	24-36 oz	Grass and broadleaf <12"	AMS 1-2%
Ultra Blazer	Broadleaf	1-1.5 pt	NIS 1 qt/100***	

*May use non-STS when mixed with NIS + ammonium fertilizer instead of COC
**Requires Roundup Ready® soybeans
***More than one additive is labeled

[1] Nonionic surfactant
[2] Crop oil concentrate
[3] Ammonium sulfate – spray grade
[4] Urea ammonium nitrate

Ag briefs & Field updates

(Continued from page 110)

Delroy Hemsath, Extension Educator in Dakota, Dixon, and Thurston counties: Recent rains complicated alfalfa harvest -- many of the fields were cut around June 1 but haven't been picked up yet.

Corn growth is in the vegetative stage, ranging from the 4-leaf to 7-leaf stage. Almost all soybeans have been planted with most now in the V2 stage.

Bromegrass pastures are in the reproductive stage. The wet weather allowed grass to grow faster than the cattle could harvest it. Weed control is the next big concern with the wet fields and windy conditions. Many fields need to be sprayed. There is an abundance of "yellow rocket" in just about every road ditch and some pastures and producers are spraying for leafy spurge.

Controlling hoary vervain in pastures

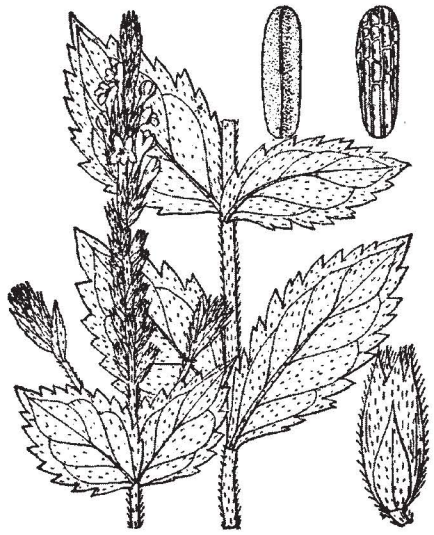
Hoary vervain *(Verbena stricta)*, also known as wooly verbena or tall vervain, is a commonly found native weed in northeast Nebraska on overgrazed rangeland, prairies and disturbed sites in all soil types. There are several other types of vervain in Nebraska -- prostrate, white, and blue --most of which have similar growth forms and habits as hoary vervain.

Hoary vervain is a perennial forb from the vervain family (Verbenaceae) that reproduces by seeds. The taproot (perennial structure) produces individual erect plants. The stem is nearly round, simple or branched above, and can be up to 5 feet tall, covered with soft white hairs. Leaves are opposite and leaf blades are ovate with many teeth. The lower surface is pubescent with highly visible veins. Like many other plant species, the overall growth and development depends on the amount and timing of rainfall. In Neberaska hoary vervain can flower from May to September, with blue or purple flowers positioned on the top of the main stem and branches. It will produce a two-seeded fruit.

Hoary vervain provides forage for deer. Its seeds are an important food source for small mammals and upland birds. Native Americans also made a tea from the leaves to treat stomachache. Hoary vervain has no value to livestock because of its low palatability.

(Photo by Jennifer Anderson @ USDA-NRCS PLANTS Database)

Hoary vervain *(Verbena stricta)*



USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *Illustrated flora of the northern states and Canada.* Vol. 3: 96.

This weed can be controlled by various means. Mowing plants 3-5 inches tall can reduce vervain population considerably for the season. Mowing once or twice a season, depending on the amount of precipitation. If the season is dry, one mowing in mid June can be effective, providing more than 75% control. If the season is wet, an additional mowing is needed in July or August. Herbicides also can be effective in providing season long control. Herbicide should be appled when vervain is 3-5 inches tall, usually in early June. Effective herbicides and their their rate and cost per acre includes: Salvo (12 oz, $4), Grazon P+D (32 oz, $8), Weedmaster (32 oz, $6), Ally (0.25 oz, $8), and Vista (22 oz, $8).

Stevan Knezevic
Extension Integrated Weed Management Specialist
Haskell Ag Lab, NEREC

Wheat condition *(Continued from page 109)*

wheat fields. It is now too late to treat for either disease with fungicides, so growers with these disease problems will have to hope for warmer and drier weather to prevent spread of infection.

The other disease that was found to be widespread was wheat streak mosaic. The worst mosaic infections were seen in Cheyenne County with three large areas being severely impacted. These areas also correspond to the occurrence of serious hail events last June. Because of the cool spring, severe spraddling of the plants is uncommon and the plants are standing surprisingly upright for wheat streak. However, the flag leaves are showing severe yellowing, and the ability of the plants to mature seed is severely compromised. In some fields, this disease will cause significant, perhaps even total, yield loss. Warm conditions will increase the impact of the virus.

The specialists did see some sign of slight freeze injury, such as white awn tips, but significant damage was only seen in isolated spots. At this stage in the wheat game, growers don't have many options other than to wait and see how the environmental conditions determine the final yield.

Drew Lyon, Extension Dryland Crops Specialist; Gary Hein, Extension Entomologist, and John Watkins, Bob Harveson, Tamra Jackson and Stephen Wegulo, Extension Plant Pathologists Scottsbluff and Lincoln

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How insects influence timing of weed control

Insects and weeds are common pests that cause major expenses to crop producers. To help producers make reasonable decisions about pest control and pesticide use, scientists developed a concept of integrated pest management.

IPM combines cultural, mechanical, biological, genetic and chemical methods to provide effective and economical pest control. In most fields many species of weeds and insects with different life cycles and survival mechanisms coexist. It is not likely that they can be managed by a single control measure.

In reality, weeds and insects interact and not only affect each other and the crop, but also the efficacy of their respective management tactics. For example, insect-induced defoliation can significantly delay soybean canopy development, which in turn will provide more sunlight for weeds to grow and compete with the crop, directly affecting subsequent weed management plans. Learning how the insects and weeds interact with each other and the crop is essential in developing IPM strategies.

We studied interactions among weeds, insects, and soybean to determine the critical time for weed removal as influenced by the three levels of simulated insect defoliation (0%, 30%, and 60%). This study was conducted by Travis Gustafson in the summers of 2003 and 2004 as part of his master's thesis research and as part of a collaborative project with UNL weed science and entomology.

Our data indicated that the insect damage to the soybean leaf area indeed resulted in a need for earlier weed management. For example, with no insect damage to the soybean canopy, weeds could remain in the crop up to the V4 stage (third trifoliate) or about 20 days after crop emergence without significantly affecting yields; however, at the 30% and 60% soybean defoliation, weeds should be removed by the V3 (17 days) and V1 (10 days), respectively.

From a practical standpoint, this indicates that soybeans with 30-60% insect damage have a shorter weed control window and potentially fewer weed control options. Soybean leaf damage, for example caused by bean leaf beetles, affects not only the final yield but it also affects the timing of when weed control needs to be initiated in the growing season in order to prevent further yield losses. This research also shows that producers may have another tool to fight weeds in soybean fields — a good insecticide. If a bean leaf beetle infestation is particularly bad, spraying an insecticide to control them may actually widen the herbicide application window and increase weed control options. Funding for this project was provided by the Nebraska Soybean Board.

Stevan Knezevic, Extension Integrated Weed Management Specialist
Haskell Ag Lab, Northeast REC

Wheat condition *(Continued from page 115)*

West Central

In west central Nebraska, wheat has experienced more problems this season (2004-2005) than in many years. While there was moisture at planting that led to good stands, complications began early with the development of leaf rust in many fields last fall. In addition, during the longer-than-normal growing season last fall, plants used a lot of soil moisture and nitrogen fertilizer. In many situations, the wheat crop then became drought stressed this spring before rains occurred and also is nitrogen deficient due to the amount used last fall. Wheat streak mosaic also has been a problem in many areas, especially where there was hail.

This wheat crop sustained quite a bit of freeze damage that wasn't apparent until it headed out. Southwest and western Nebraska had unusually cold weather from April 23 to May 4. At North Platte the night temperature was above 32°F only one day on April 26 and dropped to 21°F on May 4. Many other areas were even colder. Most freeze damage occurred where the crop was under stress due to lack of moisture and in some cases, lack of nitrogen. These wheat stands didn't provide the canopy protection which enabled the low temperatures to cause freeze damage. The earlier cool temperatures also created an optimum environment for the development of stripe rust and tan spot in many fields. Russian wheat aphids were present in some fields, but not at economic levels. When you look back over this wheat season, this crop has had to face a lot of unusual factors which will become particularly evident at harvest.

Bob Klein, Extension Cropping Systems Specialist
West Central REC, North Platte

Southeast

Southeast Nebraska fields viewed while en route to and at the Gage County Wheat Field Plot Tour earlier this week looked good from the windshield, but up close, if was evident that there is pressure on many varieties, depending on their weaknesses. Several types of rust were present and susceptible varieties have lost many leaves. Yellow rust and stripe rust seem to be the most prevalent diseases. Several fields have soil borne mosaic or wheat streak mosaic. Recent rains should provide enough moisture to finish filling the crop if any leaves are left to fill.

Lenis Nelson
Crop Variety Specialist

Pesticide containers accepted at 42 recycling sites

Farmers and other pesticide applicators can recycle empty, plastic pesticide containers at 42 collection sites across Nebraska this year. This is the 14th year for the University of Nebraska-Lincoln Extension plastic pesticide container and crop protection drum recycling program.

"Growing awareness and participation in the program have helped us collect and recycle nearly 638 tons of plastic containers," said Larry Schulze, UNL Extension pesticide coordinator. Last year alone, the program recycled more than 77 tons of plastic containers.

"Large quantities of plastic are being recycled through this program each year in Nebraska. There is a strong commitment to environmental stewardship by many pesticide applicators and agri-chemical dealers, but we would like to see participation climb even higher, since each drum or container recycled is one less that might end up littering the environment or possibly contaminating surface or groundwater," Schulze said.

To help farmers and applicators find recycling sites and other program information, UNL's Pesticide Education Resources Web site has expanded program information. New features at *pested.unl.edu/recycle.htm* include guidelines, participant roles and details about the pesticide container inspection process.

Plastic from collected containers is turned into products such as shipping pallets, drain tile, dimension lumber and parking lot tire bumpers.

The program accepts pressure-rinsed or triple-rinsed 1- and 2.5-gallon plastic pesticide containers. They must be dry and clean, inside and out. Caps, labels and slip-cover plastic labels must be removed since they cannot be recycled in this program.

Twenty-six of this year's 42 collection sites accept 15-, 30- and 55-gallon plastic crop protection chemical, crop oil and adjuvant drums. These drums must be thoroughly rinsed before delivery to collection sites and should not be cut or opened in any way.

Mini-bulk, saddle tanks and nurse tanks, which can be made of fiberglass or plastics not compatible with the recycling program, are not accepted.

Before delivering containers to a collection site, containers and drums should be cleaned, rinsed and drained. Rinsate should be returned to the spray tank. Remove and properly dispose of booklets and caps from containers; and remove and properly dispose of plastic shrink-wraps.

Glued-on paper labels can be left on the container.

Schulze coordinates the Institute of Agriculture and Natural Resources program with the help of UNL extension educators. Funding is by a national coalition of agri-chemical manufacturers through the Agricultural Container Recycling Council.

Of this year's collection sites, nine collect year-around, 13 collect May through August, 18 collect on specific dates and two collect by appointment only.

Sites are listed alphabetically by county below. Sites accepting 15- and 30-gallon plastic drums are noted.

Year-round collection sites

Buffalo: Kearney Recycling Center, Kearney, Monday through Friday, 7 a.m. to 4 p.m.

Burt: Tekamah City Compactor, Tekamah, Tuesday, 2 to 5 p.m.; Thursday, 2 to 6 p.m.

Cuming: West Point Transfer Station, West Point, Monday through Friday 8 a.m. to noon and 1 to 5 p.m.; Saturday 8 a.m. to 4 p.m.; accepts drums.

Dawson: All Points Cooperative, Lexington and Overton, Monday through Friday, 8 a.m. to 5 p.m. Both sites accept drums.

Lincoln: North Platte Transfer Station, North Platte, Monday through Saturday, 7 a.m. to 4 p.m., except holidays.

Saunders: Cedar Ridge Spraying, Ashland, business hours, 8 a.m. to 5 p.m.; accepts drums.

Scotts Bluff: Gering Landfill, Gering, Monday through Friday, 7 a.m. to 2 p.m.; accepts drums.

Washington: Blair Recycling Center, Blair, Saturday, 8 a.m. to noon; accepts drums.

May-August collection sites

Antelope: Central Valley Ag Co-op, Brunswick, Clearwater, Elgin, Neligh and Tilden.

Butler: Frontier Coop (Yanka), David City.

Gage: Hasenkamp Agricultural Co. and Southeast Nebraska Cooperative, Beatrice; both sites accept drums.

Jefferson: Farmers Cooperative Agronomy Center, Fairbury and Farmers Co-op Elevator, Plymouth. Both sites accept drums.

Lancaster: Countryside Coop, Firth; accepts drums.

Sarpy: Farmers Union Coop, Gretna.

Saunders: Frontier Cooperative, Mead; accepts drums.

Select day collection sites

Adams: Heartland Coop, Juniata, Aug. 18 and 19, 8 a.m. to 5 p.m.; accepts drums.

Boone: Country Partners Co-op, Cedar Rapids, May through July, Monday through Friday, 8 a.m. to 4 p.m.

Clay: Heartland Coop, Sutton, Aug. 18 and 19, 8 a.m. to 5 p.m.; accepts drums.

Colfax: Schuyler Cooperative, Richland, May 14, June 11, July 9, Aug. 13, 8 a.m. to noon; Husker Co-op Fertilizer, Schuyler, May 14, June 11, July 9, Aug. 13, 8 a.m. to noon.

Dakota: Northeast Cooperative, Emerson, June and July, Wednesday, 9:30 to 10:30 a.m.; Northeast Coop-

(Continued on page 118)

Preharvest herbicide treatment in winter wheat

Broadleaf weeds in winter wheat at harvest not only affect the harvest operation but also can be difficult to control after harvest. This is because they have limited leaf area after being cut off at harvest. Waiting for these weeds to regrow after harvest allows them to use soil water. If only grassy weeds are present after harvest, herbicide treatments containing glyphosate are usually more effective.

The best option would have been to control these weeds when they were small in the growing winter wheat. This would have eliminated the weeds' effect on the growing winter wheat in competing for space, soil water, light, and nutrients.

The best option now is to control these weeds before harvest. Few herbicides are labeled for preharvest applications in winter wheat. They include Ally plus 2-4,D amine, 2,4-D ester, and glyphosate. Not all 2,4-D and glyphosate brands are labeled for preharvest applications in winter wheat. Use only those that are labeled for this use.

Use only the glyphosate labeled for preharvest in winter wheat where Roundup Ready soybeans have been planted in winter wheat this spring.

Some 2,4-D labels allow preharvest treatment in winter wheat after it is in the hard dough stage. Few label specifications are given regarding using treated wheat for seed, but one should conduct a germination test prior to planting the seed from fields where 2,4-D was used as a preharvest treatment. Ester formulations are generally more active on weeds than amines, but esters can volatilize more easily than amines, especially when temperatures are over 85°F. Use of amine formulations increases the preplant interval for soybean. The soybean planting interval after 2,4-D application is 7 days for 1 pint of ester, 14 days for 1 pint of amine, and 30 days for 2 pints of amine or ester formulations.

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Table 1. Herbicide treatments for preharvest treatment in winter wheat (from page 71 of the *2005 Guide for Weed Management in Nebraska*, EC04-130).

Herbicide	Rate per acre	App. time	Remarks and cost per acre broadcast\
Ally + 2,4-D amine (4L)	0.1 oz 0.25-0.50 pt	After dough stage	Preharvest interval of 10 days. Add surfactant at 1 qt/100 gallons of spray solution. Cost: $2.90-$3.35
2,4-D ester (4L)	1 qt	Hard dough 7 or more days before harvest	Rescue treatment for control of late broadleaf weeds. To reduce breakage with 2,4-D all green color should be gone from joints. Only certain brands of 2,4-D are labeled for this use. Cost: 2,4-D $3.70; glyphosate $3.55
Glyphosate (4 lb ai)	1 qt		

Recycling *(Continued from page 117)*

erative, South Sioux City, June and July, Wednesday, 11 a.m. to noon. Both sites accept drums.

Dixon: Precision Agronomy, Newcastle, June to Aug. 24, Wednesday; Northeast Co-op, Ponca, June to Aug. 24, Wednesday. Both sites accept drums.

Dodge: Frontier Cooperative, Fremont, June 1 to Sept. 15, Friday, 1 to 4 p.m., or by appointment.

Hamilton: Aurora Cooperative Elevator, Aurora, July through Aug. 19, Friday, 8 a.m. to 5 p.m.; Heartland Cooperative, Giltner, Aug. 11 and 12, 8 a.m. to 5 p.m. Both sites accept drums.

Kearney: Heartland Co-op, Minden, Aug. 11 and 12, 8 a.m. to 5 p.m.; accepts drums.

Knox: Precision Agronomy, Bloomfield, June to Aug. 24, Wednesday; accepts drums.

Lancaster: Farmers Cooperative Co., Bennet, July 29, 9 a.m. to noon; Farmers Cooperative Co., Waverly, July 9, 9 a.m. to noon. Both sites accept drums.

Thurston: Mother Earth Recycling Center, Macy, June and July, Wednesday, 10 a.m. to noon; accepts drums.

Wayne: Precision Agronomy, Wayne, June to Aug. 24, Wednesday.

By-appointment-only sites

Brown: Ainsworth Transfer Station, Ainsworth, (402) 387-2213.

Lancaster: Lancaster County Extension Office, Lincoln, (402) 441-7180; accepts drums.