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5-9-2003

CropWatch No. 2003-9, May 9, 2003

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2003-9
May 9, 2003

Estimating seeding rates for sorghum

Traditionally seeding rates for sorghum have ranged from as few as 30,000 seeds per acre to 150,000 seeds per acre. To achieve optimum returns for your planting investment, set grain sorghum planting populations in accordance with a realistic yield goal.

Grain sorghum adapts to its growing conditions by producing more heads per plant (tillers) or more seeds per head and even by increasing seed weight.

Tables 1 and 2 show results from two dryland studies at Mead. Table 1 yields are from four hybrids at three row spacings. Table 3 shows yields from an irrigated grain sorghum trial at Mead.

Table 1. Yield and yield components of dryland grain sorghum as influenced by plant population at Mead (Clegg et al.).

| Actual Plants/A | Yield bu/A | Seeds/Head | Seed Weight g/1000 |
|-----------------|--------------------|------------|-----------------------|
| 26,500 | 111 a ¹ | 2780 a | 24.8 a |
| 53,000 | 109 a | 2390 b | 23.5 b |
| 79,500 | 110 a | 1950 c | 22.3 c |

¹Means followed by the same letter in the same column are not significantly different.

In general 70% of the seeds planted develop into viable plants, so the actual plants in Tables 1, 2, 3 and 4 would need to be multiplied by 1.43 to get the seeding rates.

Inside

| | |
|-----------------------------|----|
| Field reports | 82 |
| Management calendar | 82 |
| Weed control in sorghum .. | 84 |
| Reservoir levels | 85 |
| Soil moisture levels | 85 |
| Alfalfa/wheat diseases | 86 |
| Planting shortcuts | 87 |
| Assessing alfalfa | 87 |
| Recycling containers | 88 |
| StarLink deadlie | 89 |
| Weed Science tour | 89 |
| Wheat condition | 90 |
| Wheat insect alert | 90 |

Grain sorghum has great ability to compensate for conditions. Higher seeding rates are helpful in competing with weeds, but seed cost will be higher. Following are some guidelines to use when selecting seeding rates.

Analysis of
Nebraska data

(Continued on page 83)

Table 2. Effect of plant population on yield and days to bloom, on dryland grain sorghum at Mead (Clegg et al.)

| Actual Plants/A | Yield bu/A | Days to Bloom |
|-----------------|-------------------|---------------|
| 30,000 | 96 a ¹ | 68 b |
| 91,000 | 91 b | 69 a |
| 152,000 | 85 c | 69 a |

¹Means followed by the same letter in the same column are not significantly different.

Table 3. Irrigated grain sorghum population studies at Mead.

| Researchers | Actual Plants/A X 1000 | Yield Year | | |
|---|--------------------------------------|-----------------------------------|-------------------------|-------------------------|
| | | 1 | 2 | 3 |
| | | --- bu/A --- | | |
| Clegg et al. (16 hybrids) | 67.0 112.0 156.0 | 57 b ¹ 66 a 69 a | | |
| Clegg et al. (4 hybrids) (4 row widths) | 87.0 131.0 174.0 | 94 a 95 a 95 a | 126 a 127 a 125 a | 113 a 111 a 113 a |
| Schultz and Clegg (4 hybrids) | 9.4 16.7 32.9 76.5 221.9 | 64 85 107 113 121 | | |

¹Means followed by the same letter in the same column are not significantly different.

Changes in sorghum herbicides

In 2003, Ally + 2,4-D received a Section 3 label instead of the previously held Section 18. What this means is that the use of 2,4-D tankmixed with Ally in sorghum is now on the main Ally label and it will not come up for re-registration each year. The use rate for this tankmix is 1/20 of an ounce of Ally + 1/4 lb active ingredient of 2,4-D amine per acre. So for a 4 lb 2,4-D amine formulation you would use 1/2 pint of 2,4-D product per acre

(Continued on page 84)

Field reports

Ron Seymour, Extension Educator in Adams County: Corn planting was about 30% complete before last week's rainfall brought it to a stop. The surface of most fields is fairly wet. Planted corn is germinating, but little has emerged. Wheat and alfalfa have improved significantly. Wheat plants are jointed, most with two visible nodes. Most alfalfa plants are budded but few have begun to bloom. Pasture grasses are growing, but improvement is slow.

Ralph Anderson, Extension Educator in Buffalo County: We welcomed the recent moisture, with amounts varying from about two inches to more than seven inches for the month. Less than 10% of the spring crop was planted by May 5; producers are very anxious to get back into the fields. We certainly should have enough moisture to germinate the crops, activate the herbicide and keep alfalfa, wheat and grass growing for several days, if not weeks. We look forward with hope to continued rains throughout the summer to assure that the drought is broken and adequate rains will be available.

Douglas Anderson, Extension Educator in Thayer and Nuckolls counties: Hail storms caused about 15% damage to isolated fields. Field work has been interrupted by the rains — a report of a puddle in northeastern Nuckolls County could not be confirmed. Less than 10% of the corn has been planted, although some has already emerged from the early planted fields. Pastures are slow to green up and there already are early reports of weevil damage in alfalfa.

Gary Zoubek, Extension Educator in York County: We received about 1 inch of rain over the weekend and about 1.3 inches last week. Producers are 50-60% done with corn planting and have started

soybean planting. When field conditions dry, I'm sure planting will continue as quickly as possible. The moisture was sure welcome for pastures and dryland fields.

Allan Vyhnalek, Extension Educator in Platte County: There was 2.75-6.0 inches of rain across the county last week. Except for the sandy ground near Duncan, planting progress was slowed considerably. Lowland flooding along Shell Creek and other tributaries occurred after both rains. In places, upland erosion is considerable and some spots may need to be replanted.

Ralph Kulm, Extension Educator in Holt County: Recent rainfall has greatly improved the outlook for winter wheat. It is jointing and looking good. Corn planting has been slowed by the cool, rainy weather but is probably 70% complete. Alfalfa and cool season pastures, as well as weeds, are responding well to the moisture. Native warm season pastures will need warmer days than we've had recently to get started.

Noel Mues, Extension Educator in Furnas County: Approximately 3.5 inches of moisture during April and early May has created considerable

improvement for spring planting. Producer outlook is much improved, even if they've had to wait for topsoil to dry out for continued planting. The rains have greatly improved winter wheat and pastures; however, subsoil moisture continues to rate well below average. Area lakes are still well below normal causing concern for irrigators.

Management calendar

May 9- May 25

◆ With recent rain delaying corn planting, don't get too anxious to start field work in a field that is still wet. You can lose much more yield due to soil compaction than to delayed planting.

◆ Do you irrigate corn on coarse soils? If so, NU Extension Specialists recommend split applying the nitrogen. The last nitrogen application should be on by blister stage.

◆ The NebGuide, *Nozzles — Selection and Sizing* (G89-955), was recently revised to reflect new products for farm sprayers.

CROP WATCH



cropwatch.unl.edu

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Crop Watch is published from March to November by Cooperative Extension and Communications and Information Technology in the University of Nebraska Institute of Agriculture and Natural Resources, PO Box 830918, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order a print subscription or to change your address, write to *Crop Watch* at the above address or call (402) 472-7981. The newsletter also is available on the web at cropwatch.unl.edu

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

Sorghum seeding rate (Continued from page 81)

Research studies indicate that sorghum yields in eastern Kansas are maximized when plant populations of more than 40,00 plants per acre are achieved. This yield response to plant populations was consistent regardless of row spacings in studies conducted in 1995 and 1996 in northeast Kansas (Table 4).

Table 4. 1995 and 1996 average grain sorghum yields for three plant populations at Belleville and Manhattan, Ks.

| Plant Population (Plants/acre) | Grain Yield | |
|-----------------------------------|-----------------|-----------|
| | Belleville | Manhattan |
| | ---(bu/acre)--- | |
| 30,000 | 101 | 117 |
| 60,000 | 106 | 122 |
| 90,000 | 107 | 120 |
| LSD (0.05) | ns | ns |

indicates that the average yield of single plants at harvest is approximately 1/10 pound of seed at 14.0% moisture. Sorghum weighs 56 pounds per bushel; therefore, 560 plants are required at harvest to produce a bushel of grain.

If a realistic yield goal is 85 bushels per acre, then $85 \times 560 = 47,6000$ plants at harvest. If 70 percent of the planted seeds emerge, the number of seeds required per acre will be 68,000 seeds per acre. Increase this rate for early plantings, which have a greater chance for reduced emergence. See Table 5 for yield goal, recommended planting rate, harvest population. and seed spacing for various row widths for sorghum.

In Nebraska, it is better to be on the low side of the desired population rather than the high side. Under heat and drought stress, plants at a lower population have more soil volume from which to draw water and can survive better than a thicker stand. High populations tend to force the crop into stress more quickly when moisture supply is limited.

Pay attention to the amount of moisture in the soil profile at planting before determining the planting rate. Sorghum stands of 20,000 have produced yields of 80 bushels per acre. It is generally thought unwise to replant sorghum if the present stand is approximately 20,000 per acre or more.

The size of grain sorghum seed varies among hybrids and from situation to situation, depending on growing conditions. Some lots will have 11,000 seeds or less per pound and others up to 22,000 seeds per pound. Seed number and spacing are important, but pounds per acre is not appropriate determinant of planting rate. Although there may be emergence differences due to seed size, generally no yield differences are found.

Sorghum plants may tiller or develop large heads with more seeds per head to compensate for thin stands. However, heads produced by late tillers may be immature when the head on the main stem is mature, resulting in harvest and storage problems.

High plant populations with fewer tillers are necessary under irrigated conditions and higher rainfall areas; however, excessive stands produce plants with smaller stems and are more susceptible to moisture stress and lodging.

**Robert Klein, Extension
Cropping Systems Specialist, West Central REC**

Table 5. Yield goal, planting rates, harvest populations and seed spacings in various row widths for sorghum.

| Yield Goal | Row Width (inches between seeds) | | | | Planting Rate | Harvest Population |
|------------|-------------------------------------|-----|-----|-----|---------------|-----------------------|
| | 15 | 20 | 30 | 36 | | |
| 40 | 13.1 | 9.8 | 6.5 | 5.4 | 32,000 | 22,400 |
| 50 | 10.5 | 7.8 | 5.2 | 4.4 | 40,000 | 28,000 |
| 60 | 8.7 | 6.5 | 4.4 | 3.6 | 48,000 | 33,600 |
| 70 | 7.5 | 5.6 | 3.7 | 3.1 | 56,000 | 39,200 |
| 80 | 6.5 | 4.9 | 3.3 | 2.7 | 64,000 | 44,800 |
| 90 | 5.8 | 4.4 | 2.9 | 2.4 | 72,000 | 50,400 |
| 100 | 5.2 | 3.9 | 2.6 | 2.2 | 80,000 | 56,000 |
| 110 | 4.8 | 3.6 | 2.4 | 2.0 | 88,000 | 61,600 |
| 120 | 4.4 | 3.3 | 2.2 | 1.8 | 96,000 | 67,200 |
| 130 | 4.0 | 3.0 | 2.0 | 1.7 | 104,000 | 72,800 |
| 140 | 3.7 | 2.8 | 1.9 | 1.6 | 112,000 | 78,400 |

Limited herbicide choices for weed control in sorghum require planning, diligence

After planting corn and soybean, some producers will move on to planting sorghum. Unfortunately, sorghum does not have nearly as many herbicide choices as corn and beans so it is especially important that you pay close attention to weed management decisions.

Weed control in sorghum can be broken down into three basic steps: burndown/preplant, pre-emergence, and post-emergence.

Sorghum herbicides

(Continued from page 81)

tankmixed with 1/20 oz of Ally. You can use this tankmix on sorghum that is 3-15 inches tall; however, if you spray sorghum that is over 10 inches tall, use drop nozzles. Surfactants should not be used with this tankmix.

Currently the Nebraska Department of Agriculture has petitioned the EPA for a Section 18 emergency label for the herbicide Starane (fluroxypyr) for control of kochia in grain sorghum. **It has not yet been approved and it is unknown how soon the EPA will act on this request.** However **IF** it is approved, it would be used at 2/3 pint per acre and could be used preemergence and postemergence. In preemergence applications it would be used after weeds emerge but before sorghum emerges. In postemergence applications Starane would be applied from the 3rd to the 7th leaf stage. A maximum of two applications per year would be allowed. Starane could be tankmixed with any other sorghum herbicide whose label allows it. However, it is not to be tankmixed with Ally. We will advise you in *CropWatch* as soon there is a decision on a Section 18 label for Starane.

Brady Kappler
Weed Science Educator

Since sorghum is planted fairly late, many fields need some form of weed control before planting. This can be in the form of tillage for conventional tillage systems or a burndown herbicide application for no-till systems. In some cases a preplant treatment may be substituted or combined with a burndown to add residual control. Simply controlling early weeds with a nonresidual burndown treatment may not provide adequate control. Many times a residual preplant herbicide may be necessary.

Burndown choices are very similar to those in corn. Atrazine, 2,4-D, Banvel/Clarity, Gramoxone Extra, glyphosate and combinations of these products are all viable burndown options depending on the type of weeds present. Be sure to allow 10 days after 2,4-D application and 20 days after Banvel/Clarity application before planting sorghum.

If you need residual weed control, a preplant herbicide program may be just the ticket. Just as in corn, a preplant herbicide can be applied 0 to 45 days before planting. Preplant treatments for sorghum in continuous row crops include Atrazine, Bicep II Magnum, Bicep Lite II Magnum, Bullet, Dual II Magnum, Dual IIG, Outlook, G-Max Lite, Guardsman Max, Leadoff, Lariat and Micro-Tech. All of these except Atrazine require a seed safener so be aware of what you intend to plant.

If you plan to apply the herbicide as a pre-emergent, Atrazine, Bicep II Magnum, Dual II Magnum, Bullet, G-max Lite, Guardsman Max, Micro-Tech, Lariat and Leadoff are all suitable choices in conventional tillage systems.

The third step to weed control in sorghum is post-emergence herbicides. Herbicides registered for post-emergence use in sorghum include

Aim, Ally + 2,4-D, Atrazine, Marksman, Banvel/Clarity, 2,4-D, Buctril, Paramount, Peak, Permit and certain combinations of these products. Use caution when applying 2,4-D before the 5-inch stage. When the sorghum is taller than 8 inches, 2,4-D, Banvel and Clarity can only be applied with drop nozzles. Do not apply 2,4-D between the early boot and soft boot stage of sorghum.

Sorghum is also particularly sensitive to herbicides on soils that are coarse textured (sandy) and/or have low organic matter. Many preplant/pre-emergence herbicides are used at reduced rates or simply not labeled for these soils.

For more detailed information including rates and additives, consult pages 53-57 of the *2003 Guide for Weed Management in Nebraska* available at NU Cooperative Extension offices or online at <http://www.ianr.unl.edu/pubs/fieldcrops/ec130.htm>

Brady Kappler
Weed Science Educator
Alex Martin
Extension Weed Specialist

Woodland Field Day

An NU Woodland Management Field Day and Equipment Demo May 17 will help landowners learn to manage their trees and woodlands for timber and wildlife. The Nebraska Forest Service field day is at the Horning State Demonstration Forest near Plattsmouth from 10 a.m. to 3 p.m.

Participants can see a mature oak-walnut forest, an old field that is now a honey locust thicket, a white pine plantation and a red oak planting. Preregistration is required by May 9. Cost is \$7 and includes lunch. Contact Christine Meyer, forestry information and education assistant, at (402) 472-9869.

Current water storage in Nebraska reservoirs

The following table lists the storage in acre feet, the percent active conservation pool plus the planned or available water for 2003 delivery, as of May 5. With reservoirs with limited storage, quantity of water as well as the time and length of delivery will be problematic. Many irrigation districts deliver 1 inch or more

per week to maintain efficiency. For early or late crops, water may not be available when needed. Because of changing conditions, check with your local irrigation district for more information.

Robert Klein, Extension Cropping Systems Specialist West Central REC

| Lake/Reservoir | Reservoir Storage (acre-feet) | Reservoir Active Conservation Pool % Full | Planned Delivery or Availability (in inches) |
|---------------------|-------------------------------|---|--|
| Box Butte Reservoir | 13,227 | 42.6% | 4 |
| Calamus Dam | 132,590 | 100% | 18 |
| Enders Dam | 13,617 | 30.6% | No release |
| Harlan County Dam | 253347 | 80.4% | 6 |
| Harry Strunk Lake | 28,426 | 79.6% | 7 |
| Hugh Butler Lake | 16,227 | 43.0% | No release |
| Lake McConaughy | 824,700 | 47.3% | 18 to Central Irrigation customers |
| Merritt Dam | 75,694 | 100% | 16.5 |
| Sherman Dam | 59,296 | 85.0% | 12 |
| Swanson Lake | 31,931 | 28.5% | No release |

| | Conservation Storage Capacity (acre-feet) | In Storage* End of April (acre-feet) | % Full | % Average |
|-------------------|---|--------------------------------------|--------|-----------|
| Lake Minatare | 50,891 | 7,900 | 13 | 22 |
| Lake Alice | 11,000 | | | |
| Little Lake Alice | 1,149 | 17 | | |
| Winters Creek | 2,821 | 262 | | |

*46,5000 acre-feet of water is to be released for these lakes, with a delivery efficiency of 60-70% expected.

Seven reservoirs in Wyoming

Conservation storage capacity - 2,787, 800 acre-feet
 In storage - 1,203,200 acre-feet
 This is 43% of capacity and 62% of average storage.

Sub-soil moisture still mostly short; moratoriums placed on well drilling

While recent rains have helped replenish topsoil moisture, subsoil moisture is still lacking. According to this week's report from the USDA Nebraska Agricultural Statistics Service, topsoil moisture across the state averaged 7% short, 84% adequate, and 9% surplus. Subsoil moisture for the state rated 14% very short, 42% short, 43% adequate, and 1% surplus.

Precipitation from April 1 to May 4 was above normal in all NASS reporting districts and ranged from 106% of normal in the southeast district to 212% of normal in the southwest district. While the recent rains have been beneficial for replenishing topsoil moisture, many of the state's irrigation reservoirs (*see table, left*) remained at less than half of capacity.

With an eye on the cycle of drought and lower water tables in some areas, several Natural Resource Districts have instituted or continued **moratoriums on new irrigation well drilling**. At this time, 13.24 million Nebraska acres are under these moratoriums. This includes 3.07 million acres of irrigated and rain-fed cropland.

Corn planting

Corn planting made limited progress last week and was 33% complete. This is about a week behind last year at 52% and a few days behind average at 44%.

GPS signal expected to be interrupted

From May 9 through May 16, the FAA will be conducting tests and training on the WAAS -- Wide Area Augmentation System. Some tests may result in broadcast signal outages which would affect producers and consultants using WAAS with their GPS (global positioning system) units. These would include Garmins, Pocket PC GPS antennae, and some submeter units.

For a schedule, provided in Universal Time (UTC), of when the signal may not be available, visit: <http://www.waasperformance.raytheon.com/sis/sis.html> For help in converting the UTC (commonly referred to as GMT or Greenwich Mean Time) to local time, visit the following Web site: <http://setiathome.ssl.berkeley.edu/utc.html>

David Varner, Extension Educator, Dodge County

Alfalfa and wheat disease update

Alfalfa

This is the time of the year when spring black stem is most active. Recent cool, wet weather over most of the state provided ideal conditions for its development on the first cutting. Symptoms are evident now as black irregularly-shaped spots on leaves and stems. Infected leaves turn yellow and drop from the plant. Lesions on stems enlarge until most of the stem becomes black. Stems that are girdled by the lesions die.

Spring black stem is our most serious foliar disease and the defoliation it causes affects quality and quantity of the first cutting. There is little in the way of genetic resistance to spring black stem, so the only defense against loss is to scout fields regularly and take an early cutting if the disease is prevalent on the lower half of the plant.

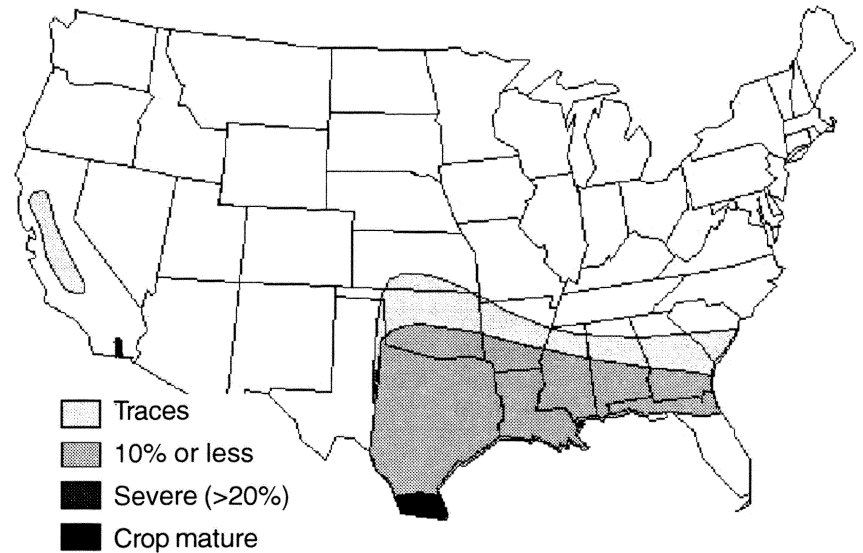
Wheat

Soil-borne wheat mosaic in eastern and central Nebraska remains active because of continued cool, wet weather. The disease will have an impact on yields in fields where plants are stunted because of the virus.

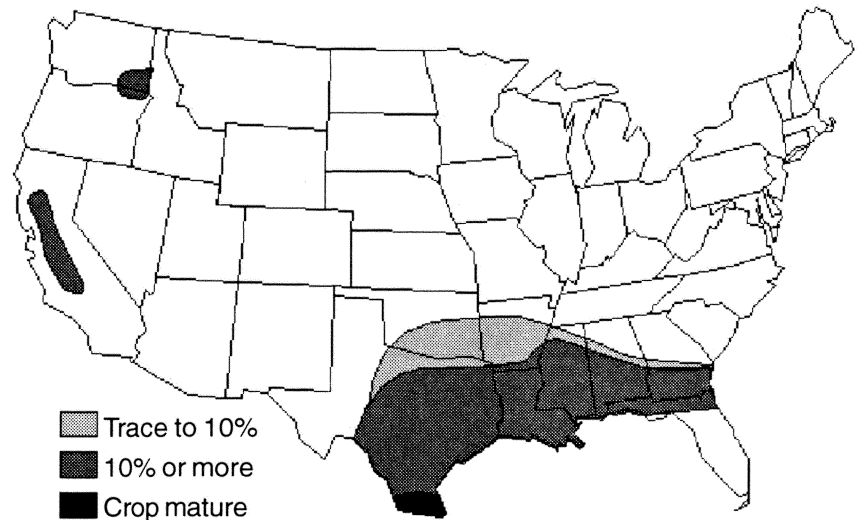
Pockets of wheat streak mosaic are occurring in the Ogallala area. The incidence in this area may relate to the heavy rain in early July 2002 that shattered heads resulting in a volunteer wheat crop before harvest. Another contributing factor could be the mild winter allowing the wheat curl mite vector to stay somewhat active through the dormant season.

Of the rust diseases, stripe rust continues to build up to high levels in the southern plains (*see map*). Oklahoma reports hot spots of stripe rust on susceptible varieties in the north central part of the state which puts Nebraska directly in the pathway of the inoculum as the spores blow north. We haven't found stripe rust in Nebraska yet, but

Leaf rust severities in wheat as of May 7, according to the Cereal Rust Bulletin.



Stripe rust severities in wheat as of May 7, according to the Cereal Rust Bulletin.



it will undoubtedly make its appearance before June.

Powdery mildew was reported on wheat in northeast Nebraska. This disease is not common, but our cloudy, overcast weather will promote its development. Heavily fertilized, dense wheat stands are likely candidates for powdery

mildew. The disease symptoms are an off-white powdery growth on leaves and stems. It doesn't present a serious threat this early in the season, but could become a factor if it moves onto the upper leaves and head during grain fill.

John E. Watkins
Extension Plant Pathologist

Short cuts for planting alfalfa after rain delays

April and early May rains have delayed spring field work for many folks. With this shortened planting season, consider the following tips for saving time when planting alfalfa.

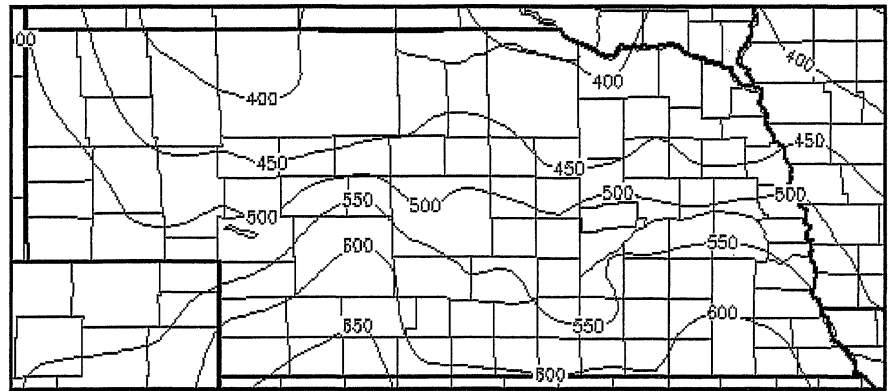
Conventional alfalfa plantings involve several tillage operations to prepare a seedbed, followed by drilling the alfalfa seed. Some folks, though, save time by using a floater or air seeder rather than a drill. This saves time by requiring less tillage since it's best to leave the field slightly rougher than normal. The floater or air seeder then spreads seed much faster than a drill. But, make sure the custom applicator is experienced at spreading the seed evenly.

After broadcasting the seed, incorporate the seed into the soil just a little. Two quick passes with a flat harrow or roller seems to work best. Do not disk because that puts much seed too deep.

No-till or low till seedings also can save much time. Small grain, bean, and even corn and sorghum stubble can be used. If residue is heavy, first shred or chop stalks so they are spread across the ground more uniformly, and so the drill can cut through them easier. Also, if the field has much ridging from previous crop rows, disk lightly to level the ground so future trips across the field will not be so rough.

If weeds already are present, spray a burn-down herbicide like Roundup or Gramoxone before planting if the light disking didn't get them. Then seed no-till, and be ready to use a post-emerge herbicide like Pursuit, Raptor, Poast, Select, or Buctril for early weeds. You still must seed alfalfa by May 15 on dryland or June 1 with irrigation for best results.

Bruce Anderson
Extension Forage Specialist



Scout for alfalfa weevils

This map shows accumulated growing degree days base 48 as of May 7. Alfalfa growers across the state should be scouting for alfalfa weevils now. Feeding should be very evident in the southern two-thirds of the state and should have begun in the northern one-third. Usually 350 GDD is used as the threshold for visible feeding damage. However, recent cool wet weather in some areas of the state may delay weevil development and appearance. Keith Jarvi, Extension entomologist at the Northeast REC, reminds producers to not let down their guard to avoid an unwelcome surprise.

(Graphic by Al Dutcher, State Climatologist)

Evaluating hail-damaged alfalfa

It's thunderstorm and hail season in Nebraska. If hail strikes your alfalfa, don't be too quick in making replanting decisions based on first appearances.

When the growing point at the top of the alfalfa plant is broken off, new shoots often begin to appear at the crown in 7 to 10 days. Wait this long before taking any action. After 7 to 10 days if many crowns show new shoot development, do nothing and just wait for the first cutting. Also wait if new, normal appearing growth is occurring at the top of the plant.

If few or no shoots are appearing, the remaining standing plant still may be sending hormonal signals to crown buds to remain dormant. Sometimes these remaining plants try to regrow by developing new branches, which usually do not yield very well. Cut remaining standing alfalfa to activate more new growth from the crown more rapidly. (Cut as hay if enough material is available or just shred and leave in field if it's too short)

Bruce Anderson
Extension Forage Specialist

Market Journal features tips on grain sorghum

The May 9 Market Journal features discussions of how to grow and successfully market grain sorghum. Speakers on the show, which is hosted by Extension Ag Economist Doug Jose and sponsored by NU Cooperative Extension, include: Paul Hay, Gage County Extension educator, Barb Kliment of the Nebraska Grain Sorghum Board; and producers Gerald Simonson and James Vorderstrasse of Twin Valley Mills near Hebron. Visit the Market Journal web site at marketjournal.unl.edu for information on viewing sites and times or to view previous programs on-line.

45 sites recycling pesticide containers

Farmers and other pesticide applicators can recycle empty, plastic pesticide containers at 45 collection sites across Nebraska this year.

This is the 12th year for the University of Nebraska's plastic pesticide container and crop protection drum recycling program, which already has collected nearly 474 tons of recyclable plastic containers, said Larry Schulze, NU Cooperative Extension pesticide coordinator. Last year the program recycled more than 85 tons of plastic 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 clean and dry, inside and out. Caps, labels and slip-cover plastic labels must be removed.

Twenty-three of this year's 44 collection sites accept 15- and 30-gallon plastic crop protection chemical, crop oil and adjuvant drums. These drums must be thoroughly rinsed 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.

Applicants should prepare containers before taking them to the site; they should clean, rinse and drain containers and drums and put the rinsate back in the spray tank; remove and properly dispose of booklets and caps from containers; and remove and properly dispose of plastic shrink-wraps from containers. Glued-on paper labels can be left on the container.

Schulze coordinates the program with the help of NU extension educators and natural resource conservation service development councils. A national coalition of agricultural manufacturers funds the effort through the Agricultural Container Recycling Council.

Recycling sites are listed alpha-

betically by county. Sites accepting 15- and 30-gallon plastic drums are noted. For more information go to the pesticide safety program link at <http://PestEd.unl.edu/recycle.htm>.

All-year collection sites:

Buffalo: Kearney Recycling Center, Kearney, 7 a.m. to noon, 1 to 3 p.m. Monday through Friday; drums accepted.

Burt: Tekamah City Compactor, Tekamah, Tuesdays 2 to 5 p.m.; Thursdays 2 to 6 p.m.

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

Dawson: All Points Cooperative, Overton, 8 a.m. to 5 p.m. Monday through Friday.

Dodge: Dodge County Extension Office, Fremont, by appointment only 8:30 a.m. to noon, 12:30 to 4:30 p.m. Monday through Friday; phone (402) 727-2775.

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

Scotts Bluff: Gering Landfill, Gering, 7 a.m. to noon, 1 to 2:30 p.m. Monday through Friday; drums accepted.

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

May-August inspection and collection sites:

Antelope: Central Farmers Cooperative, Brunswick, Clearwater, Elgin, Neligh and Tilden.

Boone: Country Partners Co-op, Cedar Rapids.

Butler: Frontier Co-op (Yanka), David City.

Dawson: All Points Cooperative, Lexington.

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

Holt: Central Farmers Cooperative, O'Neill.

Jefferson: Farmers Co-op Elevator Co., Fairbury and Plymouth;

both accept drums.

Sarpy: Farmers Union Co-op, Gretna.

Saunders: Cedar Ridge Spraying, Ashland; Frontier Cooperative, Mead.

Stanton: Farmers Co-op of Pilger, Pilger.

Sites collecting and inspecting pesticide containers only on specific days:

Adams: Heartland Cooperative, Juniata, 8 a.m. to 5 p.m. Aug. 15; 8 a.m.-noon Aug. 16; drums accepted.

Antelope: Central Farmers Cooperative, Clearwater, 8 a.m. to 5 p.m. July 12; 8 a.m. to 5 p.m. Aug. 15

Colfax: Schuyler Cooperative, Richland, May 10, June 14, July 12 and Aug. 9, 8 a.m. to noon; Husker Co-op Fertilizer, Schuyler, May 10, June 14, July 12 and Aug. 9, 8 a.m. to noon; both sites accept drums.

Dakota: Northeast Cooperative, Emerson, Wednesdays 9:30 to 10:30 a.m. June and July; Northeast Cooperative, South Sioux City, Wednesdays 11 a.m. to noon. June and July; both sites accept drums.

Dixon: Northeast Co-op, Allen and Ponca; and Precision Agronomy, Newcastle; June 10 and 24, July 8 and 22, 8 to 10 a.m. Newcastle and Ponca sites accept drums.

Hamilton: Aurora Cooperative Elevator, Aurora, Fridays only July through Aug. 15, 8 a.m. to 5 p.m.; and Heartland Cooperative, Giltner, Aug. 14, 8 a.m. to 5 p.m.; both sites accept drums.

Kearney: Heartland Co-op, Minden, Aug. 8, 8 a.m. to 5 p.m. and Aug. 10, 8 a.m. to noon, drums accepted.

Lancaster: Farmers Cooperative Co., Bennet, July 25, 9 a.m. to 3 p.m.; Firth Cooperative, Princeton, June 27, 9 a.m. to 3 p.m.; Farmers Cooperative Co., Waverly, July 11, 9 a.m. to 3 p.m., all sites accept drums.

Phelps: AgriCo-op, Holdrege, Aug. 20.

Saunders: Otte Oil and Propane,

(Continued on page 88)

StarLink claim deadlines near

Deadlines are fast approaching for Nebraska corn producers filing claims in a pending StarLink™ class action lawsuit. Visit the Nebraska Corn Board Web site at <http://www.nebraskacorn.org> where you can link to the Non-StarLink Farmer Litigation site. It includes on-line and printable claim application forms and information on the issues, litigation and possible settlements.

According to the Web site, the suit covers two claim groups: Corn Loss recovery provides compensation due to the existence of Cry9C in the general U.S. corn supply alleged by plaintiffs in the litigation and Property Damage Recovery compensates class members who demonstrate loss on sale or additional expenses resulting from Cry9C pollination of a class member's non-Cry9C corn or commingling of non-Cry9C corn with Cry9C corn.

All Corn Loss claims must be postmarked or received no later than May 31, 2003, and all Property Damage claims must be postmarked or received no later than July 31, 2003, according to information on the Web site.

If you don't have access to the Internet, further information is also available via a toll-free phone number: (888) 833-4317.

Recycling

Continued from page 87)

Wahoo, Sept. 12, 9 a.m. to 3 p.m., drums accepted.

Thurston: Mother Earth Recycling Center, Macy, Wednesdays 10 a.m. to noon, June and July, drums accepted.

Wayne: Precision Agronomy, Wayne, June 25 and Aug. 6, 8 a.m. to noon.

Site collecting pesticide containers by appointment only:

Knox: Precision Agronomy, Bloomfield, (402) 373-4755.

Steve Ress, Communications Coordinator, UNL Water Center

Fertilize summer hay meadows

If you expect to need more hay next winter, you might want to fertilize your hay meadows this spring. Good moisture plus the right fertilizer can increase hay yields from most meadows

Hay meadows respond well to fertilizer, but be sure to use the types and amounts that work best for the plants in your hay meadow. For example, if you have mostly clover or other legumes in your hay meadow, fertilize with phosphorus.

A soil test can be used to indicate how much phosphorus to apply; usually 20 to 40 pounds per acre will stimulate legume growth nicely in most hay meadows. These legumes will help supply nitrogen to the meadow grasses and the hay you cut from this meadow will contain more protein and yield more than straight grass hay.

If your meadow is already green and growing well with cool-season grasses like bluegrass, brome, or wheatgrasses that head out in late May or June, nitrogen that is applied very soon can increase yield. The rate declines as you move from east to west across the state; use about 80 pounds of nitrogen per acre in eastern Nebraska but only 30 to 40 pounds in the Panhandle.

Warm-season grass meadows are starting to green up, too. Like cool-season grasses, nitrogen rates decline from 60 pounds in eastern Nebraska to 30 pounds in the Panhandle. But be patient and don't fertilize quite yet. Wait until mid to late May before fertilizing warm-season grass meadows.

Bruce Anderson
Extension Forage Specialist

Weed Science Tour dates set for June

Mark your calendar for the 2003 NU Weed Science Field Days. Once again the "field days" will begin at the South Central Agricultural Laboratory (formerly the South Central Research and Extension Center) near Clay Center. This tour of field days across the state 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 as follows:

Tuesday— June 17

9:00 a.m., Clay Center, South Central Agricultural Laboratory (formerly the South Central Research and Extension Center)

Wednesday — June 18

9:00 a.m., North Platte, West Central Research and Extension Center

3:30 p.m. (MDT), Sidney, High Plains Agricultural Laboratory

Thursday— June 19

9:00 a.m. (MDT), Scottsbluff, Panhandle Research and Extension Center

Tuesday – June 24

9:00 a.m., Lincoln, Havelock Research Farm

Wednesday – June 25

1:00 p.m., Concord, Haskell Agricultural Laboratory

Brady Kappler
Weed Science Educator

PPDC Clinic update

Samples received at the NU Plant and Pest Diagnostic Clinic between April 28 and May 5 included:

Wheat - Nitrogen deficiency (Keith Co), wheat streak mosaic virus (Keith Co), Russian wheat aphid (Franklin Co), problems with shallow planting (Nuckolls Co);

Alfalfa - chemical injury (Custer Co), spring black stem and leaf spot (Brown Co).

Jennifer Chaky, Extension Educator, Plant Pathology

Wheat condition improves with recent rains

Panhandle

In general, winter wheat stands in much of the Nebraska Panhandle are in excellent shape. There is some tan spot evident in stubble mulch fields and some winter annual weed pressure in a few fields, but except for some hill tops, the wheat looks great.

The primary concern at this point is a lack of subsoil moisture, which will make timely rainfall critical for the success of the Panhandle wheat crop. With a few exceptions, soil water below the top 2-3 feet is very poor. Over the next few weeks, water use by wheat plants will climb to its maximum level around the boot stage. Current stored soil water will be insufficient to carry the crop through the flowering and grain fill stages.

Some Cheyenne County wheat fields sustained hail damage this week. Generally wheat at this stage should recover quickly from damage that causes the plants to lay over but not be mowed off. Yield losses should be minimal. More developed wheat would have more heads above ground and would be at greater risk for yield loss from hail injury.

Drew Lyon, Extension Cropping Systems Specialist Panhandle REC

Late growth by the wheat crop and equally good conditions for weed germination will require vigilance in monitoring and controlling weeds in many fields. Cutworm control may be critical during the next two weeks.

David Baltensperger, Extension Crop Breeding Specialist

Southeast

At this point the wheat is looking good. The wheat has all jointed and should be in the boot stage in about two weeks. Some producers who were short of phosphorus are seeing slow growth. Cool soil temperatures are slowing the release of available phosphorus from the soil.

Paul Hay, Extension Educator in Gage County

State

The USDA Nebraska Agricultural Statistics Service reported Monday that wheat condition continued to improve across the state last week. Condition rated 7% poor, 34% fair, 47% good, and 12% excellent, well above last year and near the five-year average. Sixty-one percent of the crop had jointed, 10 days ahead of last year at 31% and a week ahead of average.

Scout wheat for aphids and cutworms

Russian wheat aphids have been seen in many areas of the Panhandle, but mostly at subeconomic levels. Also, pale western cutworms have been found cutting winter wheat tillers in the Panhandle.

Growers are urged to check their wheat fields for aphids and pale western cutworms as there are likely areas where economic problems could develop. Russian wheat aphids cause tillers to curl tightly and spraddle out from the row.

In addition, their feeding results in yellow or whitish striping of the infested leaf and the outside of the infested tiller tends to turn purplish in color. Thresholds for Russian wheat aphids will range from 10%-20% infested tillers depending on yield potential, value of the wheat, and control costs.

Pale western cutworms feed just above the crown of winter wheat and damage the wheat by cutting off the tiller, making the dead tillers apparent above ground. Treatment thresholds for the pale western cutworms are one to two cutworms per row foot.

Gary Hein Extension Entomologist Panhandle REC

Certifying straw as free of noxious weeds

Winter wheat has been planted on more irrigated ground in Nebraska than in recent years because of uncertain water supplies. Some irrigated winter wheat producers may wish to bale and sell their straw after harvest. Extra income from straw sales can be a nice addition to grain sales.

Wheat straw that has been certified free of noxious weeds sometimes may be sold at a premium price to the state highway department for

use as mulch in reseeding projects along state highways. In order to have straw certified as free of noxious weeds, growers must contact their county weed board or noxious weed control authority and schedule a field inspection. These inspections must occur before harvest, preferably at a time when the wheat is ripening and weed growth in the field is easily detectable.

Drew Lyon, Extension Dryland Crops Specialist, Panhandle REC