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

CROP WATCH

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Condition update

Winter wheat gains from snow, rain

Winter wheat in much of the Panhandle is just now beginning to enter the joint stage. The recent moisture (both rain and snow) has been very beneficial. With a few exceptions, winter wheat in the Panhandle is in very good condition. Cold temperatures associated with the winter-like storms have done little more than burn some leaf tissue. Tillering winter wheat is tolerant to temperatures into the mid-teens. Even winter wheat that is jointing can tolerate a couple of hours in the mid-twenties before suffering damage (See EC 94-132-S, *Freeze Injury to Nebraska Wheat*).

Some winter wheat fields are showing signs of *Bipolaris* fungi injury. Plants in these fields have lower leaves that appear yellow or brown. This organism is soil-borne and attacks lower leaves in late winter and early spring. When temperatures warm and wheat growth accelerates, and if moisture stress is not a problem, the damage may not be severe. Wheat streak mosaic virus symptoms have not yet been reported in the Panhandle.

Recent moisture, which has interrupted herbicide applications in the Panhandle, will speed germination of summer annual weeds like kochia and Russian thistle. Producers will need to monitor weed development closely to avoid applying certain herbicides such as dicamba (Banvel), picloram (Tordon), and 2,4-D after jointing. Producers will need to work rapidly to treat weedy fields before wheat growth gets too advanced.

Drew Lyon
Extension Crops Specialist
Eric Kerr
Extension Plant Pathologist
Panhandle Research and Education Center, Scottsbluff

Inside

Environmental factors likely cause yellow wheat

Wheat producers continue to be concerned about the yellow color and slow growth of their wheat. Most of the reports have involved wheat following soybeans. The symptoms are a general yellowing that looks like nitrogen deficiency; however, most of the fields involved either received dry fertilizer last fall or liquid fertilizer this spring or both.

Several factors may be involved. Wheat planted after corn or soybeans is usually planted later than the optimum planting date. Going into winter it usually has less top growth and a sparse root system compared to earlier planted wheat. This was noted last fall in which wheat was showing a yellowing even though it had been fertilized. Dry conditions and a sparse root system restricted nitrogen uptake in the fall. Another factor involved probably had to do with the widely fluctuating temperatures in February, March and April. The continual changes from 30°F to 80°F to 25°F put additional stress on winter wheat.

A study in the mid-1980s at Purdue University showed that soybean residue could be allelopathic (toxic) to wheat. When

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Wheat (*Continued from page 37*)

wheat was planted into soybean residue that was either on the surface or incorporated into the root zone, effects on the wheat ranged from reduced and delayed emergence to stunting to chlorosis that resembled nitrogen deficiency. At the University of Nebraska West Central Research and Extension Center, North Platte, irrigated winter wheat planted into soybean residue also showed delayed emergence and yellowing. Color and growth were poor compared to wheat in a dryland wheat-fallow-system. Soybeans tend to remove much of the residual nitrate, so the yellowing in wheat following soybeans could be a combination of allelopathic and nutritional factors. Producers experienced with this cropping sequence indicate that a higher nitrogen requirement is needed for the wheat. Also, liquid nitrogen gives a more rapid response than dry.

In all probability, the yellowing and poor growth is the result of complicated interrelated factors that involve environmental conditions, cropping history of the field and nutrition.

Producers should not get discouraged with the practice of seeding wheat into soybean because this practice does have benefits. The seedbed is firmer which substantially reduces the potential for root and crown rot and winter kill. Higher seeding rates and high nitrogen rates, however, are required.

Hopefully, once warmer weather predominates growth and color will improve.

Don't confuse the yellowing due to soil-borne wheat mosaic with the general yellowing due to growing conditions. Mosaic infected plants will show a definite mosaic pattern on the leaves where the general yellowing does not. If growers are uncertain, they can submit a sample for virus analysis through the local extension office to the Plant and Pest Diagnostic Clinic. There is a $20 charge per sample for virus analysis.

John Watkins
Extension Plant Pathologist
Rogers Hammons
Nebraska Crop Improvement Association
Gary Hergert
Soils Specialist, WCREC

Control moss in stock tanks

Algae in stock and nurse tanks can be a nuisance for both animal and spraying uses especially with hard water. Adding copper sulfate to the water will take care of the problem until the tank is refilled with fresh water. The process must then be repeated. Dissolve 1 ounce of copper sulfate in 1 pt of water in a glass jar. Add 7.5 tablespoons of the prepared solution to each 1,000 gallons of water. An alternative for nurse tanks is to paint the entire tank black. This eliminates the sunlight requirement which prevents algae growth.

John McNamara
Extension Assistant, Weed Science

CROPWATCH

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Lisa Brown Jasa, Editor

For more information about a particular subject, write the authors at the addresses below:

UNL Department of Entomology
202 Plant Industry Bldg.
Lincoln, NE 68583-0816

UNL Department of Plant Pathology
406 Plant Science Bldg.
Lincoln, NE 68583-0722

UNL Department of Agronomy
279 Plant Science Bldg.
Lincoln, NE 68583-0915

UNL Department of Agricultural Meteorology
236 L.W. Chase Hall
Lincoln, NE 68583-0728

Optimum time for corn planting begins

The window of opportunity for planting corn is open from now until May 10 for most farmers in south central and southeast Nebraska, and to mid-May for those in northeast Nebraska.

Information compiled over several years shows that, under normal conditions, farmers planting between April 20 and May 10 can expect a 95% or greater yield potential. However, as planting is delayed, the percent of maximum yield potential declines.

Farmers need to assess several factors when scheduling planting, including soil condition, number of acres, expected number of good weather days, and available equipment. Using Nebraska soil, moisture and weather statistics, Nebraska researchers developed a computer model to estimate the number of calendar days needed for planting.

If it takes eight days in the field to plant all of a farmer's corn, it will take, on the average, 18 calendar days. Field conditions will not be conducive for planting on ten of these days. To maximize average yield under these conditions, you need to start planting Friday (April 21).

While there is some risk from planting corn too early, the economic loss of planting after mid May is greater than the potential loss from reduced stands due to seed diseases.

If it takes 14 days to plant your corn acres, planting should have begun April 18. On the average it will take 32 calendar days, taking into account days when the fields are too wet.

While it's helpful to monitor soil temperature, planting by calendar date is more viable over the long run. If a farmer is unable to plant the majority of corn between April 20 and May 10, it would be better to plant earlier rather than wait for soil temperatures to rise. (Corn will not germinate until the soil temperature is above 50°F.)

Although there is some risk for corn laying in the ground too long and becoming disease-infested before it germinates, the economic loss of planting later in May is greater than the potential for reduced stands from disease. When planting before soil temperatures reach 50°F, select hybrids more tolerant to cold temperatures.

Once the soil temperature reaches 50°F, a corn seedling requires 100 to 150 growing degree day units (GDD) to emerge. The GDD for corn are calculated based on the difference between the mean daily temperature and 50°F. If the average daily temperature were 60°F, then 10 GDD units would be accumulated. Normally, it takes 5-10 days to accumulate enough GDD for corn to germinate and emerge.

If fields can't be planted during the window, consider using earlier maturing hybrids or planting other crops. If it takes too long to plant your acres, you may need to consider upgrading machinery, adding machinery, or reducing the number of acres of corn planted.

Roger Elmore, Crops Specialist
Roger Selley, Farm Management Specialist
Kim Peterson, Communications Associate, South Central Research and Extension Center

Soil moisture improving; cool temps to continue

The recent stretch of cool weather, coupled with occasional heavy snow over the western half of the state, has significantly lowered mean weekly soil temperatures. For the week ending April 17, mean weekly soil temperatures at the 4 inch depth ranged from 38.6°F at Grant to 49.6°F at Red Cloud (*see page 42*). Soil temperatures are averaging 8 to 16 degrees below normal. It will take several days of above normal temperatures for soil temperature at the 4 inch depth to remain above 50°F. (Corn will not germinate if soil temperature is less than 50°F.) Unfortunately, the forecast for the next 10 days is calling for below to much below normal temperatures.

With the recent stretch of wet weather, soil moisture reserves have improved dramatically. On a statewide basis, surface moisture was rated 5% short, 64% adequate, and 31% surplus. The northern half of the state generally has surplus moisture, while the south-

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Nightshade threat grows in corn

During the last few years, nightshade has been multiplying in both corn and soybeans. This is largely due to environmental conditions, its ability to emerge after non-residual herbicides are applied or after soil-active herbicides dissipate, and its relative tolerance to many herbicides. Although it is usually considered to be a bigger problem in soybeans, certain production practices have caused it to resurge in corn fields.

Nightshade emerges under warm, moist soil conditions late in the season. The last three years have brought late-season rains resulting in moist soils and optimum emergence conditions. In many cases the weed came on strong after the crop was laid by. Herbicides can provide good control, however they usually are either postemergence herbicides with little soil activity or short-lived preemergence herbicides which rapidly dissipate under the warm summer soil conditions. Because nightshade emerges late, it avoids direct exposure to these herbicides and is not exposed to cultivation. Furthermore, there are few herbicides which provide complete control, especially in soybeans. When selecting a herbicide, choose one that controls the weed and has effective residual activity and/or is applied at the optimal time.

Certain cultural practices have been related to establishment of this weed. In particular, a large increase in the nightshade's prevalence has occurred in gravity or furrow irrigation cropping systems, where the weed can be found in the furrow or row middles. In many cases, the herbicide is banded which is especially true under ridge-till situations. Even if an effective herbicide is broadcast, the grower tends to loose control after ditching, when the herbicide zone is disturbed and most of the chemical is moved to the ridge. Due to the lack of herbicide, adequate sunlight penetration between the rows, and moist soil conditions due to irrigation, nightshade thrives.

Nightshade can be successfully controlled by integrating cultural and chemical practices. In furrow-irrigated systems, control may be difficult due to soil (and herbicide) movement during ridge-building. Under dryland conditions, the problem may largely take care of itself if Nebraska's climate returns to normal or dryer conditions. Without late-season moisture, nightshade will not emerge.

Soybeans

In soybeans, control begins with any cultural practice that encourages a vigorous-growing, competitive crop. Soybeans can effectively compete with nightshade through shading. This is particularly important in this crop since the only herbicide options available are either relatively short-residual preemergence herbicides or little to no residual postemergence products.

There are three main classes of herbicides which can control nightshade in soybean: the chloroacetamides (Lasso, Dual, Frontier), the diphenylethers (Blazer, Cobra, Reflex), and one imidazolinone (Pursuit). These herbicides generally provide about 80-85% control. The diphenylethers are postemergence herbicides with no soil activity; therefore, they will not control unemerged weeds. The preemergence chloroacetamide herbicides give good control, but have relatively short soil residual; they will have degraded by late summer, resulting in little control of late-emerging weeds. Pursuit offers excellent postemergence control (80-90%), but less preemergence control (<60%). Although cultivation is an excellent control method, many growers, especially no-tillers, don't use it. If cultivation is not a possibility, select narrow-row beans which will close the canopy faster and shade the weed.

Corn

In corn, the weed is generally less of a problem because it is a more competitive crop and longer-residual preemergence herbicides such as atrazine are available. Available herbicides include: the chloroacetamides (Lasso, Dual, Frontier, Harness, Surpass); the triazines (atrazine, Bladex, Extrazine); and several postemergence herbicides (atrazine, Banvel/Clarity, Beacon, Bladex, Buctril, Extrazine, Pursuit [IMI-corn only], 2,4-D, or mixtures containing these herbicides).

Season-long control will depend on residual activity of the herbicide. For instance, the residual for Bladex or Extrazine is not as long as for atrazine, and they may not control late emerging plants. Finally, Dual can be applied layby after furrowing or final cultivation. This can extend control till harvest. Such treatments can be somewhat expensive however and should only be used if nightshade populations are high and are not being completely controlled with other options.

David Holshouser
Extension Weeds Specialist
Northeast Research and Extension Center

Pre/postemergence herbicide possibilities

Timely herbicide application is not always possible in the busy planting season. Some -- but not all -- preemergence herbicides can be applied early postemergence with good results. However, most of these treatments are more effective when applied preemergence than postemergence, especially against annual grasses. A rain or sprinkler irrigation is required after application for best control. The table lists herbicides that are commonly used in Nebraska and can be used both **preemergence and early postemergence.** Label limitations prevent certain soil applied compounds from being used after crop emergence.

John W. McNamara
Extension Assistant
Weed Science
Alex Martin
Extension Weeds Specialist

Preemergence/early postemergence herbicides

Treatment	*Crop Stage*	*Weed Stage*
Corn		
Aatrex/Atrazine	0-12"	1.5" grass
Battalion	0-5"*	unemerged
Bicep	0-5"	2-leaf
Bladex 80W	before 5th leaf	1.5" grass
Broadstrike + Dual	0-5"*	unemerged
Bullet	0-5"*	2-leaf
Contour	0-12"	0-3"
Dual	0-5"*	unemerged
Dual + Aatrex	0-5"	2-leaf
Extrazine	before 5th leaf	1.5"
Frontier	0-8"	unemerged
Guardsman	0-8"	1.5"
Harness	0-5"*	unemerged
Harness Xtra	0-5"*	2-leaf
Lariat	0-5"	2-leaf
Lasso	0-5"	2-leaf
Lasso + Atrazine	0-5"	2-leaf
Lasso + Banvel	0-3"	2-leaf
Marksman	0-5"	0-4" broadleaf
Prowl + Atrazine	up to 2-leaf	1"
Prowl + Bladex 80W	up to 2-leaf	1"
Pursuit	corn <8-leaf	weeds <3"
Ramrod + Atrazine	0-5"*	2-leaf
Shotgun	0-12"	0-4"
Surpass	0-5"*	unemerged
Surpass 100	0-5"*	2-leaf
Topnotch	0-5"*	unemerged
Soybeans		
Broadstrike + Dual	thru unifoliate	unemerged
Detail	up to unifoliate	unemerged
Dual	thru unifoliate*	unemerged
Frontier	up to 3rd trifoliate	unemerged
Lasso	thru unifoliate*	unemerged
Pursuit	----	weeds <3"
Grain Sorghum		
Aatrex/Atrazine	0-12"	1.5"
Bicep	up to 5"*	2-leaf
Bullet	0-5"*	2-leaf
Dual	up to 5"*	unemerged
Lariat	up to 5"*	2-leaf
Lasso	up to 5"*	unemerged
Lasso + Atrazine	up to 5"*	2-leaf
Ramrod + Atrazine	0-5"*	2-leaf
Shotgun	0-12"	0-4"

*Not labeled postemergence; however, experience indicates little chance of crop injury.

Kansas wheat report

As of Monday, 81 percent of the Kansas wheat acreage was jointed, compared to 46% last yea. A very small amount of acreage in the south central district had begun to head. Freeze damage from the cold snap is estimated to be the worst in the west central and southwestern districts. Damage in these districts is estimated to be moderate to severe on 50% to 60%. of the acres. Freeze damage to a lesser extent is expected in the northwest, central, and south central areas.

Disease infestations are mostly light with some instances of wheatstreak mosaic reported in the western districts. Instances of rust are reported in eastern Kansas. Speckled leaf blotch is reported in the central districts.

Soil moisture *(Continued from page 39)*

ern third is adequate to short. Subsoil moisture is rated 11% short, 77% adequate, and 12% surplus on a statewide basis. The east central, north central, and northeast districts are reporting that approximately 20% of the acreage has surplus moisture. The Panhandle, southwest, south central, and southeast are reporting 15-25% of the acreage is short of adequate subsoil moisture.

Kansas Agricultural Statistics reports that 50 to 60 percent of the acreage in the west central and southwest districts have moderate to severe freeze damage. Damage has occurred to a lesser extent in the northwest, central, and south central districts. Additionally, damage was severe over the western High Plains of Oklahoma and Texas.

Crop damage this growing season has been significant in other areas of the world. Wheat yield reductions due to drought conditions have been significant in Australia and northern Africa. Some freeze damage to wheat has been reported across the northern plains of China. Drier than normal conditions have significantly reduced corn yields across southern Africa.

The cool, wet weather presently entrenched over the Central Plains is expected to give way to normal to above normal temperatures during May, according to the 30 day outlook. Precipitation is expected to be normal.

Al Dutcher
State Climatologist
Agricultural Meteorology

Soil temperatures

1 year analysis and 7-day summary ending 4/17

	Ave.	*Norm.*	*Dep.*	*Hi/Day*	*Lo/Day Reading*	*Last*
Ainsworth	41.1	52.8	-11.7	51./6	35./3	45.7
Alliance	38.8	51.5	-12.7	45./6	34./3	41.3
Arthur	41.0	51.5	-10.6	50./6	35./3	45.1
Beatrice	46.2	56.6	-10.4	52./6	41./3	49.9
Central City	44.4	56.0	-11.6	51./6	38./2	47.5
Clay Center	45.9	55.9	-9.9	55./6	39./2	48.8
Concord	40.5	53.9	-13.4	48./6	35./2	42.8
Curtis	44.2	55.1	-10.9	50./6	38./2	47.4
Elgin	40.1	53.7	-13.6	48./6	35./4	44.1
Gordon	39.4	50.3	-10.9	45./5	34./3	42.7
Grant	38.6	54.5	-15.9	46./6	34./4	43.3
Holdrege	47.2	55.6	-8.4	55./6	38./2	51.6
Lincoln	48.4	56.2	-7.9	60./6	41./2	52.2
McCook	44.6	56.6	-11.9	50./5	39./2	47.5
Mead	45.5	55.6	-10.2	53./6	40./2	48.0
North Platte	43.6	53.8	-10.2	50./6	36./2	45.8
O'Neill	42.3	53.1	-10.8	51./6	37./3	46.2
Ord	43.1	54.1	-11.0	54./6	35./3	47.7
Red Cloud	49.6	56.7	-7.2	60./6	41./2	52.1
Rising City	44.9	55.1	-10.3	53./6	39./2	48.0
Scottsbluff	43.1	52.4	-9.3	48./5	35./2	44.5
Shelton	47.6	55.5	-7.9	55./6	40./2	50.9
Sidney	39.4	51.3	-11.9	44./6	36./3	42.2
Tarnov	43.6	54.0	-10.4	52./6	37./2	46.9
West Point	42.8	54.3	-11.4	50./6	38./2	45.4

*Soil temperature is taken at 4 inches.