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## CropWatch No. 2002-25, Nov. 1 ,2002

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# CROP WATCH

University of Nebraska Cooperative Extension  
Institute of Agriculture and Natural Resources

No. 2002-25  
Nov. 1, 2002

## *Bt corn and ECB resistance management*

# Planning refuge plantings for 2003

Insect resistance management (IRM) has been an important topic since the advent of Bt transgenic corn. If you've grown Bt corn in the past, you're familiar with resistance management and the use of refuges. When buying Bt corn, seed farmers are required to sign contractual grower agreements that state they are aware of and will comply with resistance management requirements.

Requirements for 2003 are the same as last year, but since there were slight changes in 2002, it's a good idea to review the current requirements and plan accordingly when ordering seed.

Resistance management for European corn borers and Bt corn

revolves around the use of refuge plantings. In Nebraska, a refuge is non-Bt corn. The purpose of the refuge is to supply a source of Bt-susceptible corn borers that can mate with resistant corn borers potentially emerging from nearby Bt corn. Specific resistance management information will be a part of each corn seed bag label. Be sure and discuss resistance management with your seed dealer.

The 2003 EPA requirements for resistance management 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, 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.

Additional information concerning Bt corn, European corn borer, and resistance management is available in the Nebfact "Resistance Management for European Corn Borer and Bt Transgenic Corn: Refuge Design and Placement" (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**

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### Mark your calendar!

This week and in the next *Crop Watch* information on a variety of UNL educational and training opportunities for farmers and agribusiness will be featured.

# Updates

## Hot off the press

University of Nebraska Cooperative Extension recently released the following new or revised publications. These should be available from your local Extension office and soon will be available on the Web at <http://www.ianr.unl.edu/pubs>

G02-1466 Determining the Need to Fertilize Landscape Trees and Shrubs

G 02-1471 Decommissioning Water Wells: An Owner's Guide

G 02-1472 Residential On-site Wastewater Treatment: Conducting a Soil Percolation Test

G 02-1473 Residential On-site Wastewater Treatment: Septic Tank Design and Installation

G 02-1474 Residential On-site Wastewater Treatment: Constructed Wetlands

EC 02-1550 Nebraska Management Guide for Arthropod Pests of Livestock and Horses

## Grain, bean harvest lag behind average

The USDA Nebraska Agricultural Statistics Service reported Monday that corn harvest for grain or seed was 58% complete, behind both last year at 64% and an average of 75%. Soybean harvest was 86% complete, behind an average of 93%.

Sorghum fields were 72% harvested, ahead of last year at 69% but behind an average of 79%. Dry bean harvest was 98% complete, behind last year and an average of 99%.

Wheat fields were 96% emerged, near the average emergence for this period. Condition of the fall seedings rated 10% very poor, 9% poor, 34% fair, 45% good, and 2% excellent. A year ago conditions rated 71% good and excellent.

## Management tips

◆ **With non-stop irrigation in many areas this year, producers may have made short-term fixes in order to keep their systems running.** This winter be sure to check irrigation systems thoroughly and repair or replace worn parts.

◆ **Have you evaluated your soil fertilization practices to make sure your practices are at a low risk of harming the environment?** An excellent aid is the Farm\*A\*Syst publication: Crop Nutrient Application Management, (Worksheet 14), EC 98-790. A companion publication lists resources for making improvements.

◆ **Have you evaluated your manure storage facility and manure management regarding the risks your manure system has to the environment and your health?**

Three excellent resources for doing this are the NU Cooperative Extension Farm\*A\*Syst publications:

*Livestock Manure Storage, Livestock Yards Management, and Land Application of Manure,* (Worksheets 9, 10, 11), EC752, EC761 or EC758. Companion publications on each topic can help you determine needed improvements.

## West Nile update

The Nebraska Health and Human Services System reports that 115 presumptive human cases of West Nile virus and 5 deaths have been reported in Nebraska as of Oct. 30. Nebraska ranked 9th of 39 states reporting human cases. The first human case of West Nile virus was reported in Nebraska on Aug. 23. For further updates, visit the NHHS Web page at <http://www.hhs.state.ne.us/puh/epi/wnv/wnvindex.htm>

The Nebraska Department of Agriculture reports that as of Oct. 29, 1096 cases of equine West Nile virus had been reported in 92 Nebraska counties.

# CROP WATCH



[cropwatch.unl.edu](http://cropwatch.unl.edu)

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With all pesticide recommendations, carefully read and understand label instructions. Any reference to commercial products is made with the understanding that no discrimination is intended and no endorsement by Nebraska Cooperative Extension is implied.

Lisa Jasa, Editor; Email: [ljasa1@unl.edu](mailto:ljasa1@unl.edu)

For more information about a particular subject, contact the departments:  
 NU Department of Entomology, 202 Plant Industry Bldg., Lincoln, NE 68583-0816  
 NU Department of Agronomy, 279 Plant Science Bldg., Lincoln, NE 68583-0918  
 NU Department of Plant Pathology, 406 Plant Science Bldg., Lincoln, NE 68583-0722

## Nov. 8 farm bill meeting:

# Using on-line software to compare your options

If you're like many producers, you may still be researching and examining your options under the new farm bill before making a six-year commitment.

A Nov. 8 NU Cooperative Extension satellite conference will provide training to help producers use one of several Web resources on the farmbill -- an on-line program developed by Texas A&M University. The satellite conference will be from 10 a.m. to noon next Friday. Check with your local Cooperative Extension office for potential downlink sites.

The meeting will cover how to use the on-line Base and Yield Update Option Analyzer, how to correctly input data, and how to interpret the results to make an informed decision. The program is available at <http://www.afpc.tamu.edu/models/bya/>

Presenters will include Dr. James Richardson, TAMU Public Policy Specialist and one of the software developers, Dr. Roy Frederick, NU Public Policy Specialist, Randy Pryor, NU extension educator in Saline County and program coordinator, and Doug Klein, programs specialist with Farm Services Agency. The meeting will include time for speakers to answer questions from participants at the downlink sites.

The 2002 Farm Bill provides farmers and landowners a one-time opportunity to update the contract base acres and farm program yields used to calculate program benefits. Deciding what to update is complex and may involve several commodities and uncertain market conditions, which drive future counter-cyclical payments. Selections made this year can have long-term implications -- the base and yield elections made before April 1, 2003, will apply for at least the next six years.

### More info on-line

USDA's **Farm Bill 2002** includes a variety of resources and program updates which also may be helpful to decision-making. The site is at <http://www.usda.gov/farmbill/>

The primary benefit of the Texas A&M program is how it includes guaranteed direct payments and

counter-cyclical payments that are not guaranteed. The computer analyzes each base option using 500 counter-cyclical prices. The results of simulating the six base and yield alternatives on a farm unit amounts to 21,000 estimates of government payments per crop. The price model helps a producer or landlord see which option ranks the highest out of 500 times.

**Randy Pryor, Extension Educator, Saline County**

## Crop insurance workshop Nov. 13

This year's drought and the new farm bill are the focus of an insurance and risk management workshop Nov. 13 in Grand Island.

The session, "Challenges Facing Crop Insurance and Risk Management with the New Farm Bill," will help crop insurance agents, growers, agricultural lenders and other financial consultants provide better risk management strategies and advice to their clients, said Doug Jose, University of Nebraska farm management specialist. Registration is 7-8:30 a.m. with the conference concluding by 4 p.m.

The Grand Island session, at the Interstate 80 Holiday Inn, is one of three risk management workshops jointly sponsored by NU Cooperative Extension, Kansas State University Research and Extension and Colorado State University Cooperative Extension in cooperation with National Crop Insurance Services. Workshops also will be Nov. 12 at the Holiday Inn in Hays, Kan., and Nov. 14 at the Brush Fairgrounds Event Center in Brush, Colo.

Topics include: understanding the new farm bill, analysis of weather patterns, controlling fraud and abuse, current Great Plains crop insurance issues, legislation con-

cerning crop insurance, impacts of drought on agriculture -- a lender's perspective, servicing the customer and crop insurance challenges for the Great Plains.

Presenters are: G. A. (Art) Barnaby Jr., KSU agricultural economist; Arthur Carroll of Limerick, Maine, secretary of the National Association of Crop Insurance Agents; Rebecca Davis of Topeka, Kan., director of the regional office for the Risk Management Agency; Al Dutcher, NU state climatologist; Roy Frederick, NU agricultural economist; Russ Groshans, agricultural lender in Eaton, Colo.; John Hanson, senior agricultural advisor to Rep. Tom Osborne (R-Neb.); Scott Hill, vice president of the Lauritzen Corp. at First National of Omaha; Dennis Kaan, CSU Golden Plains Extension director and regional farm/ranch management economist; Brad Lubben, KSU agricultural economist; Neil Smith, senior vice president, First National Bank of Liberal, Kan.; and Alvin Gilmore, director of Central Regional Compliance Office, Office, Risk Management Agency, U.S. Department of Agriculture.

Cost is \$65 before Nov. 6 and \$90 after and includes instruction,

*(Continued on page 233)*

# Pesticide applicator regulations change for 2003 production season

Several changes were made in Nebraska's pesticide regulations in 2002 which will affect pesticide application and applicator licensing and certification for the 2003 crop production season. These changes are outlined below and will be addressed in initial certification and recertification training this winter.

- The minimum age for licensing is now 16 years.
- No recommendation can be made that is contrary to or inconsistent with the pesticide label.
- For the second year, once an individual is certified, the applicator must pay a license fee of \$90 for a commercial applicator or \$25 for a private applicator. This fee must be paid to the Nebraska Department of Agriculture before the license is granted in order to buy and use restricted use or general use pesticides. Beginning this year, in order to recertify, the license fee must be paid before the certification expires.
- Any employee of a political subdivision of the state applying pesticides (GUP or RUP) for vector control must obtain certification/licensing prior to applying such pesticides. He or she would be classified by the Nebraska Department of Agriculture as a noncommercial applicator.

For more information on federal and state pesticide laws applicable in Nebraska, watch for a newly revised NebGuide to be available in mid November, "Pesticide Laws and Regulations" (G479), or check the UNL Pesticide Education web site at <http://pested.unl.edu>

## Pesticide training opportunities

A number of meetings and exams have been scheduled for individuals interested in becoming certified or recertified as a pesticide applicator.

Extensive information on pesticides, applicator training and pesticide safety is available on-line at [pested.unl.edu](http://pested.unl.edu)

A person becomes certified by successfully completing the required exams or recertified by either completing a continuing education course or successfully completing the exam. Once certified, a person needs to become licensed. Persons completing certification will be sent a billing statement by the Nebraska Department of Agriculture for a license. A three-year commercial license costs \$90. When the fee is paid, the State Department of Agriculture will issue the license. Persons completing certification as a noncommercial applicator will be sent a license without a fee.

Initial commercial/noncommercial certification is based on satisfactory test scores on a general standards exam plus one or more category exams. Preregistration is required. However, registration will be at the door at Crop Protection Clinics for Ag Plant recertifications. Consult the program schedule to determine the appropriate location for the categories being sought.

Study materials are optional for recertification but are required for all initial pesticide applicator programs. To order study materials, contact the UNL Pesticide Education Office at least 10 working days before the training date. A form and further information are available on the Web at <http://pested.unl.edu/PAT2003ScheduleBrochure.pdf>. Individuals also can use a credit card to order by phone or fax.

Pesticide Education Office  
University of Nebraska  
101 Natural Resources Hall  
Lincoln, NE 68583-0820  
Phone: (800) 627-7216 or  
(402) 472-1632  
Fax credit card orders to:  
(402) 472-3574

## Initial pesticide applicator training

*(Check the web site or your local Cooperative Extension office for test categories to be offered for specific dates and sites.)*

### Feb. 4

Beatrice, Gage County  
Columbus, Platte County  
Grand Island, College Park  
Lincoln, Lancaster County  
Norfolk, Lifelong Learning Center  
North Platte, West Central REC  
Omaha, Douglas County  
Scottsbluff, Panhandle REC

### Feb. 20

Beatrice, Gage County  
Columbus, Platte County  
Fremont, Dodge County  
Grand Island, College Park  
Lincoln, Lancaster County  
Norfolk, Lifelong Learning Center  
North Platte, West Central REC  
Ogallala, Keith County  
Omaha, Douglas County  
Scottsbluff, Panhandle REC

### April 24

Lincoln, Lancaster County  
Scottsbluff, Panhandle REC  
Omaha, Douglas County

## Pesticide applicator recertification training

*(Check the web site for test categories to be offered for specific dates and sites.)*

*(Continued on page 233)*

## Pesticide training

(Continued from page 232)

### Feb. 6

Beatrice, Gage County  
Grand Island, College Park  
Grant, Perkins County  
Holdrege, Phelps County  
Lincoln, Lancaster County  
Norfolk, Lifelong Learning  
Center  
North Platte, West Central REC  
Omaha, Douglas County  
O'Neill, Holt County  
Rushville, Sheridan County  
Scottsbluff, Panhandle REC

### Feb. 18

Ainsworth, Brown County  
Albion, Boone County  
Alliance, Box Butte County  
Beatrice, Gage County  
Columbus, Platte County  
Fremont, Dodge County  
Holdrege, Phelps County  
Lincoln, Lancaster County  
Norfolk, Lifelong Learning  
Center  
North Platte, West Central REC  
Omaha, Douglas County  
Ord, Valley County  
Valentine, Cherry County

### March 4

Columbus, Platte County  
Grand Island, College Park  
Norfolk, Lifelong Learning  
Center  
Ogallala, Keith County  
Omaha, Douglas County  
Ord, Valley County  
Scottsbluff, Panhandle REC

Recertification training sessions also will be offered at all UNL Crop Protection Clinics Jan. 7-24 for the agricultural/plant category. Check the Nov. 15 *CropWatch* for meeting locations.

Recertification training also will be held in conjunction with several conferences not listed here. Check the UNL Pesticide Education Web site at <http://pested.unl.edu/PAT2003ScheduleBrochure.pdf> for details.

**Larry Schulze**  
Pesticide Education Specialist

## Ag research update Nov. 19

A Research Symposium for Nebraska producers and agribusiness professionals will be broadcast by satellite to five sites on Tuesday, Nov. 19. The symposium is co-sponsored by the Nebraska Agribusiness Association in cooperation with the University of Nebraska Cooperative Extension and the Department of Agronomy and Horticulture. Additional financial sponsorship is provided by Midwest Laboratories Inc., Bayer, BASF and Monsanto.

Host sites are the UNL Panhandle Research and Extension Center in Scottsbluff, the UNL West Central Research and Extension Center in North Platte, the Lifelong Learning Center in Norfolk, College Park Learning Center in Grand Island, and the NU Agricultural Research and Development Center near Mead. The program begins at 8:30 a.m.

Topics and presenters include:  
*Soybean Nitrogen Credit to Corn and Sorghum*, Gary Varvel,  
*Nebraska Soil Fertility Project Results*, Achim Dobermann, Extension Soil Fertility/Nutrient Management Specialist;  
*Real Time Sensors to Manage Nitrogen in Corn*, John Shanahan, USDA-ARS agronomist;  
*Fly Ash as a Lime Material*, David Tarkalson, Extension soil fertility and nutrient management specialist;  
*Making No-Till Systems Work*, Bob Klein, Extension cropping systems specialist;

*Herbicide and Insecticide Performance in 2002* (presenters vary according to host site regions):  
Brady Kappler, Extension Educator -- Weed Science; Ron Seymour, Extension educator in Adams County, and Keith Jarvi, integrated pest management;

*Impact of Changes in Weed Management on Crops and Pests*: Fred Roeth, Extension weeds specialist; Jim Stack, Extension plant pathologist; Seymour; and Jarvi;

*Corn and Soybean Disease Management*, Stack;  
*Corn Insect Management*, Seymour; and

*Soybean Insect Management*, Jarvi.  
The registration fee is \$80 for NeABA members and Nebraska Certified Crop Advisors and \$95 for non-members and out of state registrants. Fees include resource materials, refreshments and lunch. To register, visit the Nebraska Agribusiness Association's Web site at <http://www.na-ba.com/events.htm> or contact NeABA at 1111 Lincoln Mall, Suite 308, Lincoln, NE 68508-2882; phone (402) 476-1528; fax (402) 476-1259; e-mail [info@na-ba.com](mailto:info@na-ba.com).

## Crop insurance

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handout materials, lunch and refreshments. An application has been made for continuing education credit.

For more information or to register, contact NU's Agricultural Economics Department, Room 308A Filley Hall, University of Nebraska, Lincoln, Neb. 68583-0922, call (402) 472-2039, fax (402) 472-0776 or visit the Web site at [http://www.agecon.ksu.edu/risk/barnabyh02/ci\\_ws.htm](http://www.agecon.ksu.edu/risk/barnabyh02/ci_ws.htm).

Cooperative Extension is part of NU's Institute of Agriculture and Natural Resources.

**Sandi S. Alswager**  
IANR News

## Harlan County guide

A new NU publication covers the geology and history of the flood-busting Harlan County Dam, which was completed 50 years ago. The "Field Guide to the Geology of the Harlan County Lake Area, Harlan County, Nebraska -- With a History of Events Leading to Construction of Harlan County Dam" is available from the university's Conservation and Survey Division.

## Nitrogen/water quality Dec. 10 meeting focus

Farmers can compare yields from corn with various nitrogen rates during the Demonstration Projects Winter Update for the Central Platte and Lower Loup Natural Resource Districts. The project compared yields among irrigated plots with different rates of nitrogen and different yields.

The Dec. 10 meeting, which is being sponsored by the two NRDs, will be held in the Community Room of the First National Bank in Fullerton. It will open with lunch at noon and continue with speakers from 12:45 p.m. to 3:40 p.m. The program include:

*Predictions for moisture in 2003*, Al Dutcher, state climatologist;

*Issues of the new farm bill*, Roy Frederick, public policy specialist;

*Using soil types to plan fertilizer applications*, Paul Jasa, agricultural engineer;

*Central Platte NRD demonstration plot summary*, Dean Krull, project coordinator;

*Lower Loup NRD demonstration plot summary*, Eric Smith, project coordinator;

*Soil fertility research*, Charles Shapiro, Extension soil specialist;

*Management area update*, Russ Callan, assistant manager, Lower Loup NRD; and

*Area nitrate history and management update*, Milt Moravek, assistant manager, Central Plate NRD.

**Eric Smith, Demonstration Project Coordinator, Lower Loup NRD**

## Soybean Expo

This year's Nebraska Soybean Day and Machinery Expo will be 8:30 a.m. - 2:30 p.m. Friday, Dec. 13, at the Saunders County Fairgrounds in Wahoo.

The day will include ag specialists with updates and helpful tips for soybean production, equipment and product displays, and a free lunch. (See the Nov. 15 *Crop Watch* for more details.)

## Midwest Weed Science Conference Dec. 2-5

The 57th meeting of the North Central Weed Science Society will be Dec. 2-5 in the Hyatt Regency Hotel in downtown St Louis, Missouri. The program will feature papers and posters on the latest research and developments in weed management. CCA credits have been requested for three symposia:

- Glyphosate Resistant Weeds: Status, Prevention and Management
- Application Equipment and Technology as it May Influence Weed Control in the Future
- Weed Community Shifts

CCA credit also has been requested for a speaker on "Gene Flow from Genetically Modified Crops: A Multifaceted Problem Spanning Science, Regulation, Trade and Society" schedule for the breakfast meeting Dec. 5. Presentations and posters will address weed management in the following areas: corn and sorghum, soybeans and annual legumes, cereals and oil-seeds, forage and range, equipment and application methods, and weed ecology and biology.

Cost for the entire conference is \$200 for those who preregister and \$225 for those who register at the door. Full registration includes a proceedings, the Wednesday evening

awards banquet and refreshment breaks. One-day registrations are \$40.

For registration and hotel room information, contact the NCWSS executive secretary, Robert A. Schmidt, 1508 West University Avenue, Champaign, IL 61821-3133 (phone: 217-752-4241; email: raschwssa@aol.com). Information is also available on the web at <http://www.ncwss.org>.

## Create a Nebraska map customized to your needs

If you're interested in maps or just want to create a special map of your farm, visit the Nebraska Natural Resources Commission's Nebraska Map Interactive at <http://www.dor.state.ne.us/intermap.htm>

You choose the layers you want displayed and then click on the map to zoom in. Layers include cities, counties, DOQQ regions, fire districts, hydrologic units, legislative districts, roads, streams, NRD boundaries, river basins, township-range, USGS 7.5 minute quads and zip codes.

As you zoom in, more layers become available for use on the map. Features are labeled in a manner appropriate to the scale of the map.

## Husker Feed Grains and Soybean Conference

The 17<sup>th</sup> annual Husker Feed Grains and Soybean Conference will be Jan. 22-23 at the Cornhusker Hotel in Lincoln.

Invited speakers include Pro Farmer Senior Editor Scott Davis and Farm Journal Columnist John Phipps who will cover aspects of the changing ag markets, particularly in the face of current economic challenges.

A forum on environmental issues will include representatives of both the Environmental Protection Agency (EPA) and Nebraska Depart-

ment of Environmental Quality (NDEQ). UNL experts will cover alternative ag and value-added products.

The Husker Feed Grains and Soybean Conference is a joint effort of the Nebraska Corn Growers, Nebraska Grain Sorghum Producers and Nebraska Soybean associations, in cooperation with the corn, grain sorghum and soybean checkoff boards. Contact Brenda Wilson toll-free at 877-395-4653 for more information on the conference.



## Ag cooperative, LLC workshop Nov. 19-20

Producers can learn about value-added cooperatives and limited liability corporations at a Nov. 19-20 workshop.

The "Governance of Farmer-Owned Value-Added Cooperatives and LLCs" will be at Omaha's Doubletree Guest Suites. It begins at 1 p.m. Nov. 19 and ends by 3:30 p.m. Nov. 20. The session is offered by the University of Nebraska Cooperative Extension, Nebraska Cooperative Council, Iowa State and Kansas State universities, the Agricultural Marketing Resource Center, Iowa Institute for Cooperatives and Kansas Cooperative Council.

"The workshop will give groups insight on how to organize a governing body for their cooperative or LLC and work more effectively with hired management," said Darrell Mark, NU agricultural economist. "The financial reporting responsibilities and legal expectations for the group will be covered as well."

During the first day, participants will learn about the board's legal responsibilities and separation of duties and will hear from a variety of speakers with practical experience in establishing a governing body for their cooperative or LLC. The second day will cover board committees, auditor instruction and new audit requirements for cooperatives and LLCs, with a full explanation given of the Sarbanes-Oxley law. The day will conclude with open discussion.

Registration is \$100 before Nov. 14 and \$125 after Nov. 14. For more information about the seminar, contact Mark at (402) 472-1796 or email [dmark2@unl.edu](mailto:dmark2@unl.edu). For registration information, contact Patty Hannapel at (515) 294-5281 or email [pgh@iastate.edu](mailto:pgh@iastate.edu)

Vicki Miller  
IANR News and Publishing

## Agronomy offers distance learning classes

The Department of Agronomy and Horticulture is offering a variety of courses this winter via distance education. The courses are designed to help both those students needing continuing education credits (CEUs) as well as those working toward academic credit. Some students take classes noncredit to further their professional careers and businesses.

Courses are designed for the working professional in the agronomic and horticultural sciences, and postgraduate students who wish to obtain an in-depth knowledge of emerging issues and new approaches in many areas of agricultural technology.

The following lists distance education classes and workshops by topic area. Each course is offered once a year unless noted otherwise and may be taken noncredit or for CEU or academic credit. Each course is one credit unless noted otherwise. For more information, visit the Department's distance education Web site at [http://agronomy.unl.edu/distance\\_ed/](http://agronomy.unl.edu/distance_ed/)

### Genetics and Plant Breeding

*Crop Genetic Engineering*, AGRO 411/811: March 18-19, Dr. Don Lee and Dr. Deana Namuth

*Crop and Weed Genetics*, AGRO 412/812: Fall 2003, Dr. Don Lee and Dr. Deana Namuth

*Self-Pollinated Crop Breeding*, AGRO 896A: Fall 2003, Dr. P. Stephen Baenziger

*Germplasm and Genes*, AGRO 896B: Fall 2003, Dr. P. Stephen Baenziger

*Cross-Pollinated Crop Breeding*, AGRO 896D: Nov. 5 - Dec. 12, Dr. P. Stephen Baenziger

### Plant Pathology

*Phytopathological Principles*, AGRO 830: Jan. 13 - March 7, Dr. James E. Partridge

*Diseases of Corn*, AGRO 830A: March 10 - May 2, Dr. James E. Partridge

*Diseases of Turf*, AGRO 830E: March 10 - May 2, Dr. Gary Yuen

### Plant Physiology and Production

*Plant Nutrition and Nutrient Management* AGRO 424/824: (3 cr, no CEU or non-credit) Jan. 13 - May 3, offered in odd-numbered years, Dr. Ellen Paparozzi (UNL), Dr. Daniel Walters (UNL), and Dr. Kim Williams (KSU)

*Animal, Food and Industry Uses of Grain*, AGRO 496/896: Jan. 13 - Feb. 17, Dr. Stephen Mason

*Production of Specialty Grain Crops*, AGRO 496/896: Feb. 19 - March 31, Dr. Don Lee and Dr. Stephen Mason

*Agricultural Biochemistry* (2 cr), AGRO/BIOC 818: Fall 2003, Dr. John Markwell

### Crop Modeling and GIS

*Note:* The following four sections are one integrated workshop.

*Introduction to Crop Modeling*, AGRO 496/896x1: Jan 6-10, Dr. Robert M. Caldwell

*Crop Modeling: Case Studies*, AGRO 496/896x2: Jan. 6-10, Dr. Robert M. Caldwell

*Modeling Root-Zone Water Quality*, AGRO 496/896x3: Jan. 6-10, Dr. Robert M. Caldwell

*Designing GIS Applications for Crop Management*, AGRO 496/896x4: Jan. 6-10, Dr. Robert M. Caldwell

*Nebraska Range Short Course*, AGRO 496/896: offered in summers of even-numbered years, Dr. Lowell Moser

*Herbicide Action in Plants*, AGRO 896: Feb. 25 - 26, Dr. Alex Martin and Dr. Fred Roeth

*Integrated Weed Management*, AGRO 896: Spring 2003, Dr. Stevan Knezevic

Looking for something you saw in an earlier *CropWatch*?  
The last five years are archived on-line at [cropwatch.unl.edu](http://cropwatch.unl.edu)



# Drought, heat, hail pummel yields in long-term tillage, rotation research plots

The hot, dry weather put many crops and cropping practices to the test this season. In many areas, differences in tillage systems, planting dates, or other management factors made large differences in productivity. Producers often wonder how different tillage systems will perform, both in a year like this one and over the long-term.

The 2002 yields for a long-term tillage system study on the University of Nebraska Rogers Memorial Farm (10 miles east of Lincoln) are given in the table. These research plots, established in 1981 in a dryland soybean/grain sorghum rotation, show that long-term no-till builds soil structure, usually has the highest yield, and is the most profitable.

There were adequate rains in May to fill the soil profile, replacing the soil moisture lost to preplant tillage. However, no rain fell from May 30 to July 6 and only 1.10 inches fell in July. About 6.75 inches fell from August 12 through August 23 and a thunderstorm with severe hail dumped about 3 inches of rain on August 28. Even with this much rain, there was virtually no runoff from the long-term no-till fields on the farm. The creek running through the farm was out of its banks, over the road next to the farm because of runoff from the surrounding areas.

Tillage system	Yield, bu/A*	
	Soybeans	Grain sorghum**
Fall plow, disk, disk	10.9	34.8
Fall chisel, disk	15.5	41.8
Disk, disk	15.6	42.9
Disk	17.1	42.0
No-till with cultivation	16.8	48.8
No-till without cultivation	17.8	64.6

\*Full plot harvest with a combine and weigh wagon; corrected for moisture.

\*\* Severe hail one week before harvest threshed out about half the yield.

The mid-August rains may not have added much to the yield of grain sorghum which was near maturity at the time. Unfortunately, the hail stripped the leaves and threshed out about one-half the yield, turning the ground red with grain. Even with the storm damage, the no-till without cultivation treatment had the highest yield and the fall plow treatment had the lowest, much like previous years. (See previous related stories in the *Crop Watch* archive on the Web at <http://cropwatch.unl.edu/archives>.)

Similarly, the hail stripped most soybean leaves and damaged many pods, knocking some to the ground. The rainfall was welcomed for pod-fill but the damaged plants had little leaf area remaining for photosynthesis and growth. At harvest, many of the beans were discolored, diseased,

or shriveled. While no-till did have the highest yield and plow the lowest, the hail made the comparison of tillage systems difficult. On other areas of the farm that didn't receive much hail, the same soybean variety planted no-till yielded 30 to 50 bushels per acre, depending on soil type.

Over the years, it has been observed that the long-term no-till treatments have better soil structure, more residue cover, and less surface crusting. These conditions are improving the water infiltration rate and decreasing runoff, making rainfall more effective with long-term no-till. With no tillage operations, better soil structure, and higher yields, no-till is the most profitable tillage system.

**Paul Jasa**  
Extension Engineer

## Integrated crop management workshops

Plan now to attend one of several December workshops in the UNL Integrated Crop Management Winter Program. They include:

- Soil and Water Management Dec. 5 at the Lifelong Learning Center in Norfolk;
- A two-day Crop Pest Management workshop Dec. 17-18 on UNL's East Campus in Lincoln; and
- Basic Soils workshop Dec. 19 on UNL's East Campus.

For program details, costs, CCA credit and other workshop information, please contact Keith Glewen, Extension educator, at the NU Agricultural Research and Development Center at (402) 624-8030 or by email at [kglewen1@unl.edu](mailto:kglewen1@unl.edu).