3-7-2003

CropWatch No. 2003-2, March 7, 2003

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2003-2
March 7, 2003

Assessing winter wheat and potential yields

Soil moisture may be the most limiting factor in rainfed winter wheat production this year in Nebraska.

Winter wheat seasonal water use varies widely due to weather conditions, but generally it needs 16 to 24 inches. If we use a midpoint of 20 inches, water use would be 4 inches from emergence to start of spring growth, 4 inches from start of spring growth to jointing, 2 inches from jointing to boot, 2.4 inches from boot to flower, 3 inches from flower to milk, 1.6 inches from milk to dough, and 3 inches from dough to maturity. Normally it takes about 7 inches of water to get yield. For each inch of water above that, yield increases an average of 6.5 bushels.

This year's dry conditions are expected to contribute to crown and root disease since dry soil warms up and cools down six time faster than moist soil. This alternating freezing and thawing will diminish the health of the wheat plant, damaging stands and decreasing yields.

Inside

Focus on wheat

For the last two years, Nebraska has ranked seventh nationally in winter wheat production. This year approximately 1.7 million acres were estimated to have been planted to winter wheat. This and the March 21 issue will include stories directed to wheat growers, as well as other stories.

Estimating wheat yields early

Wheat growers are frequently confronted with the need to estimate wheat yields in the spring to decide whether recropping is necessary. Determining a reasonable estimate of wheat yield allows growers to predict if it is in their best interest to destroy the wheat and plant a summer crop or leave the wheat for harvest. With little soil moisture in many areas of the state, the chances of being successful with a spring crop are limited. Before making such a decision, growers should be aware of any restrictions imposed by government programs, crop insurance, or previous herbicide use.

Several methods can be used to estimate winter wheat yield potential. I will discuss two, both of which rely on several assumptions that may not be accurate for every season or situation. These assumptions presume that plants are healthy, soil moisture and nutrients are adequate, and that weeds, insects and disease are not affecting yields. Added to the uncertainty of yield estimates is wheat's ability to compensate for changes in the environment.

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Resistance management for new YieldGard Rootworm corn

Recently, the EPA and Monsanto announced the registration of YieldGard Rootworm corn. Do not confuse YieldGard Rootworm corn with YieldGard Corn Borer corn or any other Bt corn hybrids that are resistant to European corn borer. The YieldGard Rootworm corn hybrids contain a coleopteran (beetle)-specific Bt protein (Cry3Bb) that is toxic to corn rootworm. They have no effect on corn borers or any other caterpillars.

As with past Bt corn hybrids, insect resistance management (IRM) will be required of farmers who grow YieldGard Rootworm corn. Although the IRM program is similar to those for earlier Bt corns that targeted European corn borer,

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Updates

Drought workshops

"Drought Risks and Mitigation on the Agricultural Landscape" is the theme of a series of NU workshops being held across the state. The workshops, funded by a $95,000 U.S. Department of Agriculture grant, include a discussion of patterns, trends and geography of natural hazards in agriculture; how to reduce drought risk; crop insurance basics; new tools for forecasting drought and documenting crop losses; mitigating drought risk through changing cropping practices; strategies for multi-year droughts; and more.

Workshops have already been conducted in Beatrice, Chadron and Kearney, with two remaining:

- March 13, 9 a.m. to noon (Neb*sat Channel 107) and 1-4 p.m. (Neb*sat Channel 102), Conn Library, Wayne State College.
- March 19, 9 a.m. to 4 p.m. (Neb*sat Channel 107), Panhandle Research and Extension Center, Scottsbluff.

Check with local extension offices for arrangements. To register for the workshops, contact Ann Fiedler, (402) 472-6707 or e-mail afielder1@unl.edu. On-site registration is available from 8:30-9 a.m. at the workshops.

Farm mediation clinics

The farm mediation program sponsored by the Nebraska Department of Agriculture conducts farm mediation clinics at locations throughout Nebraska. The remaining March clinic dates are: March 11, North Platte; March 13, Ainsworth; March 14, Norfolk; March 18, Lexington; and March 26, Norfolk.

The clinics offer individual and confidential information and education on farm finances; the laws, regulations and policies governing the 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. Contact the Farm Hotline at 800-464-0258 to make an appointment. The contact for the program at the NDA is Marian Beethe at 402-471-6890 or marianjb@agr.state.ne.us

Understanding the prevented planting indemnity

As ag producers prepare for the 2003 planting season and the March 15 deadline for acquiring crop insurance coverage for spring planted crops, the indemnity payment method for prevented planting (PP) acres needs to be clarified. Any prevented planting acres will be eligible for only a percentage (usually 60%) of the insured value. The following example will explain this process.

For this example it is assumed that the farm has an actual production history (APH) for irrigated corn of 150 bushels per acre and intends to purchase multi peril crop insurance (MPCI) at the 70% level. The price election for corn is assumed to be $2.20 per bushel. Under this scenario, the calculations for PP indemnity are as follows:

150 bu/acre APH x 70% = 105 bu/acre coverage

105 bu/acre x 60% = 63 bu/acre PP coverage

63 bu/acre PP coverage x $2.20/bu = $138.60/acre PP indemnity

This indemnity level will allow producers to cover the cost of the insurance and the fixed costs associated with the land resource.

For more information on crop insurance issues this year, see Burgener's story in the Feb. 10 *CropWatch*, available on-line at *http://cropwatch.unl.edu/archives/2003/crop03-1.htm*

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CROP WATCH
cropwatch.unl.edu

Crop Watch is published from March to November by Cooperative Extension and Communications and Information Technology in the University of Nebraska Institute of Agriculture and Natural Resources, PO Box 830918, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order a print subcription or to change your address, write to *Crop Watch* at the above address or call (402) 472-7981. The newsletter also is available on the web at **cropwatch.unl.edu**

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Assessing wheat *(Continued from page 11)*

Method 1

Table 1 is easy to use; however, it relies on several assumptions required to make a yield estimate in the fall or early spring prior to extensive tillering or stem elongation. These assumptions include:

1. that the wheat plants, on average, develop about five heads;
2. that each head, on average, develops about 22 kernels; and
3. that there are an average of 16,000 kernels per pound.

Late-planted wheat and wheat seeds that do not germinate until later because of dry conditions will tiller less and have fewer heads.

To use *Table 1*, count the number of plants per foot of row. It is best to use at least 5 feet of row in at least five sites within the field and calculate the average number of plants per foot of row. If the stands are uneven, for example the stand is better or worse in the wheel tracks, make sure your percentage of samples in these areas accurately represents the proportion of these areas in the whole field. Locate the column in the table that corresponds to your average number of plants per foot of row and then move down that column until it intersects with the row corresponding to your row spacing. This is your estimated yield.

Method 2

Table 2 was developed using data collected from 1994 to 1998 as part of the Nebraska Wheat Quality Tour. These tours were conducted near May 1, prior to head emergence in most of the state. Factors such as heavy weed/disease/insect infestations or inadequate soil moisture at the time of the tour may suggest fewer final heads and a lower yield potential than indicated in the table. In addition, the table becomes unreliable in situations of extremely low or extremely high tiller counts, or in years when crop development as of May 1 is well ahead or behind normal. For later season yield estimates, yield predictions can be made by substituting the actual number of heads per foot for tillers per foot.

To use *Table 2*, count the number of tillers per foot of row. Again, it is best to use at least 5 feet of row in at least five sites within the field and calculate the average number of plants per foot of row. Be sure sample sites are representative of the field. Locate the column in the table that corresponds to your average number of tillers per foot of row and then move down that column until it intersects with the row corresponding to your row spacing. This is the estimated yield.

Although these multipliers may appear to be in error – everyone knows that wheat fields in the semi-arid Panhandle usually yield less than fields to the east – on a per head basis the multiplier is correct.

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Table 1. Estimated wheat yield potential.

	Number of plants/foot of row											
Row Spacing	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
-----inches-----			*----------bushels/acre----------*									
6.0	10	20	30	40	50	60	—	—	—	—	—	—
7.5	8	16	24	32	40	48	56	64	—	—	—	—
9.0	7	13	20	27	33	40	47	54	60	—	—	—
10.0	6	12	18	24	30	36	42	48	54	60	—	—
12.0	5	10	15	20	25	30	35	40	45	50	55	60
14.0	4	9	13	17	21	26	30	34	39	43	47	52

Table 2. Estimating winter wheat yield after stem elongation for the Nebraska Panhandle.*

	Number of tillers/foot of row											
Row spacing	*10*	*15*	*20*	*25*	*30*	*35*	*40*	*45*	*50*	*55*	*60*	*65*
----inches----			*----------bushels/acre----------*									
6.0	22	34	49	56	67	79	90	101	112	—	—	—
7.5	18	27	36	45	54	63	72	81	90	99	118	---
9.0	15	22	30	37	45	52	60	67	75	82	90	97
10.0	13	20	27	34	40	47	54	61	67	74	81	88
12.0	11	17	22	28	34	39	45	51	56	62	67	73
14.0	10	14	19	24	29	34	38	43	48	53	58	63

*The table was developed using data collected in the Nebraska Panhandle. For other Nebraska locations, multiply the yield in the table by the following factor: southwest Nebraska – 0.9; central and south central Nebraska -- 0.85; southeast Nebraska – 0.75.

Controlling winter annuals in winter wheat

Winter annual weeds cause both direct and indirect winter wheat losses. They are very competitive with winter wheat throughout the growing season. Additionally, some winter annual grass weeds also result in dockage and/or foreign material discounts when contaminated grain is delivered to the elevator. In order to minimize losses, growers must control these weeds in a timely manner.

Broadleaf weeds

Common broadleaf winter annual weeds in winter wheat include blue mustard, tansy mustard, tumble mustard, field pennycress, and shepherd's-purse. Unfortunately, many growers are unaware of these weeds in their fields until the weeds start to bloom in spring. By this time, control is difficult and most of the crop damage has already occurred. To be effective, winter annual broadleaf weeds need to be controlled in the late winter or very early spring, before stems begin to elongate and plants begin to bolt.

Blue mustard may be the most difficult to control because it bolts very early. To be effective, herbicides typically need to be applied to blue mustard in late February or early March. 2,4-D applied in early April usually will provide excellent control of tansy mustard and the other winter annual broadleaf weeds, but only fair control of blue mustard. Adding a sulfonylurea herbicide, such as Ally or Amber, to 2,4-D will improve control, particularly after these plants have bolted; however, it may not help increase yield because the weeds have already used soil moisture and nutrients. If the sulfonylurea herbicide is used after bolting, but prior to seed production, it may help reduce the amount of seed produced.

The bottom line is that winter wheat growers need to scout their fields in the late fall or winter to determine if control of winter annual broadleaf weeds is needed. In the case of blue mustard, herbicides should be applied in late February or early March. The other winter annual broadleaf weeds should be treated in late March or early April. Once the plants are flowering, it is probably too late to treat. If timed correctly, 2,4-D (8 oz/acre of LV4 ester or 16 oz/acre of 4 lb/gal amine) provides low-cost and effective control of these weeds. Wheat should have at least four tillers before applying 2,4-D or serious crop injury may occur.

Grass weeds

Only in the last few years has it been possible to selectively control some of the winter annual grass weeds, such as downy brome, jointed goatgrass, or feral rye, in winter wheat. Although control is often best when herbicides are applied in the fall, some spring control is possible.

Maverick Pro® provides selective control of downy brome and other *Bromus* species in winter wheat. Maverick Pro® should be applied at a rate of 2/3 ounce of product per acre in 5 to 20 gallons of water per acre. A non-ionic surfactant should be added to postemergence treatments at 0.5% on a volume basis. Spring applications to downy brome have been more inconsistent than fall applications. Occasionally spring control is as high as 85%, but more typically it ranges from 35% to 70%. Usually these plants are significantly stunted, but will produce seed. Precipitation following application appears to be important for improved herbicide activity. Growers should be aware of the rotation restrictions with this product.

A few Nebraska growers planted Clearfield wheat varieties last fall. These fields can be treated with Beyond™ herbicide this spring to control downy brome, jointed goatgrass, and certain broadleaf weeds. Although spring applications of Beyond™ have provided poor control of feral rye, spring applications have provided excellent control of jointed goatgrass and downy brome when treated with 4 ounces of product per acre. Apply the herbicide as soon as active spring crop growth begins. Postemergence applications require adding a surfactant at 0.25% and a nitrogen fertilizer solution at 1 to 2.5% on a volume basis. (One percent on a volume basis is one gallon in 100 gallons of spray solution.)

If winter annual weeds are a regular problem in your winter wheat, change the crop rotation. Including a spring-seeded crop such as corn, sorghum, soybean, oat, proso millet, or sunflower in the rotation with winter wheat-fallow provides an additional year in which to prevent seed production and allows the soil seed bank to gradually decrease.

Additional information on weed control in winter wheat is available in the Wheat Production Systems Handbook, which is available on the Web at the Panhandle Research and Extension Center Home Page at: *http://www.panhandle.unl.edu*

Drew Lyon, Extension
Dryland Crops Specialist
Panhandle REC

Assessing wheat

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Wheat fields in the sub-humid portions of the state produce more heads/acre, but typically fewer kernels/head than in the Panhandle.

For example, if your winter wheat field is in southwest Nebraska and you have an average of 30 tillers per foot of row, and your row spacing is 10 inches, multiply the table results of 40 bushels/acre by 0.9 to get a yield estimate of 36 bushels/acre.

Robert Klein, Extension
Cropping Systems Specialist
West Central REC

YieldGard

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there are some significant differences. This only makes sense since the biology of the corn rootworm is very different from that of the European corn borer.

The resistance management requirements for YieldGard Rootworm corn are:

- Growers must plant a structured refuge of at least 20% non-YieldGard Rootworm corn that may be treated with insecticides as needed to control corn rootworm larvae. Growers will not be permitted to apply insecticides labeled for corn rootworm to the refuge for control of insect pests while adult corn rootworm are present unless the YieldGard Rootworm field is treated similarly. Refuge acres should be planted as blocks in or adjacent to YieldGard Rootworm cornfields or as in-field strips.
- External refuges must be planted adjacent to YieldGard Rootworm fields.
- When planting the refuge in strips across a field, refuges must be at least six rows wide, preferably 12 consecutive rows wide.
- In addition, the refuge must be planted in similar ground as the YieldGard Rootworm corn. If the YieldGard is planted in ground that was in corn the previous year, the refuge must be planted in ground previously planted to corn. General management of the YieldGard Rootworm corn and the refuge should be similar.

We will provide performance data on YieldGard Rootworm corn from UNL trials in a future issue of *Crop Watch*.

Tom Hunt, Extension Entomology Specialist
Haskell Agricultural Laboratory
Bob Wright, Extension Entomology Specialist
South Central Agricultural Laboratory

Using emergency tillage to stop wind erosion in wheat

The drought conditions in western Nebraska have resulted in weakened winter wheat stands that are prone to further damage by blowing soil. Surface soil in many wheat fields has become smooth, dry, and finely granulated and is very susceptible to wind erosion.

Earlier attempts at stopping the blowing soil have been ineffective in some areas because the dry soil conditions have not been conducive to bringing soil clods to the soil surface. Recent snows and cold conditions may have improved this situation and there may now be a window of opportunity for growers to use emergency tillage to prevent further stand loss from blowing soil. It's better to control damage early rather than risk losing the entire crop.

The purpose of emergency tillage is to provide a rough, ridged, cloddy surface that will be more resistant to wind erosion. Surface roughness reduces wind velocity at the soil surface and helps trap windblown soil particles. Where possible, use emergency tillage before soil blowing starts. Soil erodes more rapidly from abrasion by wind blown soil particles than from wind that contains no soil particles.

If erosion is anticipated because high winds are forecast, start emergency tillage on areas in the field most vulnerable to erosion before the wind reaches a critical speed. If soil conditions are too dry to form clods, crop residues, such as hay, straw, or corn stalks, or livestock manure may be used to prevent blowing from starting in vulnerable areas. Crop residues usually need to be anchored in place with a stubble puncher or a disk with gangs set at minimum angle and shallow depth. Approximately 2,000 to 4,000 pounds of residue or 6 to 8 tons of livestock manure are required per acre to control erosion on vulnerable spots or in areas where erosion has begun. If soil blowing has already started, begin emergency tillage on the upwind edge of the eroding area. The most effective method would be to till in a direction perpendicular to the expected wind direction but at an angle to the wheat row to minimize the number of wheat plants destroyed.

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

Use narrow chisel points spaced 4 to 6 feet apart and run them 4 to 6 inches deep. Some farmers will use a 3-foot spacing between chisel points because it is easy to remove two of three gangs and obtain the 3-foot spacing; however, this strategy does not allow the farmer to come back and chisel between previous ridges if further erosion occurs.

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

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Sample soils and plan accordingly

Fertilizer issues in a dry year

With subsoil moisture significantly below normal across much of Nebraska this spring, producers should carefully consider their fertilization plans for the coming crop season. Fertilizer rates, sources, and application methods all can be potentially influenced by the current dry conditions.

Soil sampling

If producers did not collect subsoil samples for residual nitrate-N last fall, they are strongly encouraged to do so this spring. Sampling done last fall has revealed above average variability in residual nitrate-N. Irrigated corn in much of Nebraska produced near record yields, and thus might have been expected to leave very little residual nitrate-N in the soil. However, we have found that was not always the case. There have been situations where fields were fertilized at moderate rates, produced yields well in excess of 200 bu/acre, and still had high residual nitrate-N after harvest. Decent rains during and immediately after harvest last fall in parts of the state evidently allowed substantial nitrogen mineralization from soil organic matter and subsequent accumulation of nitrate-N. We also have observed very low residual nitrate-N in other fields following very high yields, so residual nitrate-N after irrigated corn is not very predictable. On the other hand, soil residual nitrate-N following dryland corn with extremely low yields last year is usually very high. In many cases, there may be enough residual nitrogen that fertilizer is not needed this year for dryland crops; however, sampling will be required to determine this. For either dryland or irrigated fields it will pay to sample for residual nitrate-N this year.

Realistic expected yield

With currently low subsoil moisture, and poor prospects for significant precipitation to refill the soil moisture profile, producers should adjust their yield expectations for dryland corn or sorghum downward. Even without accounting for residual nitrate-N left from last year, the crop fertilizer requirement for nitrogen will be less for dryland crops due to lower expected yields based on soil moisture.

Moisture conservation

Producers should look for every opportunity to conserve moisture by limiting tillage operations, including fertilizer application. While anhydrous ammonia is normally the least expensive nitrogen fertilizer source, producers should carefully weigh that cost and the resulting loss of moisture incurred during application and compare it with the cost of surface-applied applications which do not cause moisture loss. There are additional tradeoffs, however. Nitrogen fertilizers (either liquid or dry) will typically be less efficient and more subject to volatilization and immobilization than nitrogen fertilizers incorporated into the soil. These processes can be accentuated by larger-than-normal amounts of crop residue this spring, since dry conditions have not allowed as much residue decomposition as usual.

Starter fertilizers

Producers should be cautious when using starter fertilizer with the seed if soil conditions are dry at planting. Fertilizers placed with the seed (primarily nitrogen and potassium fertilizers) are hygroscopic and will draw moisture away from the seed. Excessive rates of starter fertilizer can result in germination damage and stand loss. Placing starter fertilizer in a band a couple of inches away from the seed will minimize the potential for germination damage. More information on starter fertilizer use can be found in the NebGuide *Using Starter Fertilizers for Corn, Grain Sorghum and Soybeans*, G361 (*http://www.ianr.unl.edu/pubs/fieldcrops/g361.htm*).

Richard Ferguson
Extension Soils Specialist

NRDs receive approval to regulate fertilizer rates

A new Nebraska law will allow Natural Resource Districts implementing Ground Water Management Plans to regulate the *rate* of fertilizer applied. Previously, NRDs were authorized to regulate the timing, but not the rate of application as part of their best management practices program.

The change will affect producers in the Central Platte NRD, which includes about one-half million acres stretching from Kearney to Columbus. Since the Groundwater Management Plan was first implemented in this NRD in 1988, nitrate levels in the water and soil have dropped on approximately 95% of the acres, said Ron Bishop, general manager of the Central Platte NRD. Producers who were typically applying 200-220 pounds of nitrogen per acre then, now typically

If you'd like to learn more about or follow the progress of a specific legislative bill, visit the Nebraska Legislature's Web site at *http://www.unicam.state.ne.us/*

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State pesticide regulations revised for 2003

A number of new state regulations related to pesticides, their application, and their applicators have been enacted and apply to this crop production season. Many of the changes are helping to fine-tune state regulations or bring them in line with federal regulations. Following is a synopsis of some of the changes.

• The minimum age for pesticide applicator licensing is 16. Previously state law did not provide a minimum age.

• No recommendations can be made that are contrary to or inconsistent with the pesticide label. While this had been specified in federal law, the change provides the Nebraska Department of Agriculture with a legal base for pursuing such infringements. This applies to anyone using or recommending a pesticide, from other producers in the coffee shop to consultants or agribusiness.

• NDA created a new category, Wildlife Damage Control (14), to cover the use of General Use Pesticides (GUPs) **and** Restricted Use Pesticides (RUPs) to control animal pests (rodents, moles, nuisance birds, prairie dogs, coyotes, etc.). As a result, the Agricultural Plant category no longer is applicable to cover animal pest control measures using pesticides. To apply even general use pesticides for animal control, a commercial applicator will need to be certified in this category.

• The older combination category of *Demonstration and Research / Regulatory* has been separated into two new subcategories of 1) *Demonstration and Research* and 2) *Regulatory*. Both need to be attached to a parent category such as Ag Plant or Ornamental and Turf. Applicators are "grandfathered" into the new subcategories without additional testing if they select the new subcategories at recertification.

• If a manager or supervisor who makes pesticide recommendations in a commercial pesticide applicator business wants to hold a pesticide license, the individual must be licensed as a commercial applicator and can no longer be licensed as a noncommercial applicator. (Last year the state implemented a licensing fee of $90 for commercial pesticide applicators. No license fee is required for noncommercial applicators.)

• A noncommercial applicator license is applicable for independent crop consultants who recommend pesticides (GUPs or RUPs) for clients. This would include crop advisors who do not apply restricted use pesticides, yet need state certification to hold membership in a crop advisor association, The noncommercial license is not issued to ag landowners or operators, who need private applicator licenses, or to people making commercial applications for hire.

• A commercial applicator in the Ag Plant category can apply restricted use pesticides to agricultural crops on land he/she farms personally.

• Any employee of a political subdivision (applying pesticides (GUPs or RUPs) for vector control must obtain certification/licensing prior to applying such pesticides and would be classified as a noncommercial applicator. As an employee, these people are applying pesticides for their employer as a part of their regularly assigned duties.

For more information on these and related topics visit the Pesticide Education Resources Web site at *http://pested.unl.edu* or call the Pesticide Education Office at 800-627-7216.

For more information about current regulations, see the NU Extension NebGuide, *Pesticide Laws and Regulations*, available at your local Cooperative Extension office or online at *http://www.ianr.unl.edu/pubs/pesticides/g479.htm*

Larry Schulze
Pesticide Education Specialist

Fertilizer rates

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apply 145 pounds per acre. On approximately 5% of the acres; however, nitrate levels in the groundwater continue to increase, Bishop said.

The change will be implemented following a one- to two-year period to allow for education and a warning in those areas where rising levels are a problem, Bishop said. Producers in the management area already have their soil and water tested annually for nitrates. The change means that the NRD will consult with the University of Nebraska or a crop advisor certified by the American Society of Agronomy to establish rates based on soil and water nitrate tests.

March 14 *Market Journal:* Adjusting for drought

The March 14 Market Journal will be addressing some drought-year alternatives to traditional crop, water, and pest control strategies.

Several segments of the program will highlight western Nebraska issues, focusing in particular on the concerns of farmers facing crucial shortages of both ground and surface water.

University of Nebraska Panhandle Research and Extension experts scheduled to appear includeDavid Baltensperger, NU Extension crop breeding specialist, who will talk about alternative dryland crops and forages; and Paul Burgener, Extension ag economics research analyst, will discuss the economic considerations of alternative crops. Tom Holman, Scotts Bluff-Morrill Extension educator, will address the economic considerations of alternative crops. Irrigation issues and alternatives also will be addressed. For more information, contact your local Extension Office or visit the Market Journal site on-line at *http://marketjournal.unl.edu.*

Bt corn and European corn borer -- Resistance management and compliance

While producers who grow Bt corn resistant to European corn borer are aware of the associated resistance management requirements, it's always good to review requirements prior to the growing season. I'd also like to address some questions on resistance management compliance.

Resistance management

The resistance management requirements as stated by EPA for 2003 are:

- Growers must plant a refuge of at least 20% non-Bt corn that may be treated with insecticides as needed to control lepidopteran (caterpillar) stalk-boring and other pests.
- Refuge planting options include: separate fields, blocks within fields (e.g. along the edges or headlands), and strips across the field.
- External refuges must be planted within 1/2 mile of the Bt field (1/4 mile or closer preferred).
- When planting the refuge in strips across the field, the strips should be at least four rows wide, and preferably six or more rows wide.
- Insecticide treatments for control of European corn borer, corn earworm, southwestern corn borer (Cry1Ab or Cry1F corn hybrids) and/or fall armyworm and black cutworm (Cry1F corn hybrids only) may be applied to the refuge only if economic thresholds are reached for one or more target pests. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g. Extension educators, crop consultants). Microbial Bt insecticides (e.g. Dipel) must not be applied to non-Bt corn refuges.

There are several reasons that farmers should comply with resistance management requirements. First, and most important, compliance will slow the development of Bt-resistant corn borers and preserve Bt as an effective pest management tool for the future. Many of us have seen how efficacious Bt corn hybrids are against the European corn borer. Loss of this management tool could mean going back to the days of large-scale spraying and the problems associated with treatment timing, chemical application, etc.

Second, compliance is part of the contractual agreement that a grower is required to sign when buying Bt transgenic corn seed. By doing so, growers state that they are aware of and will comply with resistance management requirements. Specific resistance management information will be a part of each corn seed bag label and must be followed. Failure to comply with the resistance management requirements could result in a grower losing access to the Bt corn hybrids for a year.

And finally, if the EPA feels that compliance is not high enough, it could seek future regulation of Bt corn use.

Compliance

Initially, compliance was measured through the use of grower surveys; however, now random field visits also are conducted to monitor compliance. Responsibility for conducting resistance management monitoring lies with the registrant (e.g. Monsanto), not EPA.

For example, farmers are selected from the pool of farmers who bought YieldGard Corn Borer corn, contacted, and a date is scheduled for a field visit by an independent agent, such as a consultant. Planting records are examined, refuge fields are measured for size and distance from the Bt field, and plants are tested for the expression of the Bt toxin. If found to be significantly out of compliance, the farmer is provided resistance management educational materials, aided in developing a resistance management plan, and revisited the next year. If the farmer is found to be out of compliance the second consecutive year, the farmer will not be able to buy the product the next year.

Additional information concerning Bt corn, European corn borer, and resistance management is available in "Resistance Management for European Corn Borer and Bt Transgenic Corn: Refuge Design and Placement", NebFact NF425, available at your local Cooperative Extension office or on the Web at *http://www.ianr.unl.edu/pubs/insects/nf425.htm.*

Tom Hunt, Extension Entomology Specialist
Haskell Agricultural Laboratory

Emergency tillage

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after the soil is frozen more than 2 inches deep.

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

Keep a close eye on your fields and take appropriate action as circumstances dictate. For more detailed information on emergency tillage see NebGuide G75-282, *Emergency Wind Erosion Control.*

Drew Lyon, Extension Dryland Cropping Systems Specialist
Panhandle REC

Livestock producers advised to reduce range use, stocking rates and look for crop forage alternatives

Precipitation has been below average for much of the Nebraska Panhandle and adjoining areas for the last three years. This has resulted in an inadequate supply of forage for hundreds of thousands of beef cattle on millions of acres of rangeland. While some variation occurs among ranches and among pastures within a given ranch, all rangeland vegetation in our region has been moderately to severely damaged by drought stress and/or excessive grazing. Consequently, even if soil moisture is not limiting in 2003, spring green-up will be delayed and total annual forage production will be 20% to 50% below average on millions of acres of rangeland this year.

With grasses, growth of all below ground plant parts is proportional to the amount of top growth each year. Limited plant growth in 2001 and 2002 due to drought stress and excessive livestock grazing has dramatically reduced root growth, levels of stored energy, and formation of buds needed for tillers in future years. These direct impacts on plants are further compounded when the remaining plant cover is insufficient to keep rain water from evaporating or running off the soil surface. Reduced precipitation efficiency and reduced depth and total length of roots will make it impossible for most Nebraska rangeland to produce average levels of forage in 2003, even if they receive above average precipitation.

Stocking rates in 2003 must be reduced by a minimum of 20% to 50% compared to long-term average pair-days per acre because a larger percentage of this year's plant growth should be left to improve the effectiveness of precipitation. In the long run, it will be most cost effective to defer grazing in severely damaged pastures until after a killing frost this fall or waiting until summer 2004. Feeding cattle on rangeland will damage plants even more and reduce infiltration of rain water into the soil when precipitation does occur.

Failure to reduce stocking rates and delay turnout would be a serious tactical mistake for long-term ranch survival. Stocking rate reductions in the Nebraska Panhandle and adjoining regions of neighboring states should include delaying use of summer pasture until June 15 on Sandhills rangeland or until June 1 on other kinds of rangeland. The greatest number of cow-days per acre will be obtained when pastures are not grazed until plants have completed most of their growth for the year. When feed and/or planted forages are used to minimize herd reductions, all cattle should be kept off rangeland during the spring and into the summer allowing unimpeded plant growth.

Because of the damage already done to plants by the drought, livestock use of range grasses must be reduced in 2003 regardless of late winter and spring moisture. Livestock producers who decide to maintain cow numbers similar to long-term average levels need to consider irrigated and/or dryland crop forage alternatives.

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Visit the *AgNews* section of *CropWatch* on the Web for further information and more detailed recommendations for replacement feed and forage alternatives. It's available at *http://cropwatch.unl.edu/agnews03/an03-3-7.htm* A future issue of *CropWatch* will address issues related to forage production.

State offers hay and forage hotline

The Nebraska Department of Agriculture is giving a new name to an established resource. The Hay Hotline will now be known as the Hay and Forage Hotline to reflect that all types of forage can be listed on the database, from hay to alfalfa, pasture, bailed cornstalks, and other sources. Also, the database will be updated regularly; postings older than 90 days will be removed. Once removed, hay and forage suppliers can call the Department to be re-entered into the database and provide any updated information.

"According to the Nebraska Agricultural Statistics Service, we entered 2003 with the lowest hay stocks in Nebraska since 1957. We hope the Hay and Forage Hotline can help those in need of forage for livestock connect with those that have it for sale or donation," said Merlyn Carlson, NDA director.

The toll-free hotline number is (800) 422-6692. Producers who have hay, alfalfa, pasture space, or other types of forage to sell or donate may call that number to be included in the database of available supplies.

Those needing forage should call that same number to request a list of sellers. This list also can be viewed on-line at *http://www.agr.state.ne.us.* The list will be updated daily as information is available. The service is free and available to all buyers, sellers, and donors.

Sites offered for safe pesticide disposal

Nebraskans can safely and properly dispose of waste or unwanted pesticides and electrical transformers from irrigation systems free at any of 11 locations in eastern Nebraska between March 8 and 21. The disposal program will be offered at seven western Nebraska locations in late April and early May.

The joint venture of the Nebraska Department of Agriculture and University of Nebraska Cooperative Extension accepts all pesticides except those in pressurized cylinders. Now in its seventh year, the program has collected and incinerated nearly 850 tons of unwanted pesticide products from across the state, said NU extension pesticide education specialist Larry Schulze.

Pesticides that can be turned in include all types of herbicides, insecticides and fungicides; and all types of agricultural, livestock, home, lawn and garden, structural and commercial pesticides (including those in aerosol containers).

Farmers can dispose of old electrical transformers left over from irrigation system renovations. These transformers can contain PCBs, which have been linked to certain cancers and other health problems.

Items such as oil, antifreeze, paint, varnish, thinners, cleaners and solvents are not accepted. Neither are pesticide products in pressurized cylinders.

Collection sites are open 8 a.m. to noon, at each location. Preregistration is not necessary at any of the sites and there are no fees charged for quantities of pesticides up to 1,000 pounds, Schulze said.

Those anticipating turning in more than a half ton of waste products should notify Rich Reiman, NDA plant industry division administrator, in advance, by phoning (402) 471-2394.

Products brought to a collection site totaling over 1,000 pounds require a fee of $1 per pound for each pound of product *over* 1,000 pounds, Schulze said.

Preparation tips

Persons turning in pesticides or transformers are encouraged to:

- Leave pesticide labels on containers.
- Handle containers with chemical resistant gloves and in a way to prevent them from spilling.
- Wash hands with soap and water after handling.
- Take pesticide materials in for identification and disposal if containers' labels have been removed or are not legible.
- Transport smaller quantities of pesticides in fragile containers in a plastic bucket or other container that will contain the pesticide if it begins leaking.
- Do not transport pesticides in the passenger compartment of vehicles.

The collection program is organized by the NDA with help from NU Cooperative Extension. Funding is provided by the U.S. Environmental Protection Agency through the Nebraska Department of Environmental Quality and the Nebraska Environmental Trust through the Nebraska Agri-Business Association.

For more information on collections or individual collection sites, contact your local NU Cooperative Extension office, the NDA at (402) 471-2394, or the NU Pesticide Education Office at (402) 472-1632. Information also is available on-line at *http://pested.unl.edu/pat.*

Collection dates/locations

The following sites will be open from 8 a.m. to noon on the specified dates:

March 8: Douglas/Sarpy County Extension Office, 8015 West Center Rd., Omaha.

March 10: Dettmer Farm Service, 504 10th St., Auburn.

March 11: Farmers Co-op Elevator Co., 501 E. Main St., Plymouth.

March 12: Farmers Co-op, 1403 Rd. 14, York.

March 13: Consumer Service Co., 150 N. Blaine Ave. and East Hwy 6, Hastings.

March 14: Agri Co-op, 310 Logan St., Holdrege.

March 17: Waverly Co-op, 10741 N. 142nd St., Waverly.

March 18: Wal-Mart, 3010 East 23rd Ave., Fremont.

March 19: Cuming County Fairgrounds, Washington St., West Point

March 20: Madison County Weed Control, 3203 S. 12th, Norfolk.

March 21: Fairgrounds, 1542 Atakad, South Sioux City.

IANR News Release

NDA warns of pesticide solicitors

The Nebraska Department of Agriculture is warning farmers and ranchers to be wary of recent telemarketing sales of farm chemical pesticides. The NDA has received complaints about telemarketers making false claims about the pesticides they are trying to sell.

"In the cases we have been alerted to, the pesticide products have been grossly overpriced, sometimes as much as ten times what the product is really worth," said Merlyn Carlson, NDA director. "You are more assured of getting a credible product at a fair price if you do business with your local pesticide dealer."

If you're contacted by one of these solicitors please contact Rich Reiman of the NDA at (402) 471-2394 or the Nebraska Attorney General's Consumer Protection Division at 800-727-6432.