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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2002-24
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Blending guidelines revised

Managing corn contamined with mycotoxins

While aflatoxin and fumonisin levels in corn are higher this year than in previous years, proper management of grain during harvest and in storage can help limit the effects of these toxins on marketing or feeding of the grain crop.

"This is not a crisis, but it is a situation that needs to be monitored and managed," said Jim Stack, UNL plant pathologist and moderator of an October 9 videoconference on the topic.

Specialists from the University of Nebraska, Nebraska Department of Agriculture, and the Lincoln Grain Inspection Service explained how mycotoxins develop and addressed the regulations, sampling, testing, and management of grain contaminated with mycotoxins. The videoconference is available for viewing on-line at *http://g2.unl.edu:8080/ramgen/programs/mj/mycotoxin.rm.* Also, many Cooperative Extension offices may have copies of the videoconference available on videotape.

Depending on the level of mycotoxins present, contaminated grain may be segregated, blended, or in rare circumstances, the crop may be destroyed, Stack said. Trucks and bins should be carefully cleaned when mycotoxin-contaminated corn is involved.

When storing corn, reduce grain moisture to less than 15% in the first 48 hours. This will not decrease existing mold, but in most cases it should prevent it from increasing, Stack said. To minimize problems in long-term storage, a low storage temperature (less than 40°F) and good air circulation are critical to maintaining a uniform temperature and low relative humidity. Insect management also is critical to maintaining condition in storage since insects may vector the fungi.

Ken Jackson, program manager for the feed and fertilizer section of the Nebraska Department of Agriculture addressed regulations, including allowable limits and blending of aflatoxin-contaminated grain, during the videoconference.

"The Food and Drug Administration has adopted, by policy as outlined in Compliance Policy Guide 683.100, certain levels of aflatoxin in corn," Jackson said. "These are the same levels applied by the Nebraska Department of Agriculture in regulating aflatoxin in corn." (See the Sept. 20 *CropWatch* for allowable levels.)

(Continued on page 225)

Inside

Plant cover crops to help limit wind erosion in Panhandle fields

With lighter soils, low humidity and several days a month of high winds, cover crops have become a relatively common practice in western Nebraska. Alfalfa producers have used oats to protect newly emerged plants from winds and provide an additional feed resource. Typically, this crop is chopped when the oats are in the boot stage as seedling alfalfa should be established well enough to hold the ground and to use sunlight.

Using early planted spring cereal crops to control the effects of wind has been gaining popularity for intensively managed crops in recent years. A small grain is planted solid and later sprayed with glyphosate over the intended row area. Sugar beets, beans or potatoes are planted in the killed area and the inter-row vegetation provides a very nice cover for emerging plants. Shielded sprayers or inter-row tillage can be used to destroy the remaining cover crop later after the high value crop has become better established in the protective environment. Factors to consider with this crop are the

(Continued on page 224)

Updates

Field update

Paul Hay, Extension Educator in Gage County: Yields for our dryland crops in Gage County ran the full gamut this year with corn from 10 to 150 bushels per acre, averaging 40; soybeans from 2 to 50 bushels per acre, averaging 22, and milo from 50 to 150 bushels per acre, averaging 75.

One no-till operator in a rain belt area had 40 bushels per acre soybeans on his 55 acre field and 45 bushels per acre on the 3 acres no-tilled into killed perennial grass pasture. Harvest is progressing well with dry weather helping dry the crop in the field.

How freezing changes forages

When plants feeze, important changes occur in their metabolism and composition and can poison livestock. Sorghum-related plants, like cane, sudangrass, and shattercane, can be highly toxic for a few days after frost. Freezing breaks plant cell membranes. This breakage allows the chemicals that form prussic acid to mix together and release this poisonous compound rapidly.

Livestock eating frozen sorghum can get a sudden, high dose of prussic acid which may kill them. Fortunately, prussic acid soon turns into a gas and disappears. Waiting three to five days before allowing livestock to graze sorghums will lower the chance of poisoning.

Freezing slows metabolism in all plants. In some plants, especially grasses, this stress causes nitrates to accumulate. This build-up usually isn't hazardous to grazing animals, but green chop or hay cut right after a freeze can be more dangerous.

Alfalfa reacts two ways to a hard freeze. Nitrate levels can increase, but rarely to hazardous levels. Freezing also causes alfalfa to be more likely to cause bloat for a few days after the frost. Then, several days later after plants begin to wilt or grow again, alfalfa becomes less likely to cause bloat. Waiting to graze alfalfa until well after a hard freeze is a good, safe management practice.

Bruce Anderson
Extension Forage Specialist

Management tips Oct.18 - Nov. 1

♦ **Are you going to apply anhydrous ammonia this fall?** If so, have you compared your usual rate to the University of Nebraska recommendation? Do this with the ACorn Nitrogen Needs Calculator for Nebraska.@ It comes in two versions: an interactive spreadsheet that calculates the recommendation for you and a paper worksheet. Get it free at *http://cropwatch.unl.edu/focusnitrogen.htm* or from your local University of Nebraska Extension office.

♦ **Is your irrigation well protecting the groundwater?** This fall evaluate each well for risks using the checklist in the Cooperative Extension Farm*A*Syst publication, "Irrigation Wellhead Protection" (Worksheet 15), EC 98-791. Other Farm*A*Syst (Farmstead Assessment System) publications are available from UNL Cooperative Extension to evaluate how you are protecting your immediate environment.

♦ **Wheat farmers in western Nebraska who have faced less than favorable conditions may be wanting to assess potential yields.** The NebGuide, *Estimating Winter Wheat Grain Yield (G01-1429),* discusses three methods of estimating winter wheat yield. It's available in Cooperative Extension offices and on the Web at *http://www.ianr.unl.edu/pubs/fieldcrops/g1429.htm*

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Soybean basics

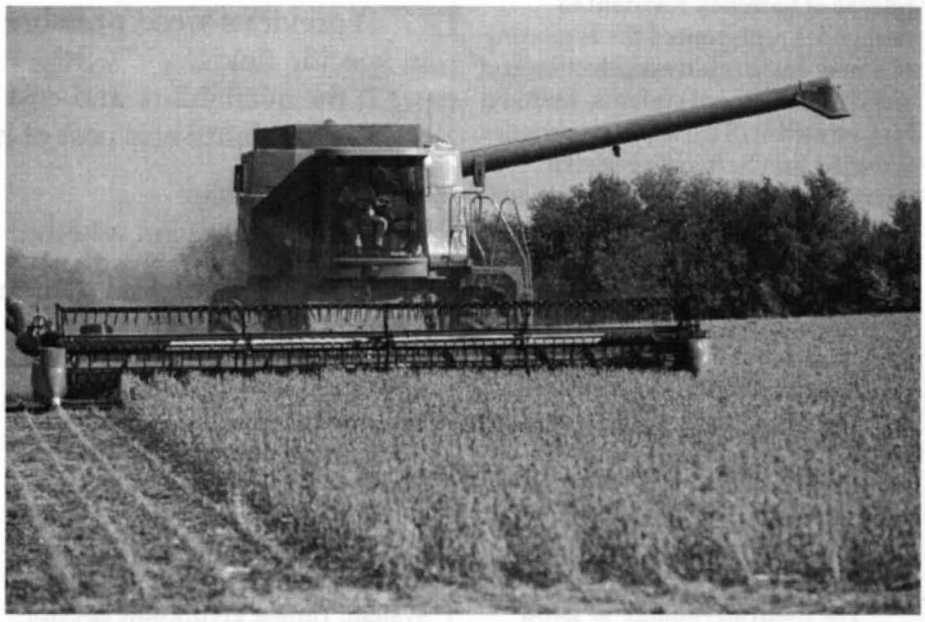
Variety development and selection

Thirteen maturity groups are used for identifying the region of adaptation for soybean around the world. Adaptation areas for specific maturities show approximate limits of adaptation and are not meant to represent rigidly defined areas where a variety is or is not adapted. Varieties of maturity groups I, II, III, and IV often are grown successfully in Nebraska. Group I varieties are adapted for northern Nebraska and maturity group IV varieties are adapted to the southeast tip of Nebraska with groups II and III in between. Varieties from one or two maturity groups are adapted at any one location in Nebraska.

The onset of flowering and regional adaptation are controlled by length of the photoperiod. Soybeans are short-day plants, which means the plants will develop vegetatively until a critical day length is reached that triggers the flowering response. Southern U.S. varieties respond to long days and mature too late for northern climates while northern varieties respond to shorter days and mature too early in the south. In Nebraska flowering usually begins in early July as the day length decreases after the maximum day length on June 21.

Indeterminate vs. determinate

Soybean varieties differ in growth habit and maturity. Indeterminate types begin flowering at the middle to lower nodes and flowering progresses upward and downward on the plant. Plant height increases continue until R5.5 (seed fill). In contrast, maturity group II and III determinate varieties achieve 80% of their main stem growth by the flowering stage with 92-93% attained within one week after flowering. Determinate and semi-determinate varieties typically are shorter, have fewer nodes, have lower pod heights on the main stem, and lodge less than indeterminate varieties.



Freezing temperatures ended the growing season this week and soybean harvest increased across the state. As of Sunday, the Nebraska Agricultural Statistics Service reported that soybean harvest was 54% complete.

(IANR Photo by Brett Hampton)

Nearly all soybean varieties in maturity groups IV and lower are indeterminate types, with flowering activity spread over a three- to five-week period once the critical day length has occurred. In the early 1970s lodging was thought to be a yield-limiting factor of traditional tall indeterminate varieties. Subsequently many determinate varieties adapted for northern latitudes were released beginning in 1977. Maturity group 0-IV determinate varieties are largely products of public breeding programs, although a few semi-determinate varieties are available from private seed companies.

Determinate varieties have played an important role in Nebraska production since 1977. In high-yield environments determinate varieties (maturity groups II - III) have yielded better than indeterminate varieties and yielded similar to indeterminate varieties with stress during the late vegetative and reproductive stages.

A concern among producers is that shorter plants often have lower pods. Stress during vegetative stages can reduce pod heights of determinate varieties and increase potential harvest losses. Breeding efforts are underway to increase the lowest pod heights of determinate varieties.

(Continued on page 224)

Soybean varieties *(Continued from page 223)*

Herbicide resistance

The development and 1994 release of varieties resistant to herbicides represented the beginning of a new era in cultivar selection and weed management systems. Sulfonylurea-tolerant (STS) soybean varieties were the first herbicide-resistant soybean varieties; they were selected and developed through conventional breeding practices. Subsequent herbicide-resistant releases included biotechnology-derived (transgenic), glyphosate and glufosinate varieties. Well over half of the U.S. soybean area is planted to glyphosate resistant (GR) soybean varieties with some states having more than 70% in these varieties. This new technology brings both advantages and disadvantages.

The main advantage is good weed control. In addition, herbicide costs and soybean injury may be reduced and producers may have increased flexibility in timing herbicide applications and may have fewer weed control decisions. Net returns may be greater than those from conventional herbicide systems due in part to the relative prices of glyphosate and other herbicides.

Conversely, there also are disadvantages for the glyphosate resistant soybean weed management system. Timing glyphosate application is a balance between maximum, season-long weed management and controlling weeds before they suppress crop yields. High winds in spring may limit spray opportunities due to the potential for herbicide drift. Weed competition may become intense to the point of limiting yields before spraying is possible. In some situations, conventional herbicides and varieties are more profitable. Because of higher seed costs, lower seeding rates of herbicide-resistant varieties may be justified when compared with nonherbicide-resistant varieties.

In addition to these disadvantages, comparisons from side-by-side variety performance trials suggest a yield suppression may exist relative to nonherbicide-resistant soybeans. Yield suppressions may result from either variety genetic differences, the glyphosate-resistant gene/gene insertion process, or glyphosate. Grain yield of glyphosate-resistant soybeans, however, is probably not affected by glyphosate.

In a Nebraska study, five backcross-derived pairs of glyphosate-resistant and nonglyphosate-resistant soybean sister lines were compared along with three high-yield, non-herbicide-resistant varieties and five other herbicide-resistant varieties. In contrast to the unpublished Monsanto report, glyphosate-resistant sister lines yielded 5% (3 bu/acre) less than the nonglyphosate-resistant sisters. High-yield, non-herbicide-resistant varieties included for comparison yielded 5% more than the nonglyphosate-resistant sisters and 10% more than the glyphosate-resistant sister lines.

Considering costs and assuming a 5% yield suppression, conventional herbicides and varieties may be the most profitable weed management system if weeds are controlled. However, if the weeds are difficult to control with conventional herbicides, the glyphosate-resistant weed management system may be more profitable. Producers should consider the potential for 5-10% yield differentials between glyphosate-resistant and nonglyphosate-resistant varieties as they evaluate the overall profitability of producing soybean. Variety choices are best based on: 1) previous weed pressure and success of control measures in specific fields, 2) the availability and cost of herbicides, 3) availability and

(Continued on page 228)

Soybean variety choices are best based on:

1) previous weed pressure and success of control measures in specific fields,
2) the availability and cost of herbicides,
3) availability and cost of herbicide-resistant varieties, and
4) yield,

and not solely on whether varieties are herbicide resistant.

For more information

Roger Elmore, Extension crops specialist, and a team of specialists and researchers from the University of Nebraska Lincoln have written a NebFact reporting their research on yield effects from glyphosate resistant soybeans.

NF02-539, "Yield Suppressions Associated with Glyphosate-resistant (Roundup Ready) Soybeans" should be available in county Cooperative Extension offices in late October or early November.

Mycotoxins (Continued from page 221)

In the videoconference, Jackson announced new guidelines for blending contaminated corn. Following are the guidelines he said would be used by the Nebraska Department of Agriculture this year for use of aflatoxin-contaminated grain.

Blending policy for intrastate commerce

"We will not object to blending corn with higher levels of aflatoxin with corn found to have lower or negative aflatoxin levels intended as animal feed for finishing beef cattle or finishing swine (greater than 100 lbs. in weight.)," Jackson said. " The following requirements must be met:

"The producer/user must:

- Test the finished blend to verify that the resulting level of aflatoxin does not exceed 300 ppb for finishing beef cattle or 200 ppb for finishing swine (greater than 100 lbs.).
- Collect a representative sample — no less than 5 lbs in a paper bag (good idea to double bag) and directly transport or mail to a laboratory for testing.
- Keep the test results for no less than one year.

"The shipper/seller must, in addition to the above requirements:

- Provide a label or invoice stating the level of aflatoxin in the finished product.
- Designate on the invoice or label what species the product is intended to be fed.
- Have some assurance that the buyer is aware of the level and will use it accordingly.

Blending policy for interstate commerce

Jackson said, "We will not object to blending corn with levels of aflatoxin above 300 ppb with corn found to have lower or negative levels of aflatoxin intended for feed for beef finishing cattle. The following requirements must be met:

The seller:

- must analyze each shipment of blended corn to identify the level of aflatoxin in the final product.
- must keep the test results for no less than one year. The same sampling procedures apply as stated above.
- provide a label or invoice stating the level of aflatoxin in the finished product.
- designate on the label or invoice what species the product is intended to be fed.
- have some assurance that the buyer is aware of the level and will use it accordingly.

If you have questions regarding management or marketing of mycotoxin contaminated grain, the *CropWatch* web site at *cropwatch.unl.edu* has further information and links to the videoconference.

Lisa Jasa, CropWatch Editor

Cover crops *(Continued from page 221)*

need for additional nutrients, especially water, and costs associated with added field operations. Though not for all situations, in highly exposed areas this practice is well worth consideration.

Fall also provides opportunities for using cover crops, especially after potatoes, beans and sugar beets. Following harvest, these fields are bare and the soils are loose. Small grains make excellent cover crops for winter wind erosion control. Winter wheat is most commonly used because it provides a dual purpose. In most cases, the cover crop is planted after the optimum planting dates for wheat so higher seeding rates and good fertility are essential.

One of the real secrets to success is to have a full soil moisture profile through at least the top 2 feet of soil prior to planting. Irrigation before planting may work better than trying to irrigate the cover crop up. Irrigating the crop up frequently adds to the erodibility of the soil by breaking surface clods.

In many cases, wheat will develop even with the later planting dates, giving the producer the potential for a full crop the next summer. If the wheat does not show potential in the spring, it is simply tilled for green manure or used to protect the row crop. Either way the production practice is sound and the goal of erosion control is achieved. For fall cover crops to work in this region, most years they need to be planted before Oct. 20.

Dryland conditions pose a separate problem. In this semi-arid area annual rainfall has not been adequate for continuous cropping. An accepted practice has been to allow one year of black- fallow between crops. Using chemical control measures has allowed this practice to be altered. Leaving the harvested wheat stubble over winter for erosion control and snow trap allows for a protected seedbed for dryland corn or millet or sunflowers. Researchers also have explored the use of green fallow systems in recent years; however, a suitable green cover has not been discovered. Several legumes have been tried, with Black Medic, peas and Austrian winter peas showing the most promise. These legume crops use little moisture, control wind erosion, trap snow and fix nitrogen for their use and for subsequent crops. To date, winter kill, insects, weed control and seed costs have been a problem. Research is currently underway to identify varieties and management practices that are better adapted to cover crops in this region.

Anthony Merrigan, Extension Educator, Box Butte County
David Baltensperger, Crop Breeding Specialist, Panhandle REC

Purple seed stain reported in soybeans

As this year's soybean harvest is well underway, there have been several calls and observations of purple soybean seed. In most if not all cases this seed discoloration is due to a fungal disease referred to as "purple seed stain."

This disease, which is caused by *Cercospora kikuchii,* is widely distributed in Nebraska and occurs every year at low levels. This year, however, conditions were excellent for its development. While this disease generally does not reduce yield, it will reduce seed quality and can impact seedling quality if planted next year.

Purple or pink streaks on the seed coat are the primary symptom of purple seed stain and discoloration can range from streaks to large blotches. The fungus grows into the pod and spreads though the hilum, resulting in seed discoloration being centered on the hilum. In some cases the entire seed may be discolored. The fungus overwinters on soybean residue. Spores are splashed onto plants during the growing season and the fungus grows into the pod.

Conditions that favor purple seed stain develop when wet weather delays harvest or warm, wet weather hits when plants have begun to reach maturity (growth stages R7 and R8) or when pods are completely brown. This has been the case in Nebraska in many fields. In some fields, stress conditions forced plants to mature prematurely. These plants did have pods with seed, many of which have purple seed stain. Rapid dry-down prevents seed infection and recent cool weather slows the rate of fungus growth, but if moisture continues into harvest I expect there to be an abundance of this discolored seed.

Loren J. Giesler
Extension Plant Pathologist

Soybean varieties *(Continued from page 224)*

cost of herbicide-resistant varieties, and 4) yield, and not solely on whether varieties are herbicide resistant.

Specialty varieties

Soybean producers can select from among several specialty varieties when planning their 2003 production. The following describe some of the more popular speciality soybeans available for Nebraska.

1. High protein: High protein soybean varieties may improve competitiveness of U.S. livestock producers. Unfortunately the strong inverse relationship between seed protein and grain yield has limited breeding progress. High protein maturity group II to V lines are now available to produce over 46% seed protein and meal with more than 50% meal protein. Breeders are developing high-yield soybean varieties with higher protein.

2. Large andsmall seeded/ vegetable soybeans: Markets are available for specialty soybeans of different sizes. Natto is a Japanese food made from mature, small-seeded, cooked, fermented soybean. Small-seeded varieties are also used for sprouting. Large-seeded speciality soybean varieties are used as edamame, or vegetable soybean. These are harvested before maturity when the seed fill 80% to 90% of the pod width. The pods are boiled and the seeds eaten as vegetables. These are especially popular in East Asia. Other products like tofu and miso also call for mature, large-seeded specialty soybean varieties. Small seeded varieties for natto and sprouts weigh less than 10 grams per 100 seed^{-1} (>4500 seeds pound^{-1}); large seeded varieties for edamame etc. weigh more than 22 grams per 100 seed^{-1} (<2000 seeds pound^{-1}). For comparison, seeds of normal varieties weigh from 12 to 18 grams per 100 seed^{-1} (3800 to 2500 seeds pound^{-1}).

Grain yield s of large- and small-seeded varieties are less than those of varieties with normal seed size. Large-seeded varieties yielded 82% of check varieties while small-seeded varieties yielded 72% of check varieties in a four-year University of Nebraska study. Seed weights were not greatly affected by either row spacing or seeding rate. Yield is a secondary consideration in production for specialty seeds because of their high value.

Roger Elmore
Extension Crops Specialist
South Central REC

Conference to address avenues of change

"Adapting to Change" will be the theme of this year's **Ag at the Crossroads** conference Nov. 7 in Lincoln. Speakers will address trends and issues in agriculture and how changes in state and national ag policies are likely to affect the future of agriculture for Nebraskans. Guest speakers will include a USDA administrator, state senators, UNL professors, and a psychologist who deals with rural issues.

The annual conference, which is sponsored by the Nebraska AgRelations Council and the UNL Department of Agricultural Economics, will be held from 8:15 to 4:45 on Thursday, Nov. 7, at the UNL East Campus Union.

The keynote speaker, Susan Offutt, administrator of USDA's Economic Research Service, will speak on "Farm Households, Farm Policy and Rural Economics."

Ray Supalla, conference chair and UNL professor of agricultural economics, said Offut was likely to address how changing trends in the level and source of farm income are likely to have far reaching implications for future ag policy and commodity programs.

USDA statistics indicate that one-third of farm operators have worked off-farm essentially full-time since the 1970s. Not surprisingly, large farms -- USDA defines them as those with over $250,000 in annual sales -- showed a smaller percentage of their total income from off-farm sources, although that percentage has been increasing, according to a report in the September Agricultural Outlook, USDA's Economic Research Service publication.

In 2000 almost one-third (32.5%) of operator household income was from off-farm sources. The Outlook article, "Does Off-Farm Work Hinder 'Smart" Farming?' addresses how this trend may curb the adoption of "smart farming" practices which substitute management for capital. The trend also is likely affecting the quick adoption of "convenience agriculture" practices such as the using genetically engineer crops.

A changing farm structure and the ramifications for farm policy

"What Does Farm Structure Imply for Future Farm Policy?" a paper written by Suan Offutt, the keynote speaker for this year's Ag at the Crossroads, is available online at *http://www.ers.usda.gov/Briefing/FarmStructure/Data/offutt.PDF* It was originally presented to the Agricultural Outlook Forum in 2001. In the paper, she writes:

"The structure of the U.S. agricultural sector has changed throughout our history. Particularly important from a policy perspective, this evolution has left us with an agricultural sector significantly different than existed in the 1930s when the foundation of much farm commodity policy was established. Farm numbers appear to have stabilized at just over two million. Most farms today are small and account for only a modest share of agricultural production, even if they control three-fourths of the country's farmland. The largest farms operating on the other quarter of farmland grow more than 60% of food that enters commercial channels. Almost two thirds of all farm operators do not regard farming as their main occupation, but rather live on farms as a retirement or residential lifestyle choice. . . ."

Conference registrations are required by 5 p.m. Monday, Nov. 4 To register, send your name and address and a check for $35 (non NAC members) to Nebraska AgRelations Council, 104 ACB, Box 830918, University of Nebraska, Lincoln, NE 68583-0918; call (402) 472-2821 or fax (402) 472-0025. Conference presentations are expected to be available via an archived webcast at a later date at *marketjournal.unl.edu*

Scheduled speakers

A schedule of topics and speakers follows. The afternoon will include two sets of concurrent sessions so participants can select among topics.

8:00 - 8:30 Registration, coffee and rolls

8:30 - 8:45 Welcome and introductions, Craig Buescher, NAC Vice President, Deweese

8:45 - 9:45 "Farm Households, Farm Policy and Rural Economies?", Susan Offutt, Administrator, USDA Economic Research Service

9:45 - 10:30 "Rural Development in Nebraska: Issues and Options", Sandy Scofield, director, Rural Development Initiative, UNL

10:45 - 11:30 "Financing State and Local Government: Issues and Options", Senator Ronald Raikes, Lincoln

11:30 - 12:00 "Nebraska Water Policy: Conjunctive Use and Water Marketing Issues and Options", J. David Aiken, Agricultural and Water Law Specialist, UNL

12:00 - 12:30 "Drought Management in Nebraska", Mike Hayes, National Drought Mitigation Center, UNL

12:30 - 1:45 Lunch; Jeff Royer, Head, UNL Department of Agricultural Economics, presiding. Luncheon address: "Coping with Stress", Dr. Val Farmer, Fargo, North Dakota

2:00 - 3:15 First rotation of concurrent sessions

Session 1: Rural Development, Sam Cordes, facilitator, Sandy Scofield, resource person

Session 2: Public Finance, Bruce Johnson, professor, UNL ag economics, facilitator; resource persons: Senator Raikes and Senator Wehrbein

Session 3: Water and Drought, Mike Jess, Acting Director Water Resources Center, UNL, facilitator; Dave Aiken and Mike Hayes, resource persons

3:30 - 4:45 Second rotation of concurrent sessions

4:45 Adjourn

Controlling winter annuals in alfalfa

Fall is a good time to control invading winter annual weeds in alfalfa. Several mustards including tansy mustard and pennycress along with downy brome are the most frequent problems. Fall rains coupled with thin or older stands of alfalfa open the door for these opportunistic weeds. Controlling these weeds may extend production of high quality alfalfa a year or two.

Treatment should begin after alfalfa has gone dormant. Winter annual weeds will have germinated by this time and alfalfa can be safely treated with the appropriate herbicide. Many useful herbicides can be used only while the alfalfa is dormant. There also is more time available in fall than in spring to make the applications.

When selecting a herbicide, consider target weed species and establishment stage of the alfalfa. Karmex, Sencor, and Velpar can be used only on dormant alfalfa established for one year or longer. All three herbicides are effective against most winter annual broadleaf weeds. Sencor and Velpar also are effective against downy brome. Some residual control of summer annual broadleaf weeds is also afforded by these herbicides.

Several herbicides can be used both on the current year's stands as well as on older stands of alfalfa. Poast, Pursuit, and Select are not restricted to dormant alfalfa. Poast and Select provide control only of emerged annual grasses. Pursuit controls primarily broadleaf weeds. Gramoxone Max will control emerged winter annual grass and broadleaf weeds in dormant alfalfa. MCP Amine will control emerged winter annual broadleaf weeds in dormant alfalfa.

Alex Martin
Extension Weed Specialist

Fall applied herbicides for alfalfa

Alfalfa status	*Herbicide*	*Commercial product per acre*	*Application time*	*Remarks*
Seedling or established stand	POAST	1.0-2.0 pt	Grasses 4" or less	Good coverage necessary. Use higher rate for sandbur, volunteer cereals, or winter annual grasses. Poast will not control over-wintered downy brome. Add COC to spray solution. Do not graze or cut for forage for 7 days or 14 days before cutting for dry hay following Poast.
	PURSUT DG	1.08-2.16 oz	Seedling alfalfa 2nd trifoliate stage	Do not feed, graze, or harvest alfalfa for 30 days following treatment. Pursuit requires adding an adjuvant.
	SELECT 2EC	6-8 oz	Grasses 2"	Controls downy brome, annual, and perennial bluegrass. Do not feed, graze, or harvest alfalfa for 15 days after application.
Alfalfa established one year or longer	GRAMOXONE MAX	1.5-2.0 pt	Dormant alfalfa	For control of downy brome and winter annual weeds. Do not cut or harvest for 42 days after application.
	KARMEX 80DF	1.5-3.0 lb	Late fall to early spring to dormant alfalfa	For control of winter and summer annual weeds.
	MCP AMINE 4	1 pt	Apply in fall to to dormant alfalfa	Apply in late fall following frosts when alfalfa is dormant. The temperature at the time of spraying should be above 40F
	SENCOR DF Harvest interval (28 days) SINBAR 80W	0.5-1.0 lb 0.5-1.0 lb	Late fall to early spring to dormant alfalfa	For control of downy brome, winter annual weeds and suppression of dandelions. Do not cut or harvest for 28 days after application.
	VELPAR DF Harvest interval (30 days)	0.66-2.0 lb	Late fall to early spring to dormant alfalfa	The 0.66/acre rate of Velpar is for low organic matter soils for downy brome control.