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Select varieties for short vernalization

Act quickly to spring seed winter wheat

High winds, low temperatures, and inadequate moisture can all damage fall-planted winter wheat stands and decrease yields. Producers who want to replant poor stands (see Evaluating winter wheat, page 5) or increase wheat acreage can plant winter wheat in early spring. However, the winter wheat must be planted early enough to assure adequate vernalization of the seedlings, a process necessary for normal development and heading in winter wheat. Plantings should be made no later than March 15 in western Nebraska or February 15 in eastern Nebraska to allow sufficient time for vernalization. Planting after March 1 is risky because imbibed seeds or seedlings must experience four to six weeks of night time temperatures below 40°F.

The risk of inadequate vernalization can be reduced by selecting wheat varieties with shorter vernalization requirements, but varieties well-adapted to the particular farm and system should work well through March 1 in western Nebraska. Winter hardiness is a less important trait in spring-planted winter wheat and varieties from Kansas and Colorado have generally performed well in this environment (see table at right).

With February temperatures 9–10°F above normal, it wasn’t surprising when the state’s wheat crop began breaking dormancy. This photo from several years ago shows a healthy wheat stand in western Nebraska.

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(Continued on page 5)

Welcome back to Crop Watch

Crop Watch is returning with its slate of old favorites — timely pest reports, pesticide updates, and management recommendations — as well as some new items. Several issues will target specific crops: wheat, corn, soybean and sorghum. Special focus stories will address current topics and research, including biotech crops, precision agriculture, reducing input costs, and water quality issues. The next two issues will focus on early season corn topics. Order your subscription on page 10.
Ray Weed, Extension educator in Kimball/Banner counties:
Winter wheat condition is good on lower elevation sites, especially irrigated center pivot and furrow irrigated wheat fields. On the higher elevation, dryland fields have some leaf damage from continual winds; however, crowns appear to be relatively healthy. We need additional moisture to protect our wheat through the spring.

Bruce Anderson, Extension Forage Specialist: Listed below are alfalfa varieties that have produced the highest yields in recent Nebraska tests. For specific performance data, check Selecting Alfalfa Varieties for Nebraska, EC99-153, a publication available from your local Cooperative Extension Office. The following suggestions are based on yield performance in Nebraska tests with supporting data from adjoining states.

Good performance statewide:
Jade, Jade II, 5364, Magnum III, and Viking I.

Good performance in western Nebraska: Asset, 5312, GH755, Webfoot MPR, and DK133.


Paul Hay, Extension Educator in Gage County: Southeast wheat producers should apply herbicides and nitrogen as soon as fields are dry enough to allow field operations. Doing this will:
• Lower the chance of injury to wheat from fertilizer materials.
• Provide treatment before winter annuals out grow control.
• Reduce the chance that surface-applied nitrogen sources are lost.
• Reduce damage to wheat by field tracking.
• Free equipment to do early preplant treatments for no-till in April.

Nebraska Agricultural Statistics March 1 report: Winter wheat condition rated 1% very poor, 3% poor, 21% fair, 60% good and 15% excellent. Soil moisture was reported short in some western areas.

Reminder
Only this issue of Crop Watch is being distributed free to 1998 subscribers who have not resubscribed for 1999. Subscribe now with the form on page 10 so you don’t miss an issue. While this issue focuses heavily on wheat production, throughout the year the newsletter provides a broad balance of crop information pertinent to that point in the season and Nebraska conditions. The next two issues will address corn production.

Last year Crop Watch featured more than 320 stories in 26 issues on a variety of timely crop production and pest management topics. Readers told us they saved $5 to $50 an acre because of information in the newsletter.
March 5, 1999

Emergency tillage can save soil, wheat

With another typical late winter in western Nebraska, surface soil in many wheat fields has become smooth, dry, finely granulated and susceptible to wind erosion. Some farmers are beginning to recognize the need for emergency tillage to control soil erosion.

Emergency tillage provides a rough, ridged, cloddy surface more resistant to wind erosion than a smooth soil. Surface roughness reduces wind velocity at the soil surface and helps trap windblown soil particles. Where possible, use emergency tillage before soil blowing starts. Soil erodes more rapidly from abrasion by wind blown soil particles than from wind that contains no soil particles. If erosion is anticipated because high winds are forecast, start emergency tillage on areas in the field most vulnerable to erosion before the wind reaches a critical speed. If soil blowing has already started, begin emergency tillage on the upwind edge of the eroding area. Tillage in a direction perpendicular to the expected wind direction will be most effective.

Field speed for emergency tillage will depend on the implement, soil conditions, and tillage depth. In general, slow speeds will produce more clods and faster speeds will provide more ridging. Speeds of 3 to 4 mph usually result in the most effective surface. For best results, vary the face angle of the tillage tool, depth of operation, and field speed to obtain the best combination that produces maximum overall roughness.

Emergency tillage can be used in a field planted to winter wheat. If wind erosion is occurring, it is better to control the damage early by using emergency tillage, rather than risk losing the entire crop. Use narrow chisel points spaced 4 to 6 feet apart and run them 4 to 6 inches deep. Some farmers will use a 3-foot spacing between chisel points because it is easy to remove two of three gangs to obtain the spacing, however, this strategy does not allow the farmer to come back and chisel between previous ridges if further erosion occurs. Tillage direction should be perpendicular or at an angle to the wheat row to minimize plant injury.

Data from a five-year study at two sites in Kansas suggests this type of emergency tillage has minimal effect on potential yield, but can reduce the damage to growing wheat and reduce soil loss in moderate erosion situations. This study found emergency tillage caused the most damage to wheat yields when the wheat had just emerged. The least yield reduction was found when the tillage was done in fields with plants already tillered. Emergency tillage is not effective if clods cannot be brought to the surface, and is not possible after the soil is frozen more than 2 inches deep.

Maintaining residue cover, especially standing residue cover, and using crop strips are very effective ways to reduce the need for emergency tillage to control erosion. However, conditions sometimes occur when serious soil erosion is imminent or has just begun and corrective action is required to protect the soil and growing crops.

A productive soil is a farmer’s most important asset; don’t let yours be gone with the wind.

Drew Lyon, Extension Dryland Cropping Systems Specialist
John Smith, Extension Machinery Systems Engineer

Selecting spring wheat seed

Two of the proven agronomic keys to a productive and profitable crop are the use of the best adapted varieties and high quality seed to deliver that variety into your production system. These are especially important for alternative/value added or limited acreage crops like hard red spring wheat.

Use these selection methods to access the best varieties and high quality seed:

1. Work with a reputable and reliable seed enterprise. A knowledgeable seed enterprise can help you evaluate what varieties are best suited to your production system and local environment.
2. Ask for Certified Quality Seed — this will be your assurance that the seed is the variety you requested.
3. Ask for seed that meets certain seed quality specifications. Certified seed is guaranteed for varietal purity, but quality factors are set at only a minimum level to achieve acceptable performance. This means seed quality can and will vary from seedlot to seedlot.

(Continued on page 5)
Numbers high in Kansas

Be watching for army cutworm invasion

Last year army cutworm larvae caused a great deal of trouble, particularly to alfalfa growers, throughout western Nebraska. Serious problems with army cutworms are not usually a problem year after year in the same area because adults of these insects migrate to the Rocky Mountains for the summer and return to the plains in the fall to lay their eggs. However, significant flights of moths moving back to Nebraska were seen last fall in some areas of western Nebraska. In addition, we have already gotten several reports from western Kansas indicating widespread and serious infestations of army cutworms extending all the way to the Nebraska border. Growers need to be diligent in monitoring their winter wheat and alfalfa fields as these crops begin to break dormancy. Because of the mild winter, army cutworm larvae likely will be developing at a faster than usual pace this year and damage will develop earlier than we usually see it.

Army cutworm

Winter wheat and alfalfa fields should be monitored early in the spring. Any delayed green up of alfalfa and poor regrowth of winter wheat should be investigated immediately. Army cutworm larvae will be found buried in the soil or under clods in wheat fields or near the crown of alfalfa plants. They feed mainly at night but can be found feeding on plants on cloudy days. Treatment decisions should be based on the numbers of cutworms present, the amount of damage, and plant’s ability to outgrow damage. In poorly growing or thin wheat, two or more cutworms per square foot may warrant treatment. In healthy wheat four or more per square foot would be the threshold. In seedling alfalfa two or more per square foot may warrant treatment, but in established alfalfa four or more per square foot would be required. It is important to consider the plant’s ability to outgrow defoliation damage as well as the numbers of cutworms present.

Information on the life cycle and management of army cutworms is available in the NebGuide, Management of the Army Cutworm and Pale Western Cutworm (G1145). If treatment is needed, cutworms are best controlled with pyrethroid insecticides. The insecticide Warrior is the only pyrethroid labeled for use on winter wheat. Several pyrethroid insecticides are labeled for army cutworm in alfalfa. Follow all label directions and precautions.

Gary Hein, Extension Entomologist
Panhandle REC, Scottsbluff

Signs of early season wheat diseases

Mild February weather is resulting in an early “green up” of the Nebraska winter wheat crop. Except for dry conditions in western Nebraska, our wheat appears in reasonably good condition. No major disease problems have surfaced, but growers should be alert to the symptoms of early season wheat diseases. Crown and root rot, Septoria leaf blotch and soilborne mosaic will cause the wheat to appear yellow.

When crown and root rot is present, fields begin to decline in March. To identify this disease, dig plants and remove the soil from the roots and crowns. Healthy roots and crowns will appear white or pale green; diseased roots and crowns will be brown. Generally, the vigor of the plant will reflect the health of the crown and roots. Plants with crowns that are too badly rotted usually do not survive. When this occurs, stands show irregular thin areas within the field.

Septoria leaf blotch causes young wheat plants to yellow and infected leaves to have tan blotches. This early in the growing season, Septoria leaf blotch is not a threat to wheat. It only becomes a concern if it appears with tan spot and leaf rust and becomes severe on the flag leaf during heading.

Soilborne wheat mosaic is a virus that occurs throughout eastern and central Nebraska. Since it was relatively dry last fall and winter, incidence of this disease may be lower than normal. However it is still a little too early to judge just how much soilborne will be present. It will be most evident in low areas within fields. If we have a warm spring, symptoms will not last long.

Additional wheat disease surveys will be made in March and April to stay on top of any developing wheat disease situations.

John Watkins, Extension Plant Pathologist
Evaluating winter wheat stands

After the state’s winter wheat has had an opportunity to green up this spring, producers will be assessing their stands to see if the wheat is best left or whether it should be replaced with another crop such as sunflower, proso millet or grain sorghum. The sooner the assessment is made the better, since the wheat will be using soil moisture each day.

One way to estimate wheat yield potential is to use the following chart. A general rule is that every plant has approximately five heads and each head has 22 seeds. For this example, assume an average of 16,000 seeds per pound.

To use the table, find your row spacing. Count the number of plants per foot of row in at least five sites within the field and calculate the average number of plants per foot of row. This is just an estimate of yield potential, assuming the plants are healthy, moisture is adequate, and weed control and fertility meet crop requirements.

To determine if wheat plants are alive before active growth begins in the spring, follow this guide:
1. Remove the top three inches of soil containing the plant crowns.
2. Thaw the samples and warm to room temperature.
3. Remove soil from the roots and wash with cool water to remove attached soil.
4. Cut off fall growth to within 1 inch above the crown and roots below the crown.
5. Rinse the crowns with cool water.
6. Place 10 wet crowns in a labeled plastic bag, inflate the bag and tie shut.
7. Place the bags in a lighted room, but not in direct sunlight.
8. Check the crowns in two days, rinse with cool water and reinflate the bag.
9. After four days, the crowns should show about two inches of new growth.
10. Plants that are not growing after six days should be considered dead when estimating survival.

Spring seeding winter wheat (Continued from page 1)

Wheat can be planted directly into thin or dead spots in existing stands or planted in new stands. Plant at the normal depth (one to two inches deep), but use higher than normal seeding rates because less tillering will occur in the spring-planted wheat. A seeding rate of one-and-one-half to two times the normal rate should be used; for example, 90 lb / A in dryland or 120-150 lb / A in irrigated. Applying starter fertilizer when drilling will help get the plants off to a good start. Growers should be able to tell if the wheat has vernalized by May 21. If it has, the wheat will begin to joint and the growing point will be elevated above the crown. If not, the wheat can be grazed or a summer crop can be planted.

Yields of spring-planted winter wheat are generally 60% to 80% of fall-seeded wheat yields and are usually slightly better than spring wheat yields. Interseeding spring wheat with winter wheat is not recommended. The spring wheat will mature about two weeks later than the winter wheat, upsetting harvest plans and increasing loss due to shattering. Mixing the two wheat classes will often result in significantly discounted prices at the elevator because it is graded as mixed wheat. Spring wheat is frequently damaged by hot summer weather, producing shriveled kernels, low test weight, and reduced yields. Also, spring wheat varieties are limited in their adaptation to this area -- most have been developed for cooler environments.

Drew Lyon, Extension Dryland Cropping Systems Specialist
David Baltensperger
Extension Plant Breeder
Ray Weed
Extension Educator, Kimball-Banner counties

Robert N. Klein, Extension Cropping Systems Specialist
West Central REC, North Platte
Drew J. Lyon, Extension Dryland Cropping Specialist
Panhandle REC, Scottsbluff
Grain sorghum fares well against corn

Grain sorghum yielded as much or more than dryland corn in 1997 and 1998 in University of Nebraska field trials where the two crops were planted side by side in farmer fields.

If dryland sorghum yields are greater than those of dryland corn, the research indicates that grain sorghum can be more profitable than dryland corn.

Recent University research indicates that when grain sorghum outyields dryland corn, it is more profitable.

The historic fall harvest price for grain sorghum is 85-98% of the corn price, with an average of 91%. Production costs for grain sorghum are 88% those of corn. Historically grain sorghum seed costs less — about 88% — than corn seed, leading to lower overall production costs. Generally grain sorghum's commodity price is less than that of corn. The lower price is offset by equally lower production costs. If yields are similar from both crops, returns are similar, but when grain sorghum yields are better than dryland corn yields, grain sorghum will provide greater returns.

In the trials, which were conducted in south central and southeast Nebraska, researchers studied the productivity of the two crops in the same fields, using cultural and management practices appropriate to each crop.

Sorghum hybrids yielded as well as or better than corn hybrids at all three locations. Productivity of these sites and growing environments ranged from good to excellent.

Usually grain sorghum performs even better in particularly dry years or when growing conditions are less favorable. We'd expect the yield advantage to be even greater with grain sorghum in those stressful years.

In 1997, 30 milo hybrids were compared with 38 corn hybrids in Nuckolls County. Both crops were surface planted after disking. The field was in wheat the previous three years. Average corn yields were 81 bu/acre with a range of 61 to 107 bu/acre. This compares to the 77 to 124 bu/acre yield range and 106 bu/acre average for sorghum. Heavy rains after planting reduced average corn stands to about 12,000 plants per acre and milo stands to an average 31,000 plants per acre. Abundant tillering helped milo compensate for the low stands.

In 1998, a similar comparison was made at both Otoe and Webster counties. At Otoe County, 60 corn hybrids were planted in the same field with 19 sorghum hybrids. Both crops were planted without tillage into soybean stubble. Average corn yield from this trial was 125 bu/acre. Individual hybrid yields ranged from 99 to 154 bu/acre. This compares to a 93-158 bu/acre yield range and an average 130 bu/acre for sorghum. Cool and wet conditions during plant emergence and early growth plus soil compaction slowed development and emergence of both crops and contributed to poor stands. Corn was yellow after emergence due to excess moisture.

In 1998 36 corn hybrids were compared to 22 sorghum hybrids in Webster County. Both crops were slot planted into wheat stubble. Average corn yield was 131 bu/acre with yields ranging from 113 to 177 bu/acre. This compares to 123 to 177 bu/acre yields and 150 bu/acre average for sorghum. Conditions were excellent at this site.

These data are particularly important when prices are expected to be low, inputs are high, and producers may not have the capital to invest in inputs. In these circumstances, grain sorghum may be a good option for dryland farmers.

Roger Elmore, Extension Crops Specialist
Roger Selley, Extension Farm Management Specialist
Both at the South Central REC, Clay Center
Len Nelson, Extension Crop Variety Specialist

Selecting spring seed
(Continued from page 3)

4. Specify Certified Quality Seed that is at least 90% germination, contains less than 0.75% inert matter (debris), no other crop seed, and no wild oats. You may have additional quality criteria.

These steps will provide a higher level of assurance that you have control of getting the crop off to a good start.

Roger Hammons, Manager
Nebraska Crop Improvement Association
In winter wheat

Developing a weed management strategy

Weed management strategies involve the following choices:
1) do nothing,
2) practice economic weed control, and
3) practice weed seed prevention.

Each spring various weed control scenarios exist in winter wheat. One can choose to do nothing, spray the whole field, or spray parts of the field. When considering weed control options remember that herbicides are registered for broadleaf weeds in winter wheat, but not for downy brome or jointed goatgrass. Also consider whether the wheat is to be grazed or the straw is to be used for feed or bedding. Some herbicides may not be registered for this purpose. Also consider weed density, kinds of weeds, weed stage, wheat stage, and succeeding crop.

Winter annual weeds must be sprayed before they elongate and become a problem since they emerge with the winter wheat. Spring germinating winter annuals are not as competitive but can still produce seed to infest future crops.

During the past 15 years the amount of winter wheat fields that are sprayed in the spring with a herbicide have increased from 10% to 60%. This increase corresponds with the increase in the amount of semidwarf wheat planted. Short-statured winter wheat varieties are not as competitive with weeds as taller varieties. In general, short varieties such as TAM 107 or Vista favor development of late germinating weeds.

If you are going to spray the wheat stubble after harvest for ecofallow, many broadleaf weed problems can be reduced by controlling these weeds in the growing wheat with a herbicide. Kochia, slimleaf lambsquarters, Russian thistle, and common sunflower are the tall weeds that may interfere with harvest and intercept the herbicide before it reaches smaller weeds after harvest.

Growers can reduce herbicide inputs by scouting their fields and identifying areas needing treatment. In 1986, 1996, 1997, and 1998 surveys taken after winter wheat harvest showed that some fields had poor stands near waterways, terraces, hilltops, or areas where the snow had blown off the fields. Wheat stands in these areas generally had fewer than 340 stems/m² at harvest. These areas should be sprayed with a herbicide so competition from weeds is reduced.

Planting an adapted winter wheat at the proper time improves the wheat’s competitive ability. Apply fertilizer during the prewheat-fallow period or as a starter when the wheat is planted. Delaying all the fertilizer application until spring benefits the weeds. Surveys have shown that fields only receiving spring applied fertilizer have more and bigger weeds than fields fertilized the previous summer or fall.

Sometimes, wheat fields have questionable stands that may need to be destroyed and planted to another crop. If in doubt, spray the field with a selective herbicide that allows flexible recropping. This lets you decide later whether to destroy the wheat and plant another crop. The wheat must be destroyed early enough so as not to lose the stored soil water if a spring crop is to be planted.

Gail A. Wicks
Extension Weed Specialist
West Central REC, North Platte

Grain storage

As temperatures continue to warm, be sure to check the temperature and quality of stored grain and aerate as necessary. See the March 18 Crop Watch for more information on maintaining stored grain quality.
Which herbicide is best for your broadleaves?

A good weed control program in winter wheat involves both crop and fallow weed control as well as supportive cultural practices to make the crop more competitive with weeds. Such practices include variety selection, planting date, planting rate, row spacing, fertilizer program, and disease and insect control. Several herbicide treatments for use in winter wheat are described in the following section. Adding liquid nitrogen may considerably reduce crop safety for some treatments. For more information see the Weed Response Chart on page 47 of the 1999 Herbicide Use Guide, EC99-13.

**2,4-D Amine or Ester**

2,4-D is an effective and economical treatment that controls many broadleaf weeds. It has shown poor activity on bushy (tall) knotweed largely because sprayings are done too late. It will not control wild buckwheat. Weeds should be treated early in their development for optimum control, however, crop growth stages must dictate the appropriate time for 2,4-D application. Winter wheat should be well tillered but not jointed to avoid significant crop injury. Winter wheat should be treated in early spring when it's in the proper growth stage for 2,4-D. Ester formulations may provide greater weed control but also may injure winter wheat more readily. Both 2,4-D formulations will persist in soil two to four weeks and will provide little residual activity. Use rates for wheat are 0.5-0.75 lb a.e./acre (1-1.5 pt with 4 lb/gallon a.i.) with amine formulations and 0.25-0.38 lb a.e./acre (1/2 to 3/4 pt with 4 lb/gallon a.i.) with ester formulations. Approximate cost: $1.50-$2.20/acre.

**2,4-D + Buctril (Moxy)**

The active ingredient in Buctril or Moxy is bromoxynil which provides effective control of most broadleaf weeds if application is timely. Bromoxynil acts primarily as a contact herbicide — thorough spray coverage is essential. Weeds should be small when treated — two to four leaves or rosettes about 2 inches in diameter. Bromoxynil will not injure winter wheat or winter barley when applied at the two-leaf to boot stage, making fall application possible if applied alone. This is a contact herbicide so applications after the canopy covers the weeds are ineffective. Bromoxynil has no residual activity in soil and is expensive when compared with 2,4-D. It should be used in combination with 2,4-D. Use rates of Buctril are 0.25 to 0.375 lb a.i./acre (1 to 1.5 pt 2EC) + 8 oz 2,4-D amine. Approximate cost: $8.00-$11.80/acre.

**2,4-D + Ally**

Use Ally (metsulfuron) only in tank mixes with other broadleaf herbicides. Ally provides about four weeks of residual weed control. Ally in tank mixes with other broadleaf herbicides can be applied from the fully tillered to the joint stage without crop injury. Do not use Ally more than once every other year on a given field. The first choice for tank mix should be 2,4-D ester at 8 oz based on 4 lb/gal a.i. plus 1 pint of surfactant/100 gallons of spray solution. Other tank mix partners are Buctril 2EC — 1/2-1 1/2 pt, Bronate — 1/2-2 pt, Banvel — 1 to 4 oz, Curtail — 1-2 pt, and MCPA — 8-16 oz. Reduced weed control may occur with the Banvel mix due to occasional antagonism. Check labels for these and other rates plus the need for surfactants. Rotational restrictions should be considered before using Ally. Dryland corn, sorghum or proso millet should not be planted for 10 months on soil with a pH of 7.5 or less. Corn, safflower, or sunflower should not be planted for 22 months after applying Ally in soils with a pH of 7.6 to 7.9. At the lower tank-mix rates surfactant must be added at 1 pt/100 gallon spray solution. The use rate is 0.06 oz a.i./acre (1/10 oz product) plus tank mix partner. Approximate cost: Ally + 2,4-D ester + surfactant —$2.70-$3.00/acre.

**2,4-D + Amber**

(Use Amber only in tank mixes with other broadleaf herbicides.) Amber (trisulfuron) is one of the sulfonylurea herbicides and can be tank mixed with several herbicides. Add surfactant if weeds are present at spraying. Check on rotational restrictions. Amber rates are 0.28 to 0.56 oz + 1/4 to 1/2 pt of 2,4-D applied from early spring in tiller to joint stage. Amber by itself can also be applied in the fall after the two-leaf stage of winter wheat. Some winter wheat varieties are more sensitive to Amber when cold temperatures occur after fall applications. Approximate cost: 2,4-D + Amber — $3.00-$6.30/acre.

**2,4-D + Finesse**

(Use Finesse only in tank mixes with other broadleaf herbicides.) Finesse is one of the sulfonylurea herbicides (Glean + Ally) and can be tank mixed with several herbicides. Use rates are 0.2 to 0.3 oz plus 1/4 to 1/2 pt 2,4-D. Add surfactant to the spray solution. Use on tillered wheat up to the joint stage. Check label for rotational restrictions. Approximate cost: $3.25-$5.20/acre.

**2,4-D + Peak**

(Use Peak only in tank mixes with other broadleaf herbicides.) Peak (prosulfuron) is one of the sulfonylurea herbicides and can be tank mixed with several herbicides. Peak + 2,4-D can be applied from early spring in tiller to joint stages. Peak has a shorter residual than some of the other sulfonylurea herbicides.

(Continued on page 9)
Research explores fertilizer-herbicide combinations

Many winter wheat farmers like to combine herbicide and fertilizer applications to reduce costs by saving an application trip through the field. While combining the applications appears to be a good practice, each year we receive reports of damaged wheat, especially when sulfur was included in the mixture. (Sulfur is commonly found in liquid fertilizer-herbicide mixes, but it is rarely needed on fine textured soils.)

In the last decade several herbicide-liquid fertilizer studies were conducted in Nebraska and Kansas to learn how combination applications injure the crop. In Nebraska, winter wheat was planted at different dates to obtain different growth stages for spring spraying. Spring-applied UAN at Sidney increased yields on wheat planted Sept. 10 but not on wheat planted August 26 or Sept. 20, 1988.

At Sidney, 2,4-D ester at 0.5 lb/A, 2,4-D + Banvel at 0.25 +0.12.5 lb/A, Ally at 0.1 oz/A + X-77 with and without 2,4-D at 0.25 lb/A decreased winter wheat grain yields. At North Platte in 1989 when UAN was applied with 2,4-D ester, 2,4-D amine + Banvel, or Ally at 0.1 oz/A, yields were reduced with winter wheat planted Sept. 15 but not with winter wheat planted Sept. 1 or Sept. 25, 1988. Occasionally, winter wheat plots treated with Ally + 2,4-D ester + X-77 without UAN yielded less than those treated with Ally +X-77. One or more herbicide

(Continued on page 8)

Herbicides for broadleaves  (Continued from page 8)

Check rotational restrictions. Approximate cost: $3.20-$6.50/acre.

2,4-D + Harmony

Harmony is another sulfonylurea herbicide combination using thifensulfuron + tribenuron. Because of its cost, it should be considered only in double crop systems. (Approximate cost: $4.70-$7.40/acre)

2,4-D + Banvel

A tank mix of 2,4-D plus Banvel (dicamba) can help control weeds tolerant to 2,4-D. This treatment will control most problem broadleaves though blue mustard may be more effectively controlled with 2,4-D alone. Application must be made to well tillered winter wheat and before the jointing stage to avoid crop injury. The risk of crop injury with this tank mix is high; weed control benefits may be offset by yield reduction if proper application timing is not observed. Residual weed control with 2,4-D + Banvel is moderate with soil persistence of four to eight weeks. Use rates are 0.06 to 0.09 lb a.e./acre (2 to 3 oz) Banvel + 0.25 to 0.375 lb a.ei./acre (8 to 12 oz) 2,4-D amine. (Approximate cost: $2.10-$4.30/acre)

2,4-D + Tordon

Apply after active growth resumes in the spring from four tillers to the early joint stage. Use rates are 1/2 to 3/4 pt 2,4-D ester plus 1 to 1 1/2 fl oz Tordon. Use only on fields that will be planted the following year to grass, barley, oat, wheat or fallowed. (Approximate cost: $1.50-$2.35/acre)

Curtil

Apply after crop begins tillering to before boot stage. Use rate is 2.0 pt per acre. It is effective on Canada thistle. Do not rotate to any crops for one year after treatment except for wheat, barley, oat, and grasses. (Approximate cost: $9.70/acre)

Rave

Rave is a mixture of Amber and Banvel/Clarity for broadleaf weed control. Rave can be applied from emergence to jointing but may injure early developing wheat varieties if applied before early tillering. Recropping guidelines vary from 12 days for wheat to up to 36 months for field corn and soybean. Rave can be tank mixed with several herbicides and also the fungicide Tilt. (Approximate cost: $3.20-$6.40/acre)

Starane

Starane is a growth regulator herbicide to be used postemergence. Use rate is 2/3 to 1 1/2 pt/acre. Starane has shown very good control of kochia (including ALS and triazine resistant biotypes with good crop tolerance). The half life of fluroxypyr (the active ingredient in Starane) ranges from 11 to 38 days. If replanting is required only wheat, barley, or oat may be planted in treated fields within 120 days after Starane is applied. Starane plus Salvo (a 2,4-D formulation) at use rates of 1 1/3 pts to 2 2/3 pt/acre and Starane plus Sword (MCPA formulation) at 1 1/2 pt to 2 3/4 pt/acre are available. Starane also can be tank mixed with other products. Another herbicide that is labeled for winter wheat is MCPA plus its tank mix partners. Generally it is weaker on broadleaf weeds but causes less injury to cereal crops than 2,4-D.

(Approximate cost: Starane: $7.20-$8.70, Starane + Salvo: $7.70-$8.70, and Starane + Sword: $8.70-$16.00)

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treatments reduced wheat yields 27% of the time. Crop injury was related to growth stage and health of winter wheat when treatments were applied. Stressed wheat was more susceptible to herbicide injury than healthy wheat.

From 1991 to 1994 a Nebraska study addressed how different factors affected wheat yield losses. While near-freezing temperatures were suspected of increasing damage, the research did not fully confirm this. Crop injury (leaf burn) one week after treatment varied among dates and years.

The Amber label suggests that adding surfactant to spray mixtures containing more than 50% fertilizer can cause increased temporary leaf burn. The surfactant may be omitted if the spray solution is more than 50% fertilizer, but this may reduce control of large weeds. To avoid possible crop injury, do not apply Amber to wheat that is stressed due to (1) extreme temperatures or rainfall; (2) disease or insect pressure; or (3) when temperature extremes are expected within one week. ALS herbicides tend to injure crops more when cold temperatures occur near or shortly after application. Some crop varieties may be sensitive to Ally or Amber under otherwise normal conditions. Treating such varieties may injure the crop. Surfactants may increase the potential for crop injury. Do not add a surfactant if liquid nitrogen is used.

Kansas researchers conducted a three-year field study in west-central Kansas to investigate the effects of combinations of spray carrier, nonionic surfactant (NIS), Amber, and/or 2,4-D on winter wheat foliar injury and grain yield. They found that herbicides applied in water without a nonionic surfactant caused little or no foliar injury in two of three years. When UAN was used at 36 lb N/A alone or as a carrier for herbicides, it caused moderate to severe foliar injury all three years. Adding NIS to UAN spray solutions increased foliar injury, especially with the tank mixture of Amber plus 2,4-D.

Effects of Amber plus NIS or 2,4-D applied in UAN were additive. Foliar injury was most evident four to seven days after application and disappeared within two to three weeks. Diluting UAN 50% with water lessened foliar injury in two of three years, especially with a nonionic surfactant, regardless of whether herbicides were in the spray solution. Treatments did not reduce wheat grain yield in any year despite estimates of up to 53% foliar injury in one year.

Kansas research has found the most efficient way to apply fertilizer solutions in the spring is to apply a surface strip band by dribbling fertilizer through drop hoses, reducing injury to the wheat from the fertilizer solutions. Herbicides are applied as needed. Fall fertilization before the winter wheat is seeded is probably the cheapest and most efficient way to apply fertilizer in much of the semiarid Great Plains. Usually there is not sufficient precipitation to leach the nitrogen below the root zone.

Chances of winter injury destroying the winter wheat are low if the proper variety is selected and planted with a hoe drill, according to Nebraska field surveys from 1986 and 1988. Weed growth after wheat harvest was greater with spring herbicide applications than with fall applications. Nitrogen not used by the wheat is used by the weeds.