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

CROP WATCH

University of Nebraska Cooperative Extension
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Seed selection is the first step to quality wheat

Many of Nebraska's wheat producers had a rough year, getting hit with a triple whammy of severe drought, late frost and higher-than-normal levels of sprouting damage. People who have raised wheat for 40-50 years reported seeing sprouting for the first time. Diseases, including scab and common bunt, also influenced yields. The Nebraska Agricultural Statistics Service estimated average wheat yields at 32 bushels per acre, about 30% below last year.

While production, including seed production, was affected, it does not appear that seed quality for 2005 will be diminished. There's been a thorough clean out of problem seed to achieve a higher quality seed lot, said Steve Knox, manager of the Nebraska Crop Improvement Association. In wheat seed they've tested for certification average germination has been 93%, well above the 85% germination required for certified seed.

That's a good sign for producers in the midst of ordering and planting wheat seed for 2005.

Seed selection

While producers can't control the weather or continuing drought, they can select seed to address potential yield and pest problems. With the "designer seeds" currently available to address a variety of production systems, growers can do a little research and select those seeds best suited to a particular field and farming system, said Knox. He recommends selecting wheat seed that is certified and well suited to the field's soil and moisture conditions, expected disease pressure, and the farming operation. Producers should also consider treating their seed. On-farm wheat trials have shown that buying treated seed or treating it on-farm will pay benefits, especially this year, said Bob Klein, Extension cropping systems specialist.

When selecting seed, there is no single "perfect" variety, but selecting several complementary varieties can help balance potential weaknesses in one variety with the strengths of another variety. This compensation improves the opportunity for yield stability and profitability of the entire wheat production system.

The 2004 Fall Seed Guide, written by UNL Extension crop specialists, recommends four steps for balancing wheat seed selections to reduce risk while trying to achieve maximum yields:

1. Identify your workhorse variety -- one with reliable and proven yield records.
2. Complement production needs and limits. Select varieties with qualities matched to your

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Wheat variety resources

Three key resources from the University of Nebraska Cooperative Extension offer objective, research-based information and field trial data on most of the wheat varieties recommended for Nebraska.

- **Virtual Wheat Tour** -- a Web site at *www.panhandle.unl.edu* with photos, descriptions, and key information on selecting complementary wheat varieties to balance your wheat portfolio. (*see page 185*)
- **Fall Seed Guide 2004 (EC04-103) and the UNL Variety Test Web site** (varietytest.unl.edu), both of which publish the results of this year's University field trials so growers can compare yields under various practices and soil conditions; also includes variety descriptions, certified seed companies; and approved seed conditioners.

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Ag briefs

Soybean aphids linger past expected demise

Soybean aphids still are present in soybean fields and in some instances have continued to increase since last week. As a whole, the later maturing (later planted) fields seem to be bearing the brunt of the increase with more mature fields (R6 or beyond) holding steady or decreasing.

Since soybean aphids were mostly gone by late August 2003, this may indicate that plant maturity has a strong influence on how long aphids will stay. Recent cooler weather with little rainfall has been ideal for aphid buildup.

Many fields had not reached potential economic threshold levels until last week. This means that up until last week, those fields had probably not incurred any yield damage from the aphids. Now, as the beans mature and aphid populations should (we hope) begin declining, it is a very difficult decision regarding treating a field with insecticide. If fields are still in the R5 stage and aphids number 1000 per plant or more, an economic return is still possible but not guaranteed. Either way, the yield effects of treating or not treating will likely not have a major impact this late in the year.

Irrigated beans in the R6 stage likely will not receive a yield response from a treatment at this time and it is highly questionable whether dryland beans (even those under stress) will benefit. Much more information needs to be gathered in Nebraska since these aphids do not act quite the same as in other areas of the soybean belt. Hopefully growers who treated fields have left untreated areas to take yield checks so we will be able to refine our economic thresholds in the coming years.

Keith J. Jarvi
IPM Extension Assistant

Paul Hay, Extension educator based in Gage County: Rains this past week over parts of the county have relieved some stress, milo appears to be moving slowly forward. Lots of callers have suggested that tried to justify being done watering soybeans -- when in most situations, we are not done.

(See the story on page 187 for more on this topic.)

Delroy Hemsath, Extension educator based in Dakota, Dixon, and Thurston counties: The cool conditions have delayed corn development. We need about 800 more GDDs to reach maturity. That seems rather difficult to acheive considering the long range forecast. It has not rained here for five weeks and the crop has pretty well mined out any moisture and some fields are beginning to show moisture stress. The impact of tillage is notable compared to reduced till fields where there was more moisture longer.

Soybeans on the hills are actually turning yellow, likely due to a lack of water and the recent hot temperatures. In addition, these areas will be the first to mature because of poorer soils.

Disease also could have an impact. Corn silage is being harvested for the feedlots. Alfalfa harvest is being completed and the regrowth is going to be rather poor because of the lack of water.

Soybean aphids are still present in some fields but they aren't expected to have much impact on soybean yield based on the development stage.

USDA Nebraska Agricultural Statistics Service: As of Sunday, August 29, **corn** condition declined and rated 2% very poor, 6% poor, 21% fair, 45% good, and 26% excellent, above last year and average. Irrigated fields rated 80% good and excellent while dryland fields were 55%. This compares to 76% and 10%, respectively, a year ago. Ninety-two percent of the acreage had reached the dough stage

Soybean condition declined and rated 3% very poor, 11% poor, 27% fair, 46% good, and 13% excellent, still well above last year and average. Fourteen percent of the acreage was turning color, ahead of last year at 12% but behind average at 20%.

Sorghum condition declined and rated 2% very poor, 11% poor, 41% fair, 39% good, and 7% excellent, still well above last year and average.

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

Wheat selection *(Continued from page 183)*

production system and pest pressures.

3. Complement with a range of maturities. Select varieties that mature both before and after your workhorse to allow for non-normal years.

4. Complement with different genetics. Select varieties with 50% or less similar parentage to the workhorse variety and to each other. Varieties with similar genetic backgrounds often can be susceptible to the same disease and production risks.

Why should you pay attention to the PVP logo on your seed label?

Because it's the law. It's as simple as that, although that's really not the "big picture" for producers who receive the benefits of years of research and development when they buy PVP seed.

The Plant Variety Protection (PVP) Act requires that protected seed not be sold except through an authorized dealer. Seed saved from last year's PVP crop can only be planted by the producer who originally purchased it. That means you can't cash in on the hard work of the company who developed the seed, even to help a neighbor running short of seed.

It can take up to 10 years to develop an enhanced seed line and companies will be less interested in pursuing this work if they can't get a return for their investment, said Steve Knox, manager of the Nebraska Crop Improvement Association. He said to expect companies and agencies to become more aggressive about reporting and prosecuting infringements.

Contact the Department of Agriculture at 402-471-2394 for more information about your rights and responsibilities. The department is responsible for enforcing the PVP Act.

Not surprisingly, a panel of UNL crop production specialists said yield was the first factor to consider when selecting a variety to meet one of the four criteria for building a balanced selection. Compare yields from both public and seed company results for fields and conditions similar to yours and do a little research to see how the variety has performed under different conditions and pest pressures in the past. To balance the workhorse variety, consider adding smaller fields of one or two of the newer varieties which offer a variety of attributes. Often three to five years of research data is available for these, starting from before they were released.

While complementation is a proven strategy, University trials also are testing wheat blends to see how they perform under various conditions. Next year will be the second year of the trial (see the Aug. 27 *CropWatch*).

Increasingly, producers are managing for higher yields and occasionally that may mean they select a variety with some susceptibility to a specific disease, Knox said. In many years, that disease may not be a problem in their area, but they need to be prepared to treat for it if necessary.

Lisa Jasa, CropWatch Editor

Seeding rate tips

A new Cooperative Extension NebGuide, *Seeding Rates for Winter Wheat in Nebraska (G04-1543)*, is an excellent resource for determining the rate and calibrating the drill for effective wheat planting. Get it at local Extension offices.

Increased wheat acres under irrigation

According to the Nebraska Agricultural Statistics Service, the number of acres of irrigated wheat continues to increase, now representing about 10% of the crop. In 1994 about 83,000 acres or 4% of the wheat crop was irrigated. A decade later, in 2003, approximately 10% of the crop or 195,000 acres was under irrigated production. In 2003, 45% of the irrigated wheat was in the Panhandle and 35% was in the southwest district.

Take *Virtual Wheat Variety Tour* and compare yields, quality

Wheat variety tours are held every summer throughout Nebraska to allow wheat growers to see, compare, and learn about the many winter wheat varieties available to them, and to get an early glimpse of new experimental lines. For those unable to attend the tours, or just as a means of refreshing your memory, we have developed the **Wheat Varieties Virtual Tour** Web site at *www.panhandle.unl.edu.*

Virtual tourists can see a list of wheat varieties recommended for their part of the state, read about a variety's characteristics and compare those characteristics to other varieties of interest. Tourists also can see how different varieties performed in nearby wheat variety trials and locate a certified seed dealer that carries the varieties they are most interested in buying.

The selection of adapted and complimentary varieties is one of the most important decisions a wheat grower will make for this season. Be sure you make an informed decision by visiting the *Wheat Varieties Virtual Tour* web site today.

Drew Lyon, Extension Dryland Crops Specialist, Panhandle REC, Scottsbluff

Scheduling the last irrigation

Don't stop too soon with soybeans

With crop development behind normal in several areas of the state, it will be important to plan irrigations, including the last irrigation, according to the crop's needs rather than by the date on the calendar.

By this point in the season in many years, corn irrigation may be winding down or ending, while soybean irrigation should likely still be underway for several weeks. Remember that the peak moisture needs for soybean usually follow those of corn by about three weeks.

Most of the soybean crop's water needs are during pod fill. To achieve the greatest yield, irrigation should be scheduled to meet this need. Often producers are surprised at how many inches of water are needed to finish out the soybean crop. Shutting off too early reduces bean size, greatly reducing yield. Use this worksheet to determine timing of the last irrigation.

Soybeans may seem like they are shutting down when they start turning yellow, but they still need about two inches of water to reach maturity.

Scheduling the last irrigation

In many areas of the state corn farmers are in the midst of picking up pipe or eagerly preparing for the last irrigation. In southeast Nebraska, however, where rains have been limited or anywhere soybeans were planted late, irrigation may need to continue.

Determining when to apply the last irrigation for the season is an important water management decision for any crop. While shutting off too early could potentially reduce yield, running later than necessary reduces room for storing off-season precipitation, increases the potential for leaching nitrogen, and adds to production costs. Balancing between the two requires knowledge of how much water is available in the root zone and how much more water the crop will need to reach physiological maturity.

Water requirements to reach maturity depend on the crop and growth stage. *Table 1 (page 188)* gives the approximate number of days to maturity and estimated water use "typical" for south central Nebraska for various growth stages of corn, grain sorghum and soybeans. Especially note that even though soybeans may seem like they are shutting down when they start turning yellow, they still need about two inches of water to reach maturity.

The last irrigation usually can be applied two to four weeks before physiological maturity, depending on the water holding capacity of the soil (*Table 2*). This will leave room in the soil moisture reservoir for storing off-season precipitation. Typically, 60% of the available moisture in the top four feet of the root zone can be depleted at crop maturity without reducing grain yield. *Table 2* gives the minimum

(Continued on page 188)

Worksheet to determine last irrigation

Field _____

Crop _____

Soil type _____

Date _____

Present stage of growth _____

1. Water need to reach crop maturity, in inches (from *Table 1*, page 187) _____
2. Current soil water balance, in inches (estimated in field) _____
3. Minimum allowable balance, in inches (from *Table 2*, page 187) _____
4. Remaining usable moisture in inches (*Line 2* minus *Line 3*) _____
5. Irrigation requirement assuming no rainfall, in inches (*Line 1* minus *Line 4*) _____

Note: If *Line 4* is greater than or equal to *Line 1*, another irrigation is **not** needed.

Irrigation *(Continued from page 187)*

allowable balance for common soil textures.

Producers should monitor soil moisture to determine if another irrigation is needed. The current soil water status in the crop root zone can be measured or estimated "by feel" and the remaining usable moisture in the root zone can be calculated by subtracting the minimum allowable balance (*see worksheet*). The need for additional irrigation can be determined if you know the predicted water requirement to reach maturity and the remaining usable moisture.

For more information, see NebGuides G84-690, *Estimating Soil Moisture by Appearance and Feel,* and G82-602, *Predicting the Last Irrigation for Corn, Grain Sorghum and Soybeans.* Also, check the *CropWatch Weather page* at *cropwatch.unl.edu/weather.htm* for GDD accumulations and crop water use.

Paul Jasa
Extension Engineer

Table 1. Normal water requirements for corn, grain sorghum, and soybeans between various stages of growth and maturity.

Crop growth stage	Approximate days to maturity	Water use to maturity (inches)
Corn		
Beginning dent	24	5.0
Full dent	13	2.5
Black layer	0	0.0
Grain sorghum		
Soft dough	23	5.0
Hard dough	12	2.0
Black layer	0	0.0
Soybeans		
Beginning seed fill	29	6.5
Full seed fill	18	3.5
Leaves begin to yellow	10	1.9
Beginning maturity	0	0.0

Table 2. Available water capacity for various soil types and minimum allowable balances at physiological maturity.

Soil type	Available water capacity (inches/foot)	Minimum allowable balance in top 4 feet of soil profile* (inches)
Silty clay loam	1.6	2.6
Upland silt loam	2.0	3.2
Bottomland silt loam	2.5	4.0
Very fine sandy loam	1.8	2.9
Sandy loam	1.4	2.2
Fine sands	1.0	1.6

*Based on depletion of 60% of the available water.

Distance ed classes target ag science

Four University of Nebraska-Lincoln online classes and workshops offered this fall through the Department of Agronomy and Horticulture will focus on crop and weed genetics, pesticide resistance, and plant breeding. The classes will be taught by UNL faculty.

For more information about these classes visit the Department of Agronomy and Horticulture's Web site at *http://agronomy.unl.edu/distance_ed/*

Upcoming classes

Sept. 27 - Nov. 2, Germplasm and Genes, taught online by Stephen Baenziger, UNL plant breeder, covers crop diversity, modern biotechnology and its ability to move genes from one species to another, genetic variation, the origin of crops and how crop ancestors have co-evolved with many crop diseases and pests.

Oct. 25 - Dec. 11, Crop and Weed Genetics, taught online by Don Lee, UNL plant geneticist, and Deana Namuth, a distance education senior lecturer; covers the genetic basis for variation among crop varieties or weed populations.

Nov. 4 - Dec. 11, Cross-Pollinated Crop Breeding, taught online by Baenziger; covers breeding methods and theories of improving cross-pollinated or self-pollinated crops that are forced to cross-pollinate.

Dec. 8-9, Pesticide Resistance Management, two-day workshop on UNL East Campus, taught by Alex Martin, UNL weed scientist; Loren Giesler, UNL plant pathologist; Blair Siegfred, UNL entomologist; and Tom Hunt, UNL entomologist; covers resistance of crop insect pests, pathogens and weeds to pesticides and other management techniques and the evolutionary biology, genetic and pest biology principles underpinning pest resistance and management.

Inspect and prepare bins prior to harvest rush

Most grain harvested in Nebraska goes into the combine hopper as number one grade, but that can change considerably during the storage process. The best we can hope for is to maintain the quality of grain that we currently have at any point in time. Once grain quality is lost, it is lost forever and nothing can be done to improve it.

Following are some tips on preparing grain bins and equipment to help you maintain all the value you put in storage. Most farmers with on-farm grain drying systems will begin harvest when grain moisture content is in the low 20s. There is some risk in binning high moisture grain. A bin of 21% moisture corn with a starting temperature of 75°F, can lose a market grade in only three days if the aeration system breaks down. To reduce the risk of a breakdown after you have filled the bin, always check electrical systems for corroded connections and frayed wiring before harvest. Mice like to nest inside electrical boxes where they are safe from predators. They will strip insulation from wires for nesting material and their urine causes corrosion. While inspecting control boxes, be sure to seal any openings where mice could get in.

If you anticipate carrying grain into the summer months, a residual chemical treatment may be applied to bin surfaces after empty bins have been thoroughly cleaned. Be especially careful to treat cracks and seams where insects can hide. Follow label directions carefully. *(See box, below left, for recommended treatments.)*

A bin of 21% moisture corn with a starting temperature of 75°F, can lose a market grade in only three days if the aeration system breaks down.

In Nebraska, our grain is free of insects at harvest but it can become infested by insects living in old grain that is left over in storage bins and harvesting and handling equipment. It is essential to clean bins and equipment before harvest. Use brooms and shop vacuums to clean the grain and grain dust from walls, floors, cracks and seams in the combine, grain carts, trucks, and in the grain bin at least two weeks prior to harvest. A rule of thumb is, if you can tell what crop was harvested or stored before, it isn't clean enough.

Two factors under a farmer's control can have a direct bearing on the quality of grain coming out of storage: moisture content and temperature of the grain in storage.

Your goal should be to dry corn to 15%, sorghum to 13.5%, and soybeans to 13% moisture content then cool to 50-55°F as soon as possible after harvest to reduce degradation in quality.

The time required to dry grain depends on: the initial moisture content of the grain, the airflow rate (cubic feet per minute per bushel, cfm/bu), the humidity and temperature of the incoming air and the heat rise if using a heated air drying system.

For batch-in-bin drying, the depth of grain to put into the bin for drying should vary according to the initial moisture content of the grain. Shallower grain depths create less resistance to airflow (static pressure). When the static pressure is lower, the fan can produce greater total air flow (cfm). Greater airflow moving through fewer bushels in the bin results in much greater cfm/bu. The absolute minimum recommended airflow rates for natural air drying of corn would be 2 cfm/bu for 23%, 1 cfm/bu for 21%, and 0.5 cfm/bu for 18% moisture.

(Continued on page 189)

Bin treatments

Residual empty-bin treatments labeled in Nebraska include:

Chemical insecticides for wheat and feedgrains: Malathion, cyfluthrin (Tempo), chlorpyrifos-methyl + cyfluthrin (Storcide), pyrethrins (many brand names), permethrin (Hard Hitter), piperonyl butoxide mixed with pyrethrins (many brand names and several different concentrations of active ingredient). Pirimiphos-methyl (Actellic) is registered for empty bin treatment for corn and grain sorghum only.

Natural products for wheat and feedgrains: Silicon dioxide (diatomaceous earth under many brand names), silica gel (several brand names), Bacillus thuringiensis (BT) subsp. kurstaki (many brands).

Soybean Storage: Silicon dioxide products, BT products, and Tempo Ultra (commercial applicators only) are labeled for empty bin treatment prior to storing soybeans.

Note: *Mention of brand names is for clarification only. Other products containing these active ingredients are being marketed as well. No endorsement by the University of Nebraska is intended or implied.*

Bins *(Continued from page 188)*

If you are using natural air to dry grain in the bin, run the fan continuously, rain or shine, until the moisture content is within two percentage points of the final goal and the grain temperature is under 50°F. Once you have reached that point *and if you can closely monitor grain temperature,* you may switch to intermittent fan operation and operate when the humidity and air temperature will allow additional drying (*Table 1*).

Tom Dorn, Extension Educator

Table 1. Equilibrium moisture values. Moisture content (% wet basis) for crops exposed to air at various temperatures and relative humidities.

	Relative Humidity							
Temp	20%		40%		60%		80 %	
(F°)	C	SB	C	SB	C	SB	C	SB
40	9.2	4.6	11.9	8.1	14.5	11.5	17.9	16.0
50	8.5	4.2	11.2	7.8	13.8	11.2	17.3	15.7
60	7.9	3.9	10.6	7.5	13.3	11.0	16.8	15.4
70	7.3	3.6	10.0	7.2	12.7	10.7	16.3	15.2
80	6.7	3.3	9.6	6.9	12.3	10.4	15.9	15.0

C = shelled yellow dent corn; SB = soybeans

Cool temperatures delay corn; yields likely affected

Temperatures warmed some this week following an extended period of cool, cloudy conditions that left corn lagging one to two weeks behind normal development. Limited or nonexistant precipitation in many areas caused field conditions to decline and there were reports of dryland crops showing stress.

"Last year we showed that very hot and dry weather with irrigation can produce excellent yields on corn," said Roger Elmore, Extension crops specialist, because corn likes it hot.

This year some corn is tipping back due to the cooler conditions and yields will be affected.

Tipping back reduces the number of kernels per ear. A reduction from 18 to 16 rows of kernels per ear will result in an 11% reduction in kernel numbers per ear. Ears that tip back one-half to three-quarters of an inch also will have an 11% reduction in kernels per ear.

"This tip back would amount to three to four kernels per row on an ear," Elmore said. "I would not be surprised to see irrigated yields up to 10% less than those we saw last year in south central Nebraska. Yields, though, will still range above average because this was such a great production year."

Elmore said the Hybrid-Maize Simulation Model, a new software product developed by the UNL Department of Agronomy and Horticulture, supports these conclusions at Clay Center. Yield projections there for 2004 were 12% below those of last year and 4% above average. This trend was true in 3 of the 11 sites simulated. The other site simulations show that projected yields in 2004 are greater than those of 2003. (For information on the Hybrid-Maize software, see the Aug. 13 *CropWatch.*)

"We aren't going to see horrible yields, but irrigated corn crops may not be as good as last year," he said. "Dryland corn is a different story. The state had a good spring and an early summer that set us up for good ear sizes. However, the late-season drought we've experienced in some areas may hasten maturity and reduce yields."

Bob Klein, cropping system specialist at the university's West Central Research and Extension Center at North Platte, reported that crops there aren't too far behind average development. A more pressing issue in that area is drought and the lack of surface water for irrigation. Also, producers in southwest and west central Nebraska who had to replant corn after a May 14 frost may not have a long enough season.

"That corn is quite a ways behind normal," Klein said. "If we have an early (fall) frost, we may be in trouble on some of that corn, especially producers who didn't use shorter season corn and/or were unable to replant soon after the freeze."

Recent cloudy, cool weather has not affected soybeans, but the lack of rain has, Klein said. Soybean still needs moisture to finish the season and some fields are showing signs of moisture stress.

With all these delays in plant growth, what are the odds for an early frost? Extension State Climatologist Al Dutcher this week said that recent weather models "continue to show a strong cold push into the United States during the September 7-10 period. Freezing temperatures are projected as far south as southern South Dakota, with Montana, North Dakota and northern Minnesota expecting a killing freeze." The Nebraska Panhandle and northern third of the state would likely be most affected by a shift, he said.

The first freeze in the Panhandle and north central Nebraska typically is in late September or early October, while southeast Nebraska's first freeze usually occurs around October 8, Dutcher said.

Sandi Alswager
IANR Newswriter

Watch for blister beetles in alfalfa for horses

Alfalfa growers need to keep an eye out this summer and early fall for blister beetles, especially if their hay will be fed to horses, University of Nebraska specialists say.

Since blister beetle larvae feed on grasshopper eggs, the last few years' buildup of grasshoppers is causing blister beetle populations to climb to potentially toxic levels in alfalfa through mid-September, said Keith Jarvi, integrated pest management specialist at the university's Northeast Research and Extension Center at Norfolk.

"Many alfalfa fields have quite a few blister beetles," said Bruce Anderson, forage specialist. "When blister beetles end up in hay and are eaten by horses, they can sicken or even kill the horses. If your alfalfa might be fed to horses, take precautions to protect these animals."

Although blister beetles appear in Nebraska alfalfa fields every summer, populations usually aren't high enough to cause problems, Jarvi said. Adult blister beetles rarely are found in first cut or October cut alfalfa, but they can be numerous in late summer, Anderson said. They congregate, or swarm, in small areas of the field and feed on blossoms or leaves if blossoms aren't available.

"Fortunately blister beetles do not travel far, so they usually are not found beyond the first 50 yards of the field margin," Anderson said.

There is no sampling method to detect toxic levels of blister beetles in cured hay, he said. Insecticides like Sevin or Warrior can be used, particularly around field margins, but this increases costs and often kills beneficial insects like honeybees.

Anderson said one of the best ways to reduce blister beetle problems is to mow alfalfa and swath without mechanically conditioning it. Since blister beetles often swarm, a large group can be crushed and killed by rollers used for mechanically conditioning.

"As a horse eats this hay, it may consume more than 100 beetles from a single flake of hay," he said. "However, if a conditioner is not used, the beetles will crawl out of the swath and simply fly away."

Blister beetles produce a chemical -- cantharidin -- to which horses are especially susceptible. Cantharidin remains toxic even in dead beetles, Jarvi said.

Even a small amount can cause discomfort and colic in horses, he said. Small doses can reduce milk production and weight gains of cattle and sheep. In people, a crushed beetle causes blistering of the skin, hence its name.

In horses, cantharidin can cause inflammation, frequent urination, straining, elevated temperature, depression, increases heart rate and respiration, dehydration, sweating and diarrhea.

Since animals can die within 72 hours, it is imperative to contact a veterinarian as soon as blister beetle poisoning is suspected.

Cantharidin concentration varies with the beetle species and sex. In Nebraska, the three striped, gray and black blister beetles are most common, Jarvi said.

The striped blister beetle contains five times more cantharidin than the black blister beetle. It takes more than 120 striped blister beetles to kill a 825-pound horse but 1,700 of the less toxic black blister beetles.

Sandi S. Alswager
IANR News Service

Inoculating and protecting silage

Inoculation. To make good silage, sometimes inoculants are needed to improve fermentation, but determining when they're needed can be a little tricky. Inoculants consistently improve wet silage, especially sorghum silage. If you start chopping early enough to prevent silage from being too dry at the end, inoculants should help. When you begin chopping, grab a handful and squeeze it tightly in your fist. If free juice squeezes from the forage, it is wet enough to benefit from use of an inoculant.

In the past, inoculants rarely improved properly made corn silage, however new inoculants are producing slight improvements.

If you do use an inoculant, make sure it contains live bacteria – at least 100,000 colony forming units per gram of wet forage when applied at the recommended rate.

Plastic protection. A producer invests time and money to produce high quality silage, but can lose a good part of that investment if the silage isn't protected. Even after silage has been chopped, piled and packed correctly, it still can be damaged by air and moisture slowly penetrating the outer 3 to 4 feet. In fact, good silage can lose 15-20% of its feed value from fermentation and spoilage under normal conditions. This loss can be cut in half, or even less.

Cover freshly chopped silage with black plastic immediately after you finish filling the trench, bunker, or pile. Then cover the plastic with something to hold it down. Old tires often are used because they do a good job of keeping the plastic from blowing away, but a tire only keeps the plastic in direct contact with the silage directly under it. In between the tires, air can circulate and cause spoilage. A better choice would be a solid cover, like freshly chopped forage or weeds or a 6-inch layer of manure.

You spend a lot of time and expense to make good silage. Isn't it worth it to spend just a little bit more to protect that investment?

Bruce Anderson
Extension Forage Specialist

Managing alfalfa this fall for a better spring

Last cutting

It's time to plan your last cutting of alfalfa, a decision that will affect winter survival and next spring's vigor.

Alfalfa needs about six weeks of uninterrupted fall growth to become fully winterized. This winterterizing generally begins about three weeks before the average date of first frost. The last harvest can occur anytime before or after winterizing; however, harvest during the winterizing process can be risky, depending on the level of crop stress.

When determining when to take the last irrigation, first cosinder the number of cuts already taken. Fields cut four or five times are more susceptible to winter injury than fields cut three times or less. Also, young stands of winterhardy, disease resistant varieties are less stressed and can be harvested during winterizing with less risk than older stands of disease susceptible varieties that are only moderately winter hardy.

Also consider your need for extra alfalfa or its value as a cash crop. Dairy hay is priced high, so if you cut dairy hay from this final harvest it may be worth the risk of lowering next year's yield. But, stock cow or grinding hay appears plentiful and reasonably priced. So it may be better to buy rather than risk another cutting. And remember, you can cut after winterizing with less risk.

Harvesting alfalfa during its winterizing period is risky, but by reducing total stress, you can control that risk.

Lime applications

Soil pH is one of the first things to check if your alfalfa seedings seem to be getting off to a slow start this fall. Way too often, growers either don't get a soil test or don't apply lime according to what the results would indicate..

Alfalfa grows best in soils with a neutral pH of about 7. When soils are acid, with pH of 6.2 or lower, alfalfa will not grow as well. At a low pH, alfalfa roots are less able to absorb nutrients from soil. The root nodules that convert nitrogen from the air into a form that plants can more readily use can't work as efficiently in an acid soil.

Most sandy, low organic matter soils as well as heavier ground that has been tilled and fertilized with nitrogen for many years have become acid. These soils, which may have a pH as low as 5-5.5, need lime to rectify this problem. It takes time for lime to neutralize much acidity so I recommend applying lime at least four months before planting. That means that if you expect to seed a new field of alfalfa next spring, lime needs to be applied this fall so that it has time to work. The application is an investment, but is less costly than a stand failure or several years of low alfalfa yields.

Irrigation

Irrigation season is winding down for most crops, but not for alfalfa. September is a critical time for irrigating alfalfa. Too much water and alfalfa plants become stimulated and grow rather than becoming dormant. Too little water, though, restricts growth and can limits winterizing.

Keeping the soil moist in fall and winter offers some advantages and can help limit winter desiccation, the most common cause of winter kill. Cold, dry winter winds dry out the soil and plant roots in that soil. When you have moisture in the soil as winter begins, less drying injury will occur. Of course, it also is nice to already have some moisture ready to support next spring's growth.

So, how do you balance too much with too little irrigation? Ideally, seek to have four to five inches of moisture in your soil by Labor Day so that it's available for regrowth after your late August or early September harvest. Then let the plants dry down naturally until winterizing is complete in mid-October or plant tops are fully killed by a hard freeze. Then, if soils are dry, add up to another three inches of water for extra protection from winter drying.

In fields where soils are very tight and absorb water slowly, you might even exceed this three-inch limit by continuing to irrigate until freeze-up to build soil water reserves for next year.

Bruce Anderson
Extension Forage Specialist

Farm Mediation Clinics

The Nebraska Department of Agriculture Farm Mediation Program will host three more clinics this September: Grand Island, Sept. 7; Ainsworth - Sept. 13; and Norfolk - Sept. 14.

The clinics offer individual and confidential information and education on farm finances; the laws, regulations and policies governing Farm Services Agency (FSA); debt restructuring and other legal options; and how the mediation program can help work with lenders to find an agreeable and workable solution. The Farm Hotline (1-800-464-0258) must be contacted to make an appointment and to learn the clinic location in the town where individuals wish to make an appointment.

The contact for the Farm Mediation program at the Nebraska Department of Agriculture is Marian Beethe (402-471-6890) or marianjb@agr.state.ne.us

Events calendar

Information about these events is available in this and previous issues of *CropWatch* or on the Web at *cropwatch.unl.edu*

September

- **Sorghum Hybrid Test Plot Field Day,** September 8, near Ruskin. *(see below)*
- **West Central Research and Extension Center Centennial Celebration,** September 17, North Platte
- **Land Application of Manure Workshop,** September 20, Neligh *(story at right)*

October

- **Land Application of Manure Workshop,** October 7, Ohiowa *(see story at right)*
- **Land Application of Manure Workshop,** *October* 27, *West Point (see story at right)*

Manure land application training meets permit requirements

Getting the most from an often undervalued farm resource -- manure -- is the topic of three land application workshops being hosted by the University of Nebraska Cooperative Extension this fall.

The classes will be taught by Extension specialists and educators and cover how to:

1) get the greatest economic value from a farm's manure resources,

2) assure compliance with state and federal regulations, and

3) use worksheets and software to simplify planning and record keeping.

The programs will help livestock and poultry producers fulfill Nebraska Department of Environmental Quality land application requirements for managing manure and comply with permits. These requirements affect all livestock producers who received a livestock waste control facility permit since April 15, 1998.

The program at each site will cover: Interpreting soil and manure test reports, NDEQ rules and record keeping, developing a manure application plan, manure and soil sampling, applicator calibration, stream setbacks, plus special local topics, as outlined with the meeting announcements below.

Neligh: Monday, September 20; Antelope County Extension office, County Courthouse Annex, Hwy. 275, Neligh. Contact: Phil Steinkamp CNMP coordinator, at 402-370-4061; special topic: *Value of Manure as a Fertilizer Source.*

Ohiowa: Thursday, October 7; At Mid-America Feedlots on the old Bruning Air Base, From Hwy. 82 south of Bruning, 7 miles east on Hwy. 4. Contact: Paul Hay, Gage County Extension, 402-223-1384; special topic: *Composting of Solids and Pivot Application of Liquids.*

West Point: Wednesday, October 27; City Auditorium, 237 N. Main St. Contact: Larry Howard, Cuming County Extension, 402-372-6006; special topic: *Reducing Phosphorous in Rations, Foliar Toxicity of Effluent.*

All sessions are from 10 a.m. to 3 p.m. and require a $30 registration fee. Pre-registration is required. Space is limited, so register early.

These workshops are sponsored by Cooperative Extension in the University of Nebraska Institute of Agriculture and Natural Resources and the Nebraska Environmental Trust.

For more information contact Phil Steinkamp, CNMP coordinator, University of Nebraska Lifelong Learning Center, Norfolk, 402-370-4061. (*Note:* Producers who attended the UNL Comprehensive Nutrient Management Planning (CNMP) winter classes, have met the NDEQ requirement.)

Sorghum field day September 8 at Ruskin

Sorghum producers can view and compared how various hybrids performed this year at the 2004 Sorghum Hybrid Test Plot Field Day September 8 near Ruskin

The event, which will be held at the Gerald Simonson farm, starts at 5 p.m. with a tour of the Hybrid Test Plot. It's sponsored by the Nebraska Grain Sorghum Producers, Cooperative Extension, the Nebraska Grain Sorghum Board, and participating seed companies.

"We'll have representatives from the commercial seed companies on hand to discuss field performance on their plot entries," said Simonsen, board president and plot coordinator. "Farmers will be able to see and compare hybrid performance for themselves."

A barbecue beef sandwich meal, featuring sorghum cookies, will be served at 7 p.m.. Rob Heyen of Milford, a sorghum producer and crop insurance consultant, will discuss new lower-cost crop insurance options and how it may benefit a producers' bottom line.

Dave Morgan, Extension safety specialist, will demonstrate grain entrapment to show the force necessary to remove a victim buried in various levels of grain. He'll discuss the use of lifelines and safety harnesses when entering bins, grain carts and trucks.

The event also will include a yield guessing contest and door prizes.

Location: From the west edge of Ruskin on Hwy 136 go 4 miles south and 2.5 miles west. From Hardy go 5 miles north and 0.5 mile east. (The site is across the road north of the TV tower.)