2000

Crop Watch No. 2000-07, April 28, 2000

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Planting grain sorghum to moisture

This spring approximately 700,000 acres will be planted to grain sorghum in Nebraska, up 20% from last year. Ensuring a good crop begins with planting at the right depth and to a source of moisture, especially this year.

To successfully germinate, the grain sorghum seed embryo must take up enough water to reach 50% to 60% moisture. Even though the grain sorghum and soybean seed are similar in moisture requirement to germinate — soybean requires 51% moisture — the grain sorghum seed requires less total water because it is much smaller than the soybean seed.

If moisture is available and the soil temperature is suitable, the grain sorghum kernel will begin to take up water and swell within a few hours of being planted. For fine-textured soils the preferred seeding depth is not more than 1 1/2 inches and in coarse-textured soil, not more than 2 inches. If moisture is adequate, in fine-textured soils a 1-inch planting depth is enough while in coarse-textured soils a minimum depth of 1 1/2 inches is suggested. The seed should be uniformly covered with firm soil to provide for good seed-soil contact. Furrow openers usually make it possible to reach moist soil and reduce the amount of soil cover to the minimum suggested. A hard rain may move additional soil over the seed making the seed be too deep.

If the soil is dry and it is necessary to plant deeper, the soil temperature at the deeper depth may not be 60-65°F, the minimum preferred soil temperature for grain sorghum. When the calendar suggests it is time to seed grain sorghum if soil moisture permits, it usually is best to plant. Many old timers have suggested that seed does not grow in the bag. Emergence will also take longer and seed and seedling losses are greater. The longer a seedling takes to emerge, the greater the possibility of stand loss to crusting, disease, insects, and rodents. With heavy residue cover, it will help to leave a narrow band exposed over the row to let the sun hit and warm the soil surface.

Seeding too shallow or too deep also increases the possibility of injury from preemergence herbicides. With little soil cover and a small amount of precipitation, the herbicide may be moved into the seed area. Creating a depression when seeding or using furrow openers can be a problem if rainfall concentrates the herbicides in the seed area. Deep planting weakens the seedling and provides more time to imbibe the herbicide.

Bob Klein, Extension Cropping Systems Specialist West Central REC

How cold really are those lows within the plant's microclimate?

Earlier this month a cold front spewing rain, sleet, and ice moved through western Nebraska, just as fields of winter wheat appeared to be in good condition and entering the jointing stage. With temperatures ranging from 19°F to the low 20s for more than 24 hours, serious damage might have resulted.

While there may be damage in some areas, generally the wheat looks great, reported Drew Lyon, Extension Dryland Cropping Systems specialist at the West Central REC in North Platte.

"It's amazing. Much to my surprise I haven't seen any damage from that cold snap."

Often it may take several days for damage to become apparent, however any significant damage would likely be visible by now.

(Continued on page 59)
Field updates, scouting reports

Gary Hein, Extension entomologist at the Panhandle Research and Extension Center: Russian wheat aphids are widespread in western Nebraska but generally at subeconomic levels. They will have their greatest impact in the next two to three weeks as the wheat's flag leaf emerges. Next week's Crop Watch will feature more information on identifying and treating Russian wheat aphids.

Ray Weed, Extension educator in Kimball and Banner counties: Our wheat and alfalfa were hailed last week and subjected to below normal temperatures. The wheat crop needs moisture to recover from these stresses. Wheat curl mites and symptoms of the wheat streak mosaic virus have been reported in wheat here. Wheat producers who are considering treating fields for Russian wheat aphids, should first look for symptoms of the wheat streak mosaic virus. If symptoms are obvious, investing in an insecticide treatment may be questionable.

Paul Hay, Extension educator in Gage County: Alfalfa is slow and short in most fields due to dry conditions. Aphids have been a serious problem in numerous fields with the predator insects lagging behind. Corn planting is moving rapidly and was 45% completed by Tuesday (April 25). The earliest plantings are up and there are some problems with flea beetles. Wheat-on-wheat fields are in or near bootstage. Plantings behind soybeans and corn or milo are coming slower. These had from 2.3 to 2.7 tillers per plant in 10 field counts. Even with recent rains, tillage operations are drying soil enough to force deeper planting to ensure emergence.

Keith Glewen, Extension educator in Saunders County: Pea aphids have been found in alfalfa in northern Lancaster County above the threshold for treatment. While in many years, pea aphids do not present a significant threat in alfalfa, recent temperature and moisture patterns have been beneficial for them. Scout now and plan to treat when 50 aphids are found on a 10-inch stem. Pesticide recommendations are available on the NU Department of Entomology Web site at http://www.ianr.unl.edu/ianr/entomol/instabs/aphids.htm.

Ralph Anderson, Extension educator in Buffalo County: The rain Monday night varied from 1/2 inch to an inch in the northwest part of the county and was very welcome. Planting has been progressing, practically unhampered by wet fields, but slowed by wind and dry soils.

We continue to monitor alfalfa for weevil and army cutworms, although some of the latter have reached maturity. One producer installed drip irrigation on alfalfa on four pivot corners this spring. Wheat continues to look either very good or very bad, the latter due to poor germination last fall and very thin stands.

Dewey Teel, Extension educator in Antelope County: Planting is underway in Antelope County. Recent showers have added enough moisture to put surface moisture into good shape for planting. Subsoil moisture is short. Spring planted oats look very good at this point. Some pivots have been running on alfalfa.

(Continued on page 61)
Wheat microclimates (Continued from page 57)

April 15 temperatures throughout the day at six western Nebraska weather stations. The “AT” columns represent air temperature at 4 feet 9 inches, while the “ST” columns are soil temperatures 4 inches below the soil surface. (Data courtesy the High Plains Climate Center.)

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given the recent warmer temperatures.

"Wheat, for the most part, is looking pretty good. Wheat that was planted late or wheat planted back into summer crop stubble is not looking as good though due to a lack of available moisture," Lyon said.

While researchers are not sure why there wasn’t significant frost damage, a fortunate combination of factors may have worked to the advantage of local wheat producers.

Not surprisingly, the recorded temperatures for April 15 at six Panhandle sites at 5 feet above the ground and four inches below the soil surface differed greatly. While the difference may not be unusual, the amount of difference provides insight into the plant’s microclimate. (See table)

The degree of injury to wheat from spring freezes is influenced by the:

1) plant stage,
2) low temperature, and
3) duration of low temperature.

Not surprisingly, prolonged exposure to freezing causes much more injury than brief exposure to the same temperature. Generally it had been thought that temperatures below 20-25°F for a minimum of two hours would cause freeze injury at this growth stage. As the table indicates air temperatures were easily in the low 20s for 24 hours; however soil temperatures were significantly warmer having not yet cooled from the preceding balmy weather. Soil temperatures at 4 inches below the surface ranged from the upper 30s to sometimes, even the upper 40s. The growing point, often still wrapped in leaves and only an inch or less above the soil surface, would have been somewhat protected and in a microclimate somewhere between the two temperature extremes. In addition the rain and sleet would have helped insulate the wheat plant. Relative humidity readings ranged from the mid 70s to the upper 90s. Wind speeds ranged from 5 mph to more than 10 mph.

Where plants were already reacting to a lack of soil moisture, the severity of freeze injury may have been reduced. Drought stress tends to harden plants to cold and decreases their water content and potential for injury. Other factors also affect plant injury from one field to the next. These include differences in elevation and topography of the field.

These same low temperatures now would likely cause much more significant damage since the plants are at a later growth stage. If you suspect freeze injury in your field, split the stem lengthwise with a sharp knife. A normal, uninjured growing point is bright yellow-green and turgid; freeze injury causes it to become white or brown and water-soaked in appearance. This injury can occur even in plants that appear normal because the growing point is more sensitive to cold than other plant parts.

For more information on spring freeze injury, read the NU Cooperative Extension publication, EC94-132, Freeze Injury to Nebraska Wheat, available from your local Cooperative Extension Office.

Drought watch

Much of central and eastern Nebraska continues in a first stage to severe drought, as is most of Iowa, Texas and Florida and major strips of Illinois and Indiana. For more updates, check out the U.S. Drought Monitor at http://enso.wrl.edu/monitor/monitor.html
How to tell one wheat virus from another

Five wheat viruses commonly occur in Nebraska: soilborne wheat mosaic, wheat streak mosaic, high plains, barley yellow dwarf and wheat spindle streak. Telling one from the other in the field can be a challenge, especially when multiple infections by more than one virus are present in the same plant. This chart (below) can help with field diagnosis, but remember a laboratory analysis of infected plants is the only sure method of identifying a specific virus disease.

Common associations of more than one virus in a field are spindle streak/soilborne mosaic, barley yellow dwarf/wheat streak mosaic and wheat streak mosaic/high plains. The most lethal of these combinations is wheat streak mosaic/high plains which can reduce yields to almost nothing. With the aphid-vectored barley yellow dwarf and the curl mite-vectored wheat streak mosaic and high plains, the incidence and severity of these diseases is directly associated with the distribution of the aphid or mite vectors.

Virus diseases in wheat can be controlled through cultural practices such as proper planting time and destruction of volunteer wheat and grassy weed hosts, and through the use of more tolerant or less susceptible varieties.

John Watkins, Extension Plant Pathologist

<table>
<thead>
<tr>
<th>Virus Disease</th>
<th>Vector</th>
<th>Field pattern</th>
<th>Individual leaves</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle streak</td>
<td>Soilborne fungus</td>
<td>Yellowing is more uniform than soilborne mosaic</td>
<td>Yellow-green mottling, dashes and streaks. Discontinuous streaks taper to form chlorotic spindles on older leaves.</td>
<td>Early spring; 45-55°F</td>
</tr>
<tr>
<td>Soilborne mosaic</td>
<td>Soilborne fungus</td>
<td>Yellowing usually associated with low-lying wet areas; stunted plants.</td>
<td>Yellow mosaic dashes and streaks on younger leaves.</td>
<td>Mid-spring; 55-65°F</td>
</tr>
<tr>
<td>Barley yellow dwarf</td>
<td>Aphids</td>
<td>Yellowed, sometimes stunted plants singly or in groups</td>
<td>Bright yellowing or reddening of flag leaves; look for evidence of aphid feeding.</td>
<td>Cool, moist weather; 60-70°F</td>
</tr>
<tr>
<td>Wheat streak mosaic</td>
<td>Curl mite</td>
<td>A graduation of symptoms across a field, with the most intense yellowing often at field margins</td>
<td>Yellow mosaic pattern of parallel discontinuous streaks; rolled leaf margins often have curl mites; rosetting of infected plants.</td>
<td>Mid-spring to early summer &gt;70°F</td>
</tr>
<tr>
<td>High Plains</td>
<td>Curl mite</td>
<td>Intense yellowing of infected fields often more pronounced at field margins; dying plants</td>
<td>Small white or chlorotic spots; less mosaic streaking than with wheat streak mosaic.</td>
<td>Mid-spring to early summer &gt;70°F</td>
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Herbicide options for sorghum increasing

Historically, sorghum growers have had few herbicide choices; however, several manufacturers have recognized the lack of weed management options in sorghum and are adding some options.

**Treatments (labeled)**

**Connect 20 WSP**

Connect is a new postemergence herbicide from Aventis for broadleaf control in sorghum. Connect is a 20% by weight wettable powder formulation of bromoxynil. This is the same active ingredient found in Buctril. Sorghum growers will benefit from Connect because it allows a variety of tank mix options. Also, Connect will provide quick burndown of many broadleaf weeds with less leaf burn than Buctril.

Outlook is also from BASF and is a 6lb/gal liquid formulation of dimethenamid, the active ingredient found in Frontier. Outlook contains a more active isomer of dimethenamid with use rates of 10 – 21 oz/a, depending on soil type. Rates are approximately 55% of the Frontier rates with similar activity. Safened seed is required with Frontier or Outlook.

**Treatments (not labeled)**

**AIM (label pending)**

Aim is a formulation of carfentrazone from FMC for broadleaf control. Although Aim will do well on many broadleaf species including Redroot pigweed, Black nightshade, and Common lambsquarters, it really shines with velvetleaf control. With a low use rate of 0.33 oz/a at a cost of around $4/a, Aim fits the bill for velvetleaf control in sorghum fields. Because Aim is a cell membrane disrupter, some leaf burn is typical following an application.

A section 18 is being sought for Ally + 2,4-D over grain sorghum. The addition of Ally can offer increased control of kochia, Common lambsquarters, and ragweed. Ally is currently labeled in wheat for broadleaf control with some limited grass activity. Crop safety will be similar to that of 2,4-D alone. Look for the section 18 possibly in late May early June.

Jeff Rawlinson
Extension Technologist
Alex Martin
Extension Weed Specialist

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**Field updates** (Continued from page 58)

Gary Hall, Extension educator in Phelps County: Wheat condition is somewhat questionable. We have thin stands in many fields and the lack of moisture is a concern for potential yield. Some farmers are considering destroying the wheat in time to plant another crop should conditions not improve.

Alfalfa fields are very dry as expected. One alfalfa producer is irrigating his fields.

Planting is going well as the ground is very mellow. Once the weather allows there will be a lot of corn and soybeans planted in a very short time here. Soil temperatures are favorable for corn and most of the planters are adjusted for the dry conditions.

Noel Mues, Extension educator in Furnas County: Corn planting is well underway here as planters began moving full speed during the week of April 17. The Furnas and Red Willow irrigated corn variety plots were planted on April 20. Corn planting should be nearly completed by late April when farmers will be shifting to soybeans and grain sorghum. Less than an inch of rain has been received in the area during April. The threat of wildfire is a concern to pastures, property, and wildlife habitat.
Weeds in alfalfa – when good stands go bad

With the unseasonably warm weather for much of our spring, many growers observed alfalfa stands breaking dormancy and greening quite early this year. For some, green up came too early and did not provide growers with enough time to control problem weeds, especially mustards.

Now that alfalfa stands across the state are well into green up, herbicide selections are severely limited. In many stands, mustards including shepherdspurse and pennycress are very prominent. Herbicides such as Lexone/Sencor, Roundup Ultra, Velpar, Zorial, and Karmex are no longer an option once the alfalfa has broken dormancy, due to potential injury. Although a few herbicides may be useful to control winter annuals after established alfalfa stands break winter dormancy, their activity on more mature winter annuals can be quite reduced.

**Butyrac (2,4-DB)** is a growth regulator that is converted to 2,4-D within the plant. Butyrac has fair activity on many annual broadleaf weeds at 1-3 qt/A. The effect of Butyrac on mature mustards will be very limited. Butyrac should not be used when temperatures are expected to fall below 50°F for three days after application.

**Poast** will have good activity on most annual grasses at 1.5-2 pt/A but will not control over-wintered downy brome. Be aware of a 30-day harvest restriction.

**Pursuit** can be used at 2 oz/A with good activity on pennycress, and other winter annuals. As mustards mature, the efficacy of Pursuit will be limited.

**Select** will provide excellent control of downy brome at 6-8 oz/A. In fields where this control will not be effective enough, growers will need to wait until fall. Once the alfalfa stand has gone dormant, winter annuals can be more easily controlled with treatments such as Roundup Ultra, Lexone/Sencor, Velpar, Zorial, Gramoxone Extra, and or Karmex.

The best advice for producers at this time is to assess the quality of the stand and weed growth stage, control what weed species they can this late in the season and throughout the summer, and regain control of winter annuals once the stand has gone dormant in the fall.

Jeff Rawlinson  
Extension Technologist  
Alex Martin  
Extension Weed Specialist

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**Crop update**

Spring planting activities were underway in many areas of the State, according to the Nebraska Agricultural Statistics Service April 24 report.

Precipitation fell over most of the state last week with the largest accumulations in the Panhandle. Corn planting occurred where surface moisture conditions permitted and soil temperatures were warm enough. Last week's moisture should help pastures and alfalfa crops, but additional moisture will be needed.

The winter wheat crop rated is rated 6% very poor, 12% poor, 30% fair, 49% good, and 3% excellent. As of Sunday (April 23), 32% of the crop had jointed, well ahead of last year at 23% and the five-year average at 12%. Additional moisture continued to be needed in the Panhandle and other wheat producing areas to ensure plant growth and development.

Oat planting was virtually complete at 98%, well ahead of 83% last year and 65% for the five-year average.

Corn planting progressed to 12% seeded. This was ahead of 6% last year and the average. Reports indicated that 1% of the fields had emerged, ahead of last year and average.

Nebraska Agricultural Statistics Service