CropWatch No. 96-15, July 12, 1996

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

Follow this and additional works at: http://digitalcommons.unl.edu/cropwatch
Part of the Agriculture Commons

http://digitalcommons.unl.edu/cropwatch/118

This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Crop Watch by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
Storms damage thousands of acres

Producers in southwest Nebraska are assessing crop damage and determining their most cost effective options following the high winds, hail, and pelting rain that swept through the area Saturday and Sunday. Thousands of acres of cropland sustained damage.

In some areas, it will take several days before producers can assess the full extent of the damage. In other areas, the damage is all too obvious — corn and soybean plants stand leafless, stripped to stubs. Most of the corn was in the 16-21 leaf stage, just prior to tasseling. Agricultural agency personnel reported that in the worst hit areas, the leaves around the tassel were stripped away, leaving the tassel prematurely exposed.

Soybeans were just beginning to flower. Defoliation effects on soybean yield potential escalate from flowering to the pod elongation and seed fill stages, according to Roger Elmore, Extension Crops Specialist at the South Central Research and Development Center near Clay Center.

Gary Hall, Extension educator in hardest hit Phelps and Gosper counties, estimated that 84,000 acres suffered a 60% loss, causing almost $30 million of damage in Phelps County alone. Much of the affected area in Phelps County was irrigated corn.

A strip of marble to golf ball sized hail from Smithfield to Holdrege, approximately 28 miles long and 5-6 miles wide, caused damage which ranged from leaf shredding to total defoliation. Lowland flooding from the weekend downpours continued early in the week.

In Harlan County, Lee Christensen, county executive director of the Farm Service Agency, said almost 20,000 acres of corn, sorghum, soybeans and wheat were damaged. He estimated that almost 15,000 acres of corn suffered about an 80% loss.

In nearby Franklin County, Jim Shelton, county executive director of the Farm Service Agency, estimated that about 10,500 acres of crops sustained 10-75% loss following the storms. “It’s really too early to tell the full extent of the damage,” he said Tuesday afternoon.

Ralph Anderson, Extension educator in Buffalo County, estimated that about 43,000 acres of cropland suffered an average 18% loss. With grain prices higher than usual and the majority of inputs already made, Anderson is recommending that producers do what they can to salvage the remaining crop.

Areas a little east of these counties also suffered crop damage from high winds and rain which caused plant defoliation, greensnap (isolated incidents of 30-70%), and a lot of root lodging, Elmore said. While it’s too early to determine the effect on yield, harvest will be more difficult and losses at that time would seem likely. Plants broken at or below the ear node — as happened in 1993 and 1994 high wind storms — probably will not contribute to yield at all.

Research from these previous mid-season storms indicated that nearby plants did not compensate for the loss. Hybrids have shown some definite differences in their ability to withstand high winds prior to tasseling. The research also indicated that factors which accelerated crop growth early in the growing season also increased the susceptibility of the crop to stalk breakage, according to Richard Ferguson, Extension soils specialist in the South Central District.

Stalk breakage increased with nitrogen rate and was reduced with sidedress nitrogen application and no-till.

Agency personnel estimated that much of the affected area was covered by insurance, however that provides little comfort to producers who had been expecting record grain prices.

For more information on estimating yield losses due to the recent hail storms, see Extension publication, G86-803, Assessing Hail Damage to Com, and G85-762, Soybean Yield Loss Due to Hail Damage.
Chinch bugs in sorghum

In most sorghum fields surveyed last week, chinch bug numbers were generally low and limited to the first couple of rows next to wheat. In a few fields, scattered plants next to wheat had from 10 to 40 chinch bugs at the base of the plants and some visible damage. Although none of the fields surveyed had serious infestations, it is possible that a few scattered fields may have heavier infestations.

For more information consult University of Nebraska NebGuide G86-806, Chinch bug management.

Z B Mayo
Entomology Professor

Corn rootworm larvae

Based on field observation at Holdrege on July 5, corn rootworm larvae in that area are somewhat behind larval development at Clay Center. Pupae were seen on July 2 at Clay Center, yet on July 5 at Holdrege no pupae were found, but late third instars and prepupae (nonfeeding stage before pupa) were commonly found. The pupal stage would be expected to last 7-10 days under July conditions.

Bob Wright
Extension Entomologist
South Central District

Timing key to 2,4-D use

Do not spray corn with 2,4-D from a week before tassel emergence until after the silks turn brown. Treatments during this critical time often interfere with pollination and reduce yield. After the silks turn brown, pollination is complete and 2,4-D can be safely used. The state’s early planted corn is now in the stage where it should not be sprayed with 2,4-D.

How much will premature tassel emergence affect pollination?

Much of the corn damaged by last weekend’s storms in southwest Nebraska was approaching the tassel stage. In cases where the leaves around the tassels were destroyed and the tassel was prematurely exposed, will the tassel pollinate the crop properly? Some fields have lost some tassels, but not all of them. How many plants will one tassel pollinate?

Gary Hall
Extension Educator
Holdrege

Response

At this point, it’s difficult to know the effects of premature tassel exposure on pollination. It takes about 100 growing degree days for pollen to shed after normal tassel emergence. Normally, in three to four days there should be evidence of pollen shed. By July 12-13 it probably will be clear if they will shed pollen. Regarding how many plants it takes for effective pollination, not many; 10% is probably more than enough.

Roger Elmore
Extension Crops Specialist
South Central District

Copyright 1996

CropWatch is published from March to December by the University of Nebraska Institute of Agriculture and Natural Resources Communications and Information Technology, Box 830918, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order a subscription or to change your address, write to the above address or call (402) 472-7981.

Each week information from CropWatch is featured on its World Wide Web Home Page at: ianrwww.unl.edu/ianr/pubs/crpwatch.htm. For more information about many CropWatch topics, check out the Extension publications on the Web at ianrwww.unl.edu/ianr/pubs/extnspubs.htm.

Lisa Brown Jasa, Editor

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

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

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

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

Department of Agricultural Meteorology
236 L.W. Chase Hall
Lincoln, NE 68583-0728
Assessing hail damage in corn

The following information is abstracted from a NebGuide, G86-803, Assessing Hail Damage to Corn, by J.J. Vorst of Purdue University.

Assessing damage, while difficult in some cases, can be important when determining the cost efficiency of future inputs, such as irrigation or fertilizers, as well as harvesting and marketing the crop.

Hail affects yields primarily by reducing stands and defoliating the plant, with the latter causing the most damage at this point in the season. Total corn yield loss from hail damage is estimated by adding the expected yield loss from both kinds of damage. This figure is only an estimate, however, and beneficial or detrimental weather during the remainder of the growing season will continue to have a significant role in total yield.

Estimating stand reduction

Fields may look particularly bad immediately after a storm and it may be difficult to distinguish living tissue from dead tissue, so delay stand assessment for 7-10 days. By this time, regrowth of living plants will have begun and discolored dead tissue will be apparent. Another reason for delaying assessment is that some plants initially surviving a storm may soon die because of disease infection at the sites of plant damage.

To accurately estimate damage, observe and sample plants from at least three parts of affected fields, totaling about 1/100 acre. (See Table 1.) Divide the total number of row feet to be sampled by the number of locations to determine how many row feet to sample at each site.

To sample pre-tasseled corn, split the stems of several obviously damaged plants with a knife to observe the growing point. If it is whitish-yellow, the plant is alive and should survive; if discolored and soft, the plant is dead or dying. Table 2 shows some loss estimates for typical populations.

Estimating defoliation losses

Most yield reduction in hail damaged corn results from losing photosynthetically active leaf area. The severity of that reduction likely depends on the amount of leaf area removed as well as the growth stage of the plant. When leaf area is removed, the plant loses some of its capability to produce dry matter, resulting in reduced grain yields. However, grain yield reductions are not directly proportional to leaf area reductions because of increased dry matter production in the remaining leaf area and movement of dry matter from other plant parts into the developing ear.

To estimate percent of yield loss due to defoliation:
1. Determine growth stage of the plant.
2. Estimate percent of leaf area destroyed per plant. Consider both leaf area removed and leaf area still attached to the plant but no longer green. Live green tissue remaining on the plant, even though mutilated, should not be considered as leaf area destroyed. Examine plants at least three sites in the field and average the percents of damage to get a more realistic estimate.
3. Use Table 3 to estimate yield loss based on defoliation percentages.

Roger Elmore, Extension Crops Specialist
South Central Research District

<table>
<thead>
<tr>
<th>Row spacing</th>
<th>Row length</th>
<th>Row spacing</th>
<th>Row length</th>
</tr>
</thead>
<tbody>
<tr>
<td>24&quot;</td>
<td>218 ft</td>
<td>32&quot;</td>
<td>163 ft</td>
</tr>
<tr>
<td>26&quot;</td>
<td>201 ft</td>
<td>36&quot;</td>
<td>145 ft</td>
</tr>
<tr>
<td>30&quot;</td>
<td>174 ft</td>
<td>40&quot;</td>
<td>131 ft</td>
</tr>
</tbody>
</table>

Table 2. Estimated percent corn yield loss due to stand reduction (1/100 of an acre).

<table>
<thead>
<tr>
<th>Original stand</th>
<th>Remaining plants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>220</td>
</tr>
<tr>
<td>250</td>
<td>3</td>
</tr>
<tr>
<td>270</td>
<td>6</td>
</tr>
<tr>
<td>300</td>
<td>9</td>
</tr>
<tr>
<td>320</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 3. Estimated percent corn yield loss due to defoliation

<table>
<thead>
<tr>
<th>Growth stage</th>
<th>Percent leaf area destroyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-leaf</td>
<td>6</td>
</tr>
<tr>
<td>17-leaf</td>
<td>7</td>
</tr>
<tr>
<td>18-21 leaf</td>
<td>10</td>
</tr>
<tr>
<td>Tasseled</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Growth stage</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-leaf</td>
<td>6</td>
<td>11</td>
<td>18</td>
<td>23</td>
<td>31</td>
<td>40</td>
<td>49</td>
<td>61</td>
</tr>
<tr>
<td>17-leaf</td>
<td>7</td>
<td>12</td>
<td>20</td>
<td>27</td>
<td>35</td>
<td>45</td>
<td>56</td>
<td>69</td>
</tr>
<tr>
<td>18-21 leaf</td>
<td>10</td>
<td>17</td>
<td>26</td>
<td>34</td>
<td>44</td>
<td>56</td>
<td>69</td>
<td>84</td>
</tr>
<tr>
<td>Tasseled</td>
<td>13</td>
<td>21</td>
<td>31</td>
<td>42</td>
<td>55</td>
<td>68</td>
<td>83</td>
<td>100</td>
</tr>
</tbody>
</table>
Assessing hail damage in soybeans

Yield loss predictions from hail damage to soybeans are based on two factors: a) stage of growth at the time of damage, and b) the degree of plant damage. Plant damage is classified as leaf defoliation, stand reduction, stem damage, and pod damage. Accurate determination of growth stage is necessary to determine yield loss due to hail. Most of the soybeans affected by last week’s storms were in the R1 to R3 stage. The following information may help you differentiate between stages:

R1: one flower appearing at any node (10 days to R3)
R2: open flower at one of the two uppermost nodes on the main stem with a fully developed node (full bloom stage)
R3: pod 0.5 cm (1/4 inch) long at one of four uppermost nodes with a fully developed leaf (nine days)

A node is counted when the attached leaf is completely unfurled. Reproductive stages (R-stages) occur after the plant begins to flower and are defined by the development of the flowers, pods, and seeds. Determinate soybeans cease vegetative growth when flowering begins; indeterminate varieties continue to grow during reproductive stages.

Determining losses

1. Stand reduction is a measure of the number of plants killed by the storm. To determine the pre-storm population, count the original number of plants in 10 feet of row. Repeat this step several times throughout the field to get a representative sample. Using the same procedure, determine the remaining live plant population. Stand loss during reproductive stages reduces yield proportionately, or 1% yield loss for each 1% stand loss.

2. Percent yield losses due to stem cutoff, broken over stems, and defoliation are added together to determine the percent plant damage.

Defoliation is measured as a percentage of the leaf area destroyed by the storm and is often the prime factor in determining soybean damage from hail. Leaf tissue that is green and still attached to the plant will continue to produce photosynthate, and is not considered leaf area destroyed.

Research has shown that leaf loss during vegetative stages has little effect on yield. Defoliation loss is measured only in the reproductive stages for indeterminate varieties.

To determine the amount of leaf area destroyed, examine each exposed leaf and estimate the leaf area that was present before the storm and the percentage of damage. Evaluate 20 plants and average the percents of damage. Use Table 1 and Table 2 to estimate the percent yield loss sustained.

Stem damage includes stem cutoff (stems completely cut off and removed from the plant) and stems bent or broken over. To determine the amount of stem damage, count the number of nodes above the cotyledonary node present at the date of loss. Estimate the number of nodes that have been cut off from the plant. Count the number of nodes above the break or broken over part of the stem. Keep separate the number of nodes cut off from those on a broken over portion of the stem. Sample 20 plants, then compare the averages with Tables 3 and 4.

Charles Shapiro
Extension Soils Specialist
Northeast District

<table>
<thead>
<tr>
<th>Growth Stage</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1-R2</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>12</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>R3</td>
<td>3</td>
<td>6</td>
<td>11</td>
<td>14</td>
<td>18</td>
<td>24</td>
<td>33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Growth Stage</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1-R2</td>
<td>0</td>
<td>6</td>
<td>13</td>
<td>15</td>
<td>20</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>R3</td>
<td>0</td>
<td>7</td>
<td>14</td>
<td>17</td>
<td>25</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Growth Stage</th>
<th>5</th>
<th>15</th>
<th>25</th>
<th>35</th>
<th>45</th>
<th>55</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1-R2</td>
<td>1</td>
<td>4</td>
<td>9</td>
<td>12</td>
<td>16</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>R2.5</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td>14</td>
<td>18</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>R3</td>
<td>3</td>
<td>9</td>
<td>14</td>
<td>19</td>
<td>25</td>
<td>32</td>
<td>41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Growth Stage</th>
<th>5</th>
<th>15</th>
<th>25</th>
<th>35</th>
<th>45</th>
<th>55</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1-R2</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>R2.5</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>11</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>R3</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td>14</td>
<td>17</td>
<td>21</td>
<td>25</td>
</tr>
</tbody>
</table>
Especially this year in wheat
Focus on postharvest weed control

The 1996 winter wheat crop varies from poor to excellent. Many fields suffered from winter injury that reduced stands and made them less competitive with weeds. The density of weeds in many of these fields is extremely high.

Controlling these weeds after winter wheat harvest will be a challenge. Surveys taken after winter wheat harvest in west central and southwest Nebraska usually show barnyardgrass and green foxtail as the leading summer annual grasses infesting winter wheat fields. Other grassy weeds include sandbur, stinkgrass, and witchgrass. This year many of the broadleaf weeds such as lambquarters, morning glory, sunflower, Russian thistle, kochia, and wild buckwheat may create the biggest problem.

The effectiveness of post-harvest weed control is influenced by production practices associated with the previous wheat crop, such as winter wheat variety selection, fertilizer practices, planting date, and rate. Other factors influencing weed control include:

- weeds that are too large,
- cutting off weed tops with the combine,
- crop rotation,
- environmental temperature when spraying,
- rain the day of spraying,
- streaks caused by sprayers,
- terraces,
- dust, straw, and chaff; and
- weed seed distribution.

If only large broadleaf weeds are present after harvest, Cyclone plus atrazine should be applied soon after harvest. A mixture of Cyclone + atrazine offers good control of both small and mature barnyardgrass, but is less effective on medium or large plants. Control of barnyardgrass is poor with Cyclone + atrazine when sprayed during the tilling to boot stage. However, once barnyardgrass has headed, the mixture again provides good control. Spraying after the grass has headed allows seed production. In addition, the longer the weeds grow, the more soil water is used.

Several options are available for using nonselective herbicides with difficult-to-control weeds. With Cyclone be sure to use a minimum of 2 pints of X-77 or equivalent surfactant per 100 gallons of solution. Use 2 quarts of X-77/100 gallon of spray solution if using less than 20 gallons of carrier. A surfactant is included in the new Roundup Ultra. Landmaster BW also has a surfactant included. With Roundup Ultra or Landmaster BW, add ammonium sulfate (spray grade) at 17 lb per 100 gal of spray solution. The ammonium sulfate is the first item put into the spray tank after the water. Ammonium sulfate is especially helpful under stress conditions.

Many options, besides increasing herbicide rates, are available for controlling weeds after wheat harvest. It takes a total weed management plan to obtain maximum weed control. Stands of vigorous winter wheat will compete better with weeds, allowing you to concentrate on weed control in the fallow. Preparing a good firm seedbed, timely weed control, fertilizing if needed, proper seeding, planting during the optimum time, selecting a competitive winter hardy winter wheat variety, and weed control in the growing wheat offer the best chance of reducing weed population and vigor after harvest. In addition, it’s essential that you watch closely and spray at the proper time to control weeds. Most labels state that weeds must be treated before they are six inches tall. If weeds are under severe drought stress, wait for rain and spray about a week later.

One cannot easily recognize stress to weeds; therefore, it is wise to always add ammonium sulfate. Improve control by increasing the rate of Roundup Ultra or Landmaster BW.

Allow at least six hours for the Roundup Ultra or Landmaster BW to become rainfast. Some weeds require more time than others. Barnyardgrass control may require as much as 24 hours without rain for maximum control. A spray volume of 5 to 10 gallons per acre should be used with Roundup Ultra or Landmaster BW.

Our research and field surveys suggest that atrazine combined with either Cyclone or Landmaster BW is an effective treatment if applied before weeds are too large. Use Landmaster BW + atrazine on grasses from tillering to the boot stage. If weeds are mature, use the Cyclone + atrazine combination. Do not use Roundup Ultra or Landmaster BW on days that it will rain or when temperatures reach 95°F.

Split treatments have been especially effective. With the split treatment, the first application is made in July or early August. A second application in September should contain at least 1/2 lb/A of atrazine and possibly Cyclone or crop oil concentrate, depending on the amount and size of volunteer winter wheat, downy brome or jointed goatgrass present. The atrazine rate varies with soil and rainfall patterns. In southwest Nebraska use at least 2 lb/A of atrazine, but in the Panhandle, 1/2 lb/A is often the maximum allowed in one season. Be careful not to exceed the label rate for atrazine with the two combined treatments. The advantage of the split treatments is that they provide excellent control of volunteer winter wheat and other winter annual grasses.

If winter annual grasses such as jointed goatgrass, downy brome or rye are a problem and a winter wheat-fallow rotation is being used, till immediately after harvest to plant these weed seeds.

Robert N. Klein
Gail A. Wicks
Drew J. Lyon
Extension Crops Specialists
Address resistance development before options become too limited

It's not too early to begin thinking about spider mite management. Reports from southwestern Nebraska indicate spider mite populations are beginning to build up in some corn fields. The article below was written by a group of university entomologists working on corn spider mites in the Western Great Plains. There is a concern across the region about the potential for spider mites developing resistance to the few effective miticides available for corn. This article is written from a regional perspective. A few points should be noted concerning the corn spider mite situation in Nebraska:

1. Twospotted spider mites and Banks grass mites differ in their susceptibility to corn miticides in Nebraska.
   - Dimethoate is still effective against Banks grass mites, but not against twospotted spider mites. This points to the importance of identifying mite species. Even though Banks grass mites in Nebraska continue to be susceptible to dimethoate, we strongly recommend following a mite management program for both mite species to prolong the useful life of dimethoate.

2. In areas where spiders mites have been a problem, carefully consider your use of insecticides against other corn pests, such as European corn borer, western bean cutworm or adult corn rootworms. In the case of first generation European corn borer, using products containing B.t. is an effective option which has the fewest harmful effects on spider mite natural enemies. In the case of other insect pests, be sure to follow treatment guidelines in deciding whether treatment is needed.

3. The article discusses use of pesticide mixtures; however, we do not recommend using pesticide mixtures in Nebraska. This practice is used in Texas where spider mites are much more common and more difficult to kill than in Nebraska.

Bob Wright, Ron Seymour, Gary Hein and Jack Campbell
Extension Entomologists

On the Western High Plains . . .

On the Western High Plains, spider mites are considered a major pest of irrigated corn. There are no reliable non-chemical controls for spider mites in corn so producers have had to rely on chemical controls. Although control of corn spider mites varies from field to field and from year to year, they are generally more difficult to control the further south you go in the region.

Currently, over much of the region, only two miticides are regularly effective against corn spider mites: bifenthrin (Capture 2E) and propargite (Comite II). Availability of limited numbers of miticides is of great concern to growers and consultants because spider mites are notorious for their ability to develop miticide resistance. In the future, spider mite control could be very difficult if we lose our current products. There are no obvious alternatives now or in the near future, even for Section 18 registrations, should registered miticides become unavailable. Resistance management is essential to prolong the useful life of miticides because no new miticides are being developed for corn.

Resistance develops because individual spider mites differ in their tolerance to a given miticide. Repeated use of any single miticide removes the susceptible individuals from the population, leaving only the most resistant mites to reproduce. Over time, as each new generation is selected, the percentage of resistant individuals increases. Development of resistance can be delayed when populations of selected mites in treated fields are mixed with untreated mites on nearby, untreated alternate hosts. Over enough time, however, the overall level of resistance in the pest population can be expected to increase to the point where the miticide will no longer be useful.

This undesired development of resistance has occurred with several organophosphate miticides which were formerly used in corn on the Western High Plains.

The time required for resistance to develop is difficult to predict and is affected by many factors:
- species of spider mite,
- number of applications per year,
- number of spider mite generations per year,
- spider mite movement from fields to alternate hosts,
- miticide efficacy and mode of action,
- application dosage, and
- thoroughness of application coverage.

However, we believe that we can reduce the rate of resistance development by using a resistance management

(Continued on page 111)
Spider mites (Continued from page 111)

strategy. Such a strategy is especially important for corn on the Western High Plains where spider mites frequently reach damaging levels. Special precautions must be taken to prolong the useful life of existing miticides.

These measures are particularly important in areas where mites are known to be infested with mites. In general, follow sound agronomic practices to produce the healthiest and most vigorous crop possible.

1. Use cultural practices to reduce mite problems. Cultural practices can often be effective in areas where mites are known to be infested with mites. In general, follow sound agronomic practices to produce the healthiest and most vigorous crop possible.

2. Use corn borer insecticides carefully. Apply insecticides for corn borer and other corn pests only when absolutely essential to avoid serious yield losses. This precaution is necessary because some insecticide applications induce spider mite outbreaks that could reduce the need to treat for spider mites if the use of these hybrids results in fewer insecticide applications.

3. Use miticides sparingly, but effectively. Miticides should not be used unless mites are threatening, based upon treatment thresholds or application guidelines. When applied make sure adequate carrier and appropriate adjuvants are used to assure optimal miticidal activity. Avoid making applications when weather conditions are unfavorable.

4. Rotate between different miticides. Avoid using the same miticide in the same fields year after year, since using any single pesticide repeatedly will select for resistance. Consider rotating between Comite II and Capture 2E, or consider using dimethoate or disulfoton if they are effective locally. If a miticide + synergist mixture (see Point 7 below) is recommended in your region, the mixture should be considered as a single chemical in the rotation schedule.

5. Always use labelled rates of bifenthrin (Capture 2E). Avoid using reduced rates of Capture 2E for corn borer control. Reduced rates can lead to increased exposure of mites to Capture 2E and speed the buildup of resistance. Lower rates of Capture 2E may be effective as corn borer treatments, but this approach selects for resistance in mites and does not provide effective miticidal activity. Several other corn borer insecticides are available and should be used in place of Capture 2E when mites are not a serious threat.

6. Minimize pyrethroid insecticide use, in areas where miticide resistance is a significant concern, to avoid development of cross-resistance. Cross-resistance occurs when high levels of resistance to one pesticide lead to resistance to other pesticides with similar modes of action or target sites in the pest.

In practice, cross-resistance usually occurs between pesticides that are closely related chemically. Some pyrethroids used for corn borer control, such as lambda-cyhalothrin (Warrior), are closely related chemically to bifenthrin (Capture). Cross-resistance among such similar insecticides is likely. There are effective nonpyrethroid insecticides available for corn borer control that can be used in areas where development of miticide resistance is a concern.

The Warrior label claims spider mite suppression, so it probably has enough activity to select for resistance in mites. The use of Warrior may lead to cross-resistance to Capture and the loss of miticidal efficacy of one of our remaining effective corn miticides. Other corn borer pyrethroids, such as permethrin (Pounce & Ambush), are not known to have miticidal activity in the field and are probably of less concern relative to cross-resistance to bifenthrin.

These pyrethroids, however, often induce outbreaks (probably by killing mite predators) and may indirectly lead to expanded miticide use.

7. Use mixtures only where recommended and be aware of possible problems with mixtures. (Mixtures are not recommended for Nebraska. See related article.) Use miticide mixtures that are known to be synergistic. Nonsynergistic mixtures actually may be antagonistic, making mite problems worse than they would have been without treatment. Check with your Cooperative Extension entomologist to determine if the use of mixtures is advisable in your area and ask for a list of effective combinations. If mixtures are recommended, be sure to (1) never use Capture 2E at rates lower than those on the label, and (2) follow a rotation schedule according to the guidelines in Point 4 above.

Written by the High Plains Corn Spider Mite Working Group. Members are: Tom Archer, Texas A&M University, Larry Buschman, Kansas State University, Ed Bynum, Texas A&M University, Jack Campbell, University of Nebraska, Greg Cronholm, Texas A&M University, Gary Hein, University of Nebraska, Randy Higgins, Kansas State University, Jerry Michels, Texas A&M University, Pat Morrison, Texas A&M University, Phil Mulder, Oklahoma State University, Carl Patrick, Texas A&M University, Frank Pearis, Colorado State University, Stan Pilcher, Colorado State University, Frank Schweissing, Colorado State University, Ron Seymour, University of Nebraska, Phil Sloderbeck, Kansas State University, Bob Wright, University of Nebraska
Outlook for winter wheat seed improves

Adequate rainfall in May and June across much of the central and northern Great Plains wheat growing area has eased concerns about a wheat seed shortage for fall planting.

Several factors can affect the supply of quality seed for 1997. While prospects look good, we won’t be sure of the supply of quality seed until harvest is completed and the seed is conditioned and tested. Another unknown affecting supply is the demand for quality seed, especially for varieties adapted to south central and central hard red winter wheat growing areas. These were hit hard by drought and winterkill.

The best way to assure an adequate supply of first-choice varieties is to talk early and often with your source for Nebraska Certified Quality Wheat Seed. Be sure to discuss your wheat seed needs and complementary varieties adapted to your production system.

While exact bushels of quality seed may not be known, it is possible to identify some trends and make projections based on the acres applied for inspection as the first step in the certification process for varietal identity and other quality factors (e.g. germination, weed seeds, etc.).

Each year the Nebraska Crop Improvement Association publishes the Nebraska Wheat Seed Book. This directory includes the names, addresses and phone numbers of seed growers of each wheat variety and the acres eligible to produce certified seed. The 1996 Wheat Seed Book is free and will be available about the third week of July from all Cooperative Extension offices and District Extension Centers or the Nebraska Crop Improvement Association (402-472-1444).

According to the 1996 Wheat Seed Book, about 13,000 total acres representing twenty-six varieties, were enrolled to be field inspected, as the first step in the seed certification process. This is about 1800 acres below the 10-year average.

The top ten wheat varieties in seed acres applied for are Arapahoe (3273), Niobrara (2701), Ike (952), Vista (907), Alliance (783), Centura (745), Karl 92 (738), Pronghorn (436), Siouxland (397) and Nekota (364). Varieties with under 350 acres of seed under production are Buckskin, Coronado, Jagger, Ogallala, and TAM 107. Varieties with under 150 acres of certifiable seed are 2163, Abilene, Akron, Brule, Hickok, Lamar, Laredo, Longhorn, Rawhide, Redland, Scout 66, Thunderbird, Tomahawk, and Vona.

Seed marketers report an average supply of carryover seed for most varieties. It appears seed supply of the most widely grown and well adapted varieties should be adequate. However, some newer varieties — those with limited seed acres or varieties with southern adaptation — could be in short supply.

The selection, quality assurance and placement of wheat seed in the soil are critical first steps to successful wheat production. The use of high quality, genetically pure seed enables variety choices to keep performing at optimum efficiency. On-farm research shows that an average Nebraska wheat grower who saves grain to use as seed without using proper seed quality management procedures can begin to see economical yield reductions in as soon as two years.

Roger Hammons
Associate Manager
Nebraska Crop Improvement Association

Using wipers and bean bars

Wiper applicators are popular for controlling tall weeds in shorter crops. Weeds should be at least 10 inches taller than the crop. Roundup is the preferred herbicide for wiper applications in sorghum and soybeans. Use a concentration of 33% Roundup in water to control broadleaf and grass weeds. Shattercane and volunteer corn are very susceptible to Roundup.

Roundup is less effective against broadleaf weeds than grasses. Sunflower and pigweed control is usually good but velvetleaf is not readily controlled. Dense weed stands make good herbicide coverage difficult with a wiper. Two passes in opposite directions will be required for good control.

Bean bars have become quite popular for controlling weed escapes in soybeans. Weeds need not be taller than the crop since they are individually sprayed with hand held spray nozzles. Roundup is registered at a 5% concentration for straight stream nozzles and a 2% concentration for spreading nozzles.

Some crop damage occurs with Roundup in a bean bar since spray droplets contact the crop. Growers have searched for treatments that are safer to soybeans than Roundup. Using Assure, Basagran, Blazer, Classic, Fusilade, Pinnacle and Post in bean bars provides weed control with less crop injury than Roundup. These herbicides are generally mixed at the per acre rate of herbicide and surfactants in 25 gallons of water. Be certain you heed the preharvest interval when using these treatments.

John McNamara
Extension Assistant, Weed Science
Alex Martin
Extension Weeds Specialist

2,4-D use
(Continued from page 108)

Do not spray grain sorghum with 2,4-D after the boot stage. As in corn, pollination problems and yield reductions result from spraying sorghum during this sensitive period. Between a 12-inch height and boot stage, use a drop extension to direct 2,4-D away from the sorghum whorl. Never use Banvel on grain sorghum after it is 15 inches tall.

John McNamara
Extension Assistant, Weed Science
Alex Martin
Extension Weeds Specialist