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Assess defoliation carefully

Bean leaf beetles feeding in soybeans

Some soybean defoliation is occurring throughout Nebraska. The first generation of bean leaf beetles have been active, along with grasshoppers. (The overwintering beetles we see emerging early in the year are second generation beetles from the previous year.) These two types of insects are causing the most damage, but other defoliators may be present as well, including green clover worms and blister beetles.

Most soybeans are now in flowering and pod set reproductive stages. Soybeans have a lot of leaf area and are quite tolerant of leaf feeding. Generally we rarely recommend treating unless leaf damage approaches 20-25% defoliation. Many people tend to grossly overestimate leaf loss because insects tend to concentrate feeding on the top of the plant where the leaves are younger. Be careful to be objective in your assessment of leaf damage. Bean leaf beetle populations will be dropping rapidly as they mate and lay eggs for the second generation that will feed on leaves and pods in late August-early September.

Remember that if more than eight grasshoppers are found per square yard in field crops, it may be time for a rescue treatment.

At this time of year we usually observe some leaf tearing associated with weather (high winds, small hail) and disease. Minor leaf diseases such as bacterial blight infest lower leaves of soybean, turning the leaves yellow or brownish. The wind will then tear the leaves after they are weakened by the disease. Much of the tearing will occur on the side of the plant that experienced the wind. This injury is often confused with insect feeding damage. Insect feeding usually appears as a clean cut, and disease-weather damage appears as a ragged tearing.

While spider mites are usually found in corn, they can and do damage soybeans. They have been reported attacking soybeans in Buffalo County and other areas where dry conditions have prevailed. Two-spotted spider mites especially will damage soybeans.

Experts have suggested that control may be warranted when infested plants have substantial spotting or leaf yellowing and live mites, but before mites cause browning and leaf drop. Damage from mites may be confused with that caused by drought and several foliar diseases, so be sure to base treatment decisions on the presence of mites, rather than just apparent injury symptoms.

Fields may be spot treated if the infestation is localized, but check other areas for mites (especially downwind of infestation) and extend treatments into these areas if large numbers of mites are found. Lorsban 4E at 1/2 - 1 pint per acre and Dimethoate 400 at 1 pint per acre are labelled for spider mite control on soybeans. Lorsban 4E has a 28-day pre-harvest interval and Dimethoate 400 has a 21-day pre-harvest interval.

In the past, Lorsban 4E has provided acceptable control of spider mites in soybeans, although infestation is possible since the residual may be short-lived. Insecticides do not hurt mite eggs.
Karen DeBoer, Extension Educator in Cheyenne County, reports on this year's wheat harvest:

Only a few winter wheat acres are left to harvest in Cheyenne County. This year's wheat crop was affected by dry conditions until early this spring. Some areas were hard hit by hail and the wheat streak mosaic virus.

Generally growers said yields were lower than last year. The average yield was at or below the county average, 30-35 bu per acre. Lowest yields were 0-5 bushels per acre. Highest yields were 45-50 bushels per acre, but they were rare. Protein levels averaged 12-13% and test weights averaged 60-61 lb/bu.

Most years, Cheyenne County is the leading wheat producing county in the state with more than 200,000 acres of wheat harvested each year.

Carolyn Logue with the Nebraska Wheat Board: Wheat harvest throughout the state appears to be winding down, with reports of dryland yields ranging from 22 to 100 bushels an acre. Reports include test weights up to 62 pounds and protein levels of 8-14.8%.

Preliminary harvest averages for two wheat-growing regions were: southwest Nebraska, test weight, 59.4, and protein, 12.8, and southeast Nebraska, test weight, 58.7, and protein of 12.7. Generally disease pressures had not been significant this year, although wheat mosaic virus developed where wheat was hailed and volunteer wheat developed.

Bob Wright, Extension Entomologist, South Central Research and Extension Center: Spider mites are rapidly increasing in some corn fields. In most cases they are the Banks grass mite though in one field twospotted spider mites were predominant. In some fields, predators such as lacewings, predatory mites, and lady beetles were holding the mites in check.

Western bean cutworm moths are flying and grasshoppers are causing light damage in some milo.

Ralph Anderson, Extension Educator in Buffalo County: It's so dry that... We have not had a year with less rainfall between June 1 and July 28 since records were started here in 1931. This year we had 1.71 inches (and .94 of that came June 3) as compared to 6.5 inches mean. We're dry!

Paul Hay, Extension Educator in Gage County: Don’t eat the mushroom! A local woman was walking with a friend and decided to sample a nice fresh-looking white mushroom. She ended up in the hospital for 24 hours and was lucky the poisonous mushroom was not deadly.

Highlights from the Kansas Insect Survey Report of July 25 from the Plant Protection and Weed Control Section, Kansas Department of Agriculture:

Egg laying by southwestern and European corn borers is well underway. Leafhoppers continue to cause problems in seedling alfalfa. Greenbugs are becoming more common in milo.

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

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202 Plant Industry Bldg.
Lincoln, NE 68583-0816

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

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

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

Crisis measures combat effects of heat

How dry is dry and what kinds of emergency measures are necessary for the state's agriculture? These were among the questions addressed by the Governor's Climate Assessment and Response Committee (CARC) Monday. Following is a synopsis of the group's discussion.

Pastures across the western two-thirds of the state have deteriorated to the point that producers are seeking emergency hay sources, including pastures in surrounding states.

Emergency roadside haying

Last week Gov. Nelson approved emergency roadside haying along state highways for specific counties. The emergency haying will cost $5 per mile on regular highways, $10 per mile on non-interstate four-lane highways, and $20 per mile on interstate highways. No median hay will be sold. The availability period begins July 28 and cutting must be completed by Sept. 10. A farmer/rancher/livestock owner may buy a minimum of one mile and a maximum of five miles. Only one side of the highway will be released at this time to leave adequate cover for pheasants. After August 11, if hay is still available, producers may buy an additional one to five miles of hay land.

Emergency haying is provided for these counties: Adams, Buffalo, Chase, Custer, Dawson, Dundy, Franklin, Frontier, Furnas, Hall, Harlan, Hayes, Hitchcock, Howard, Keith, Lincoln, Gosper, Kearney, Perkins, Phelps, Red Willow, Sherman, and Webster. As of earlier this week, 78 permits had been issued for 350 miles of roadside haying. Usually emergency haying receives a lukewarm response because of the low quality of the forage along roadsides; however this kind of response indicates the critical need for pasture in these counties.

(Continued on page 146)

How high temperatures affect pollination

Many areas of Nebraska are experiencing hot dry weather. As the temperature soars into the 90s and above with tasseling in progress, producers should be concerned about pollen viability and silk receptivity.

Pollination is a critical period for corn development, and heat and drought stress can affect it in several ways.

Pollen shed occurs over a two-week period. Silks must emerge and be fertilized for kernels to develop. Silks grow about 1 to 1.5 inches a day and will continue to elongate until fertilized. Temperatures greater than 95 F with low relative humidity will desiccate exposed silks but not greatly impact silk elongation rates.

Pollen is killed by temperatures in the mid 90s or greater especially with low relative humidity, but fortunately, pollen shed usually occurs from early to mid-morning when temperatures are lower. Fresh pollen is available every morning until pollen shed is complete.

Drought stress slows silk elongation rates but accelerates pollen shed. This can result in pollen shed occurring before silk emergence. Any stress such as inadequate water, low soil fertility, or a too dense seed population can delay silking two or more weeks, reducing seed set if pollen is not available. This is potentially a major problem although I have not heard of it happening often. The fact that pollen from one plant in ten is sufficient to pollinate a field provides a degree of compensation and improves the opportunity for fertilization in stressful environments.

The bottom line is that high temperatures will not severely stress corn if soil moisture is adequate. Irrigators in Nebraska have some control over this. Obviously farmers don't have to be told to keep up with irrigation at this time of year. It is one of the best ways to reduce the impacts of high temperatures on corn pollination and fertilization.

Rain-fed fields are more of a concern. Drought stress with high temperatures at pollination and silking can have serious effects. If the current hot, dry conditions continue, I would expect to see major differences among fields based on management practices and hybrids.

Practices that conserved soil moisture this spring or last year, such as no-till or reduced till, will improve a crop's performance during drought. Early-season hybrids probably will do better than other hybrids if pollination occurred before temperatures soared or moisture reserves were depleted. Full-season hybrids with good stress tolerance may do better than others with less stress tolerance.

Roger W. Elmore, Extension Cropping Systems Specialist South Central Research and Extension Center
Emergency measures (Continued from page 145)

The CARC recommended that the following additional counties be included in the program: Antelope, Boone, Boyd, Cedar, Colfax, Cuming, Dakota, Dixon, Dodge, Garfield, Greeley, Holt, Knox, Madison, Nance, Pierce, Platte, Stanton, Valley, Washington, Wayne and Wheeler counties. Check with individual county offices for action on this recommendation.

Emergency CRP grazing

The following counties have been granted emergency grazing and haying rights on CRP acreage: Antelope, Banner, Boone, Boyd, Buffalo, Cedar, Dakota, Dawson, Dixon, Dundy, Franklin, Frontier, Gage, Gosper, Harlan, Hitchcock, Hayes, Knox, Madison, Pierce, Red Willow, Sherman and Wayne. Additional counties have started the process to be granted emergency status. If the dry trend continues, many more counties will likely be added to the list of eligible counties.

A producer may not sell hay harvested from CRP acreage. However, the land can be rented to livestock producers who have operations within the eligible county. There will be a 25% reduction in CRP payments if the acreage is cut for hay. Only 50% of any landowner’s CRP acreage can be cut and cutting must be completed by August 31. State and federal officials have requested that the eligible acreage be increased to 75% to 80%, however this has not been approved yet. There will be a 5% reduction for CRP payments for each 30-day period the acreage is grazed. Acreage is eligible through September 30.

FSA emergency loans

As of July 21, 55 counties were eligible for FSA emergency loan assistance, with 16 declared primary counties, and 39 designated contiguous counties. Producers should contact their local FSA office for further information concerning CRP emergency haying and FSA emergency loan assistance questions.

Crop stress

Stress conditions are beginning to show on a considerable amount of the rainfed acreage. As of July 27, 61% of the producers across the state were reporting their topsoil as either short or critically short of moisture. Fifty-seven percent of the producers reported that their subsoil moisture reserves were either short or critically short. The condition of the rainfed corn and soybean crop is showing rapid deterioration. Only 46% of the rainfed corn crop and 62% of the soybean crop is rated as good to excellent. This compares to July 22 ratings of 63% for corn and 75% for soybeans.

Although last week’s rains were welcome, only a few locations received more than one inch. The heaviest precipitation fell along the southern tier of counties of southeast Nebraska and spotty locations along the eastern and northern border of the state. Most areas of central and south central Nebraska have failed to receive any measurable precipitation during the last three weeks.

Except for the southeast, northeast, and southern Nebraska Panhandle, growing season precipitation is 40-70% of normal. No significant precipitation events are forecast for the next week and it is very likely that substantial yield reductions will result. In addition, above normal to much above normal temperatures are expected for this weekend.

Irrigation and town water supplies are starting to concern local officials. Some towns are down to one well and have requested that citizens voluntarily cut back on excessive water use. If dry weather continues, more restrictive measures may be undertaken. Irrigation has been shut off to those producers who have not installed pumping meters in the area from the Lake McConaughy dam to the mouth of the Loup river. Elwood reservoir will shut down water deliveries after August 15.

Water releases from the Missouri River will continue to be above normal through this fall. Heavy rains have fallen over North and South Dakota during the last three weeks and there is little reservoir storage space available to handle the excess runoff. Minor lowland flooding can be expected along the Missouri south of Gavins Point dam. If above normal precipitation returns to eastern Nebraska, major flooding will be a distinct possibility.

CARC will meet August 5 to discuss whether increased action is warranted, especially if above normal temperatures and below normal precipitation occur. CARC anticipates that additional counties could be included in the roadside haying program and that some modifications of the current program may be needed.

Al Dutcher
State Climatologist
Agricultural Meteorology
Got spider mites? Get the answers

Following is an excerpt from an E-mail discussion on the escalating spider mite situation in central Nebraska. The interchange is between Gary Hall, Extension Educator in Phelps and Gosper counties, and Bob Wright, Extension Entomologist at the South Central Research and Education Center. Ron Seymour, Extension Assistant for Integrated Pest Management at the West Central Research and Extension Center adds a postscript on beneficial insects. (See the July 25 CropWatch for a more detailed story on spider mites, including scouting and treatment recommendations.)

Hall: We have been spraying spider mites since last week. Has anyone else had spider mite problems yet or are we just lucky? I would like to know how fast they can become a problem. What do you recommend for control?

Wright: For effective control, spider mites must contact the miticide. Since mites are found primarily on the underside of the leaves, they are difficult to reach with low volume applications. Using three or more gallons of water per acre to carry miticides may increase effectiveness. Aerial applications are generally more effective if applied in the early morning or late evening. Applications made at these times avoid the upward movement of sprays on hot rising air, away from the plants.

Eggs are difficult to kill with miticides, so reinestation is likely to occur seven to 10 days after treatment as a result of egg hatching. The reinestation is frequently heavy because natural enemies have been reduced or eliminated. A second application may be necessary to kill newly hatched mites before they mature and deposit more eggs.

In many cases, especially with the twospotted spider mite, slowing the rate of population increase is all that can be accomplished with a miticide application. For an economic injury level table, see NebGuide 1167, Spider Mite Management in Corn and Soybeans.

The only products likely to give adequate control are Capture or Comite. If you have Banks grass mite, products containing dimethoate (Cygon) also would be an option.

Hall: Can we last for two weeks when the corn dents and avoid spraying?

Wright: Yes, research has shown that corn is unlikely to benefit from treatment for either the Banks grass mite or the twospotted spider mite after the dent stage.

Hall: Will the populations slow down with cool weather?

Wright: Yes.

Hall: How fast do they multiply when weather is hot and dry?

Wright: Mite eggs usually hatch in about three or four days. Young mites resemble the adults, and increase in size by periodically shedding their skins. It takes about five to 10 days after hatching (depending on the temperature) before mites are mature and begin to produce eggs. All stages of mites may be present at the same time, and there may be seven to 10 generations during the growing season.

Hall: How do they spread into the field?

Wright: Although mites may occasionally overwinter in crop residues, Banks grass mites primarily overwinter in the crowns of winter wheat and native grasses and twospotted spider mites primarily overwinter in alfalfa and other broadleaf plants bordering the fields. In the spring or summer,

Common bunt reported in harvested wheat

Common bunt or stinking smut is showing up in a few grain samples of harvested wheat. The problem is not widespread but a few elevators have rejected grain from fields where the disease occurred. In the harvested grain bunted kernels are dull gray and are filled with black powdery smut spores. Contaminated grain has a pungent odor of decaying fish, making it an easy disease to identify.

Although bunted grain is not toxic, livestock often refuse to eat it because of the strong odor and low palatability. If the bunted wheat is blended with corn, it can be fed.

Seed harvested from bunt-contaminated fields should not be used to plant fields this fall. Even the healthy nonbunted kernels may have bunt spores clinging to the seed coat. Planting these seeds could carry common bunt to the 1998 wheat crop. As a precaution treat wheat seed with a fungicide containing hexachlorobenzene (HCB), pentachloronitrobenzene (PCNB), carboxin (Vitavax) or difenoconazole (Dividend) to control both soil- and seed-borne inoculum. The best preventative is to plant cleaned/fungicide-treated seed harvested from common bunt-free fields.

Extension Circular, Diseases Affecting Grain and Seed Quality in Wheat, EC97-1874, contains additional information on common bunt and other diseases that affect grain and seed quality. It is available at local extension offices.

John Watkins
Extension Plant Pathologist

(Continued on page 148)
Spider mites
(Continued from page 145)
mites crawl or are carried by wind to corn or soybean fields where they deposit small, round, pearly-white eggs on the underside of the leaves. Early mite reproduction and damage often appears first on the south and west edges of fields due to the prevailing wind direction, but infestations also may arise in “hot” spots scattered throughout the field.

Hall: If the edge of the field is sprayed, will that stop the spread of the mites into the rest of the field?

Wright: It depends on the extent to which they were restricted to the border to start with; but generally, spraying the field edges can be effective if it is done before spider mites have dispersed throughout the field.

Seymour: It’s important to recognize the predators that feed on spider mites. The most important ones include the fallacis mite, the mite destroyer beetle and the six-spotted thrips. If these predators are abundant, they will eventually provide relief from spider mite infestations. See NebGuide G93-1167 for photos and descriptions of these beneficial organisms.

The hot weather and previous insecticide application have caused problems with spider mites this year. Spider mites develop faster than the predators during hot, dry weather. This results in increasing mite populations, which the predators can not keep up with. Insecticide application for pests such as first generation European corn borer can be particularly hard on the predators in field corn. The insecticide applications may have killed all of the predators and none of the pest mites. This sets up a mite outbreak that can only be solved with a pesticide application.

Heat safety
(Continued from page 146)
cool the body if it evaporates. During high-humidity conditions, sweat can’t evaporate and instead just drips off the skin without removing heat. At about 70% humidity, sweating is ineffective in cooling the body. A highly humid, but mildly warm, day can be more stressful than a hot, dry day.

A working adult can produce about 2 quarts of sweat per hour for short periods, and as much as 15 quarts in one day, but the body can absorb only about 1.5 quarts of water every hour. People can’t drink enough water to keep up with sweating. In hot and humid conditions a person can become so dehydrated it is impossible to catch up with fluid losses.

When working in hot weather, drink 8 ounces of water every 20 minutes. Don’t try to catch up by drinking extra water later — the stomach can’t handle the extra fluid. Instead, drink extra water before starting work. Cool water is easier for the stomach to absorb.

It’s a bad idea to drink coffee, tea or alcohol when overheated, since they act as diuretics.

Robert Grisso
Extension Engineer

European corn borers
When is treatment cost effective? Let our worksheets on the web do the calculating for you. Check them out at http://www.ianr.unl.edu/ianr/pubs/crborer/comborer.htm

The next Crop Watch will be Aug. 15.

Panhandle day
to feature beef and irrigation research, new technologies

The University of Nebraska Panhandle Research and Extension Center Field Day will focus on new technology available to farmers. This field day is of particular interest to farmers producing crops under irrigation but this year we also will have a program for beef cattle producers.

Dr. Ivan Rush will conduct a demonstration of the use of the fistulated steer in his nutrition research and a discussion of the effect of energy sources on fiber digestion. He also plans to discuss the results of his study adding dry beans to cattle rations.

Other technology tour stops include a demonstration of a European designed disengaging plow packer, a tractor tire flotation implement and a look at in-canopy sprinkler operations.

There also will be a discussion of post-harvest management of grass seed crops, a comparison of herbicides for new seedling alfalfa and an update on wheat curl mite research.

Field Day tours begin at 9 a.m. Thursday morning at the University of Nebraska Complex one mile north of Scottsbluff on Hwy. 71. University specialists from the Panhandle Research and Extension Center will conduct the tours.

An optional program has been added for the afternoon. Focus on Alfalfa, an alfalfa management demonstration, will be conducted by the Scottsbluff/Morrill Extension Educators. It begins at 1 p.m.

Stan Haas, Communications Specialist, Panhandle Research and Extension Center
Assess and address wheat fertility needs now

Nitrogen and phosphorus are the two nutrients that usually provide the most economical return to producers of winter wheat in Nebraska. Many of the wheat producing soils in southeastern Nebraska are becoming very acid (low soil pH values). Lime should be considered at least an eight-year investment on these soils.

How much lime, nitrogen and phosphorus should be applied for wheat? The most effective way to learn how much is to soil test. In most situations, the top 8 inches of soil is tested to determine the availability of phosphorus to plants and the need for lime. Testing for nitrogen is another matter. Depending on the previous cropping history, it may be beneficial to take representative samples of the subsoil to depths of at least 3 feet to determine residual nitrate-nitrogen. Field research on non-irrigated wheat has shown that wheat will use moisture from at least the 6-foot soil depth. If nitrate-nitrogen is in the lower soil depths, wheat can accumulate excess nitrogen resulting in severe lodging. It’s important to know the soil’s nitrate-nitrogen status to avoid applying more nitrogen than is actually needed.

Applying excess phosphorus probably will not reduce yield, and unless there is severe erosion the excess phosphorus will remain in the soil for future use. However, there would be a short-term economic loss for interest on “prepaying” for the fertilizer.

How should soil samples be taken and how often? Unless producers are involved with grid sampling, the best approach is to sample fields based on soil types (soils with similar characteristics). Take samples from at least 10 different areas and preferably not more than 40 acres per sample area.

For deep samples for nitrate-nitrogen take at least six sample areas. Composite the soil from the different areas into one sample, however, it is better to keep the different depths separate. That is, 0-8 inches, 8 to 24 and 24 to 36 inches.

Normally, an accurate soil test for pH, organic matter, phosphorus, potassium and zinc should be good for at least three years. Soil nitrate is usually tested annually with grain crops. Normally, testing soil for accumulated nitrate-nitrogen after alfalfa or soybeans is not necessary because both those crops use any available nitrate-nitrogen before fixing atmospheric nitrogen.

When and how to apply the plant nutrients? For best results, aglime should be applied and incorporated before seeding wheat. Phosphorus can be broadcast and incorporated prior to seeding. Research has shown that applying phosphorus with the seed or applying 10-34-0 (ammonium polyphosphate) with anhydrous ammonia through dual placement are efficient methods. Usually, seed (row) and or dual placement provide more efficient phosphorus utilization than broadcast especially on calcareous soils in western Nebraska.

There are several ways to apply nitrogen. Anhydrous ammonia applied prior to wheat seeding is the most economical since nitrogen from anhydrous ammonia is usually less expensive than nitrogen from dry or liquid sources. A split nitrogen application is common. A small amount of nitrogen can be applied in the fall with the balance topdressed in early spring. Dry forms of nitrogen (urea or ammonium nitrate) or nitrogen solution can be used. The nitrogen solutions also can be the herbicide carrier if an early spring weed problem exists.

The bottom line is that most wheat producing soils are usually deficient in phosphorus and soil testing is the best way to determine the economical rate to apply.

Ken Frank, Director
UNL Soil Testing Laboratory

Recycle used vehicle oil

Oil recovered from vehicles is dirty, not useless.

One gallon of used oil can be recycled and refined into 2.5 quarts of lubricating oil. Forty-two gallons of crude oil are required to make the same product.

A 150-horsepower tractor with 18 quarts of oil in its crankcase may receive new oil three to four times a season, about once every 100 hours of use. That equals 13 to 18 gallons of oil that could be recycled.

Throwing used oil in the garbage or pouring it on the ground or down sewers can contaminate groundwater. Sending oil to the dump or applying it on roads to decrease dust is illegal in Nebraska.

The Recycling Directory, available at no cost from the Nebraska Department of Environmental Quality or a local Cooperative Extension office, lists collection center sites. Most will take the oil for free.

Robert Grisso
Extension Engineer
I was in a field of soybeans this week that had at least 15% leaf damage by beetles. I noticed several beetles down by the blossoms and young pods and it appears they are chewing on the newly forming pods. How serious is this right now?

Dennis Kahl, Extension Educator
Seward County

This is a difficult call for several reasons. First, there is pod feeding. Normally leaf feeding by this generation of beetles does not require treatment. Pod feeding, however, is more severe because it may lead to disease entry later on.

Keith J. Jarvi, IPM Extension Assistant, Northeast Research and Extension Center

For data on more emergence dates and maturity classes, consider subscribing to the CropWatch News Service on the web, where crop water use data is updated daily.

Degree day accumulations for wheat, corn, soybeans and sorghum*

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*Growing degree days to maturity for early season (1), mid season (2) and late season (3) crops:
MC = maturity class
Corn: MC1 = 2400; MC2 = 2500; and MC3 = 2750
Wheat: MC1 = 1600; MC2 = 1840; and MC3 = 2000
Soybeans: MC1 = 1950; MC2 = 2360; and MC3 = 2450
Sorghum: MC1 = 2125; MC2 = 2200; and MC3 = 2369

Precipitation (% = percent of average)

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CropWatch News Service on the web, where crop water use data is updated daily.

For data on more emergence dates and maturity classes, consider subscribing to the CropWatch News Service on the web, where crop water use data is updated daily.