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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 95-25
Oct. 27, 1995

Maintaining your conservation plan

Lower yields mean less residue

Many farmers across Nebraska have crop residue requirements as part of their conservation plan for erosion control on highly erodible land. Crop yields are highly variable this year, depending on the crop grown and the area of the state.

Some farmers are getting lower yields this year which, translated into erosion control terms, means less residue and soil erosion control. As a result it is imperative that tillage practices be changed to ensure that required crop residue levels are present before planting.

Residue cover depends on the amount of plant material (residue) produced, breakdown due to weathering, tillage and spreading after harvest. Yield is a good indicator of the amount of plant material produced that can become residue after harvest.

Using yield as a basis, three steps are necessary to estimate residue cover.

Step 1: Estimate residue weight after harvest from grain yield.

$$\text{Residue weight (lb/acre)} = \text{Yield (lb/ac)} \times \text{ratio}$$

To determine yield in lb/ac, the yield in bu/ac should be multiplied by the test weight of the crop. The ratio multiplier is 1 for corn and sorghum/milo, 0.67 for soybeans and 0.59 for wheat.

Step 2: Convert residue weight after harvest to residue cover.

Use the following table to determine your approximate residue cover. Estimate residue cover for amounts between the given residue weights.

Residue weight lb/ac	Corn/sorghum/ soybeans		Wheat
	-- % Residue cover --		
500	13	24	
1,000	24	43	
2,000	43	67	
4,000	67	89	
6,000	81	97	
8,000	89	99	

Step 3: Adjust residue cover due to tillage.

$$\text{Adjusted residue cover (\%)} = \text{Residue cover} - [\text{residue cover} \times \text{residue buried}]$$

This calculation can be repeated for each tillage operation. For the second and subsequent operations, simply substitute the previously adjusted residue cover value for residue cover in the equation.

Field operation	Residue buried
Chisel	.25
Disk	.40 to .50
Disk	.40 to .50
Moldboard plow	.70 to .90
Blade/sweep	.10 to .15
Field cultivator	.20 to .25
Harrow	.15 to .20
Anhydrous applicator	.10
Rodweeder	.10 to .15
Mulch treader	.30

Alice J. Jones, Extension. Soil Erosion Control/
Conservation Tillage Specialist



UNIVERSITY OF NEBRASKA-LINCOLN, COOPERATING WITH THE COUNTIES AND THE U.S. DEPARTMENT OF AGRICULTURE

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Ergoty grain and hay risky to cattle

Cool wet weather this spring created ideal conditions for the infection and development of ergot in pasture grasses and susceptible small grains. Ergot sclerotia detected in grain or grass hay should not be taken lightly. If wheat has been rejected at the elevator because of ergot or if ergot bodies are found in grass hay, exercise extreme caution before feeding to livestock.

Federal grain grading standards classify wheat as ergoty if it contains more than 0.3% of ergot bodies, or sclerotia, by weight. The toxic alkaloids contained in ergot bodies affect all domestic animals, including poultry and humans. Consumption of affected grain or hay may cause blood vessel constriction and smooth muscle contractions in animals. In pregnant animals, continuous doses of ergot can cause uterine contractions leading to spontaneous abortion. Ingesting small amounts of ergot may cause a reduction or complete cessation in lactation or the loss of extremities, especially ears, tails and hooves, because of blood vessel constriction followed by the onset of gangrene. Ergot causes the condition known as "St. Anthony's Fire" in humans.

Ergot bodies or sclerotia are

black hard structures, resembling rodent droppings, produced in place of the seed. In wheat their size and shape may be similar to the kernel; in rye or triticale they are much larger than the kernel. Ergot sclerotia produced in grass hay generally are smaller than those from cereal grains and more difficult to detect. Any suspect hay should be carefully inspected before being fed. If you find something that resembles mouse or rat droppings, that's probably ergot sclerotia. Screen ergot contaminated grain to remove as many sclerotia as possible.

It is highly recommended not to feed ergoty grain or hay to livestock, particularly to pregnant

or young animals. Any amount of ergot in the diet of animals may cause adverse health effects.

Before considering feeding ergoty grain or hay have it analyzed by the Veterinary Diagnostic Center, University of Nebraska-Lincoln, P.O. Box 83097, Lincoln, NE 68583-0907. Dr. Norman Schneider, Chief of Toxicology at the UNL Veterinary Diagnostic Center, is interested in receiving ergot sclerotia screened from grain samples. Send the ergot to him at the above address.

John Watkins
Extension Plant Pathologist
Norman Schneider, DMV
Veterinary Toxicologist

And the name please ...

Michael Schafer of Grand Island will receive a one-year free subscription to *CropWatch*. His name was drawn from the many entries submitted in a drawing at the 1995 Husker Harvest Days. Thanks to all for visiting the University's Institute of Agriculture and Natural Resources Exhibit.



CROPWATCH

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Lisa Brown Jasa, Editor

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Sorghum variety trial results released

Hoegemeyer S6710 grain sorghum hybrid topped the Nebraska Grain Sorghum Producers Association Variety Trials with 90.49 bushels per acre adjusted yield.

The trial included 28 hybrids, six of which were Gaucho-treated, and was conducted near Beatrice on the farm of Dan Dell. The plot was no-till drilled June 7 into 1/2 inch of dry soil over muck in a field no-till drilled the preceding two years to milo. The next week there was 100 degree weather and the drill slots opened wide, resulting in reduced stands in some varieties. The harvested plots were 210 feet long and 20 feet wide or about 0.1 acre. They were harvested with a full-sized combine and weighed with a weigh wagon.

AgriPro AP9850, which provided the top adjusted yield in the 1993 and 1994 trials, was used as the check variety this year.

Averages of 28 hybrids:

Yield 72.2 bu/A
Moisture 14.02%
Test weight 56.65 lb/bu

Averages of 29 check strips

Yield 77.7 bu/A
Moisture 14.16%
Test weight 58.48 lb/bu

Paul Hay, Extension
Educator, Gage County

Variety	Adj. Yield* bu/A	Population**	Moisture %	Test Wt. lb/bu
Hoegemeyer S6710	90.49	43,560	14.1	55.9
Cargill 737 Gaucho	85.89	52,030	13.3	56.7
Pioneer 8500	83.00	58,080	13.6	60.4
Cargill 737	82.67	35,090	13.6	56.8
Lynks 710	79.72	38,720	13.8	57.8
ICI 5536	79.12	44,770	13.5	57.5
Mycogen 444E Gaucho	76.82	42,350	14.0	56.9
AgriPro ST686	75.67	37,510	14.4	57.9
Producers 76	74.30	45,980	14.2	58.6
Mycogen 444E	74.17	36,300	14.0	56.7
Fontanelle 5570C	73.92	47,190	14.3	57.2
Co-op 416E	73.79	55,660	14.5	57.8
NC+ 371	73.40	59,290	13.8	56.3
NC+ 371 Gaucho	73.19	50,820	13.7	56.3
DeKalb DK54	72.98	50,820	14.3	54.8
Northrup King KS524	72.98	50,820	13.5	57.1
Ottillie 420	71.80	44,770	14.6	57.7
Asgrow A570	70.81	45,980	13.1	55.7
Golden Harvest H505BW Gaucho	70.53	36,300	13.7	56.1
Ciba Seeds 1616	69.80	43,560	13.9	53.7
Golden Harvest H505BW	68.65	35,090	14.2	54.9
Asgrow A504 Gaucho	68.51	44,770	14.2	56.1
Keltgen KG698CR	67.07	37,510	14.3	55.4
Roth Seeds RSC541	66.74	24,200	14.0	57.5
Cenex 425	63.10	32,670	14.5	57.1
LG Seeds/Horizon 213Y-E	60.77	35,090	14.4	55.1
Miller Preferred MP70C	55.35	24,200	15.0	54.2
Producers 68 Gaucho	55.13	20,570	14.0	58.0

* Yields corrected to 14% moisture and adjusted relative to adjacent check strips of AgriPro AP9850.

** Stand counts based on the average of four separate 1-square-yard counts.

Surveys requested

Thanks to all of you who have taken the time to complete your *CropWatch* survey and mail it back. The results will be very helpful in evaluating what you use most in the newsletter and what you would like to see changed or improved. If you haven't already sent yours back, please take a few moments to do so. The survey was the last page of the Oct. 13 issue.

Several subscribers have called for information on subscribing for 1996. An application form will be available in the last issue of *CropWatch*, currently scheduled for Nov. 10. That issue also will feature an annual index and schedule of winter Extension meetings

Lisa Jasa
Editor

Winter programs to convey latest research

Sunflower production

Research and Extension personnel will present current sunflower production data at a regional meeting Jan. 16 at the Holiday Inn in Kearney. It will be sponsored by the High Plains Committee of the National Sunflower Association (NSA). Meetings will also be held in Colorado and Kansas. For more information, contact Drew Lyon, Extension Dryland Crops Specialist, Panhandle Research and Extension Center, phone (308) 632-1266.

Agronomy Highlights

Recent research conducted by the UNL Department of Agronomy will be featured at its annual Agronomy Highlights Conference to be held 8:30 a.m. to 4:30 p.m. Tuesday, Dec. 19 in Lincoln. The program will include lectures, a symposium, posters and demonstrations. The mini symposium will feature the most recent crop variety improvements.

The program will be conducted at the Cornhusker Hotel, 333 S.

13th St. There is no fee for the event, however individuals should preregister before Dec. 8. The noon meal is free.

To preregister or to obtain specific program topics, contact: JoAnn Collins, 279 Plant Science Hall, UNL, Lincoln, NE 68583-0915 or call (402) 472-2811.

Sustainable agriculture

Strategies and Ideas in Sustainable Agriculture will be the topic of a meeting beginning at 9 a.m. Thursday, Feb. 1 at the Adams County Activities Center, Adams County Fairgrounds. For more information, contact Paul Swanson, Extension Educator, Adams County Extension Office, phone (402) 461-7209 or fax (402) 461-7210.

Regional weed science

The 50th Annual North Central Weed Science Society meeting will be Dec. 5-7 at the Holiday Inn Holidome and Convention Center in Omaha. "50 Years of Progress" is the theme of this year's program.

Participants will be able to view research results and visit with University and industry representatives.

Topics will include weed ecology and biology; herbicide physiology; sugarbeet, horticulture, and ornamentals; soybean and annual legumes; Extension weed science; corn and sorghum; edaphic factors, environment, and health; equipment and application methods; cereals and oilseeds; regulatory and crop consulting; and industrial, forestry, turf, and aquatic. Symposiums will cover sustainable agriculture, biocontrol of weeds, and weed management in conservation tillage.

Registration, which includes banquet and coffee breaks, is \$105 for members, \$35 for graduate students, and \$10 for spouses. Pre-registration is due before Nov. 1 and should be sent to the North Central Weed Science Society, 1508 W. University Ave., Champaign, IL 61821-3133. If registering at the door, a \$10 late fee will be assessed.

For more information, contact David Holshouser at the Northeast Research and Extension Center, Concord, phone: (402) 584-2261.

Crop Protection Clinics at 12 sites in January

Extension speakers will address a variety of topics at this year's Crop Protection Clinics. The program content will be site specific and tailored to the area issues. Commercial Pesticide Applicator Recertification will be conducted at each site. Detailed programs will be available Dec. 1.

A \$17 fee will be charged for meals and proceedings. Certification costs an extra \$10.

For more information, contact: Alex Martin, 362 Plant Science, Box 830915, University of Nebraska, Lincoln, NE 68583-0915 or call (402) 472-1527.

Jan. 3	Lincoln	Lancaster County Extension Office
Jan. 4	Fremont	Holiday Lodge
Jan. 5	Norfolk	Ramada Inn
Jan. 9	Deshler	Legion Club
Jan. 10	Hastings	Garden Cafe
Jan. 11	O'Neill	Legion Club or TBA
Jan. 16	York	Chances "R"
Jan. 17	Auburn	Arbor Manor
Jan. 18	Holdrege	Ag Center
Jan. 23	Scottsbluff	Panhandle REC
Jan. 24	Ogallala	Holiday Inn
Jan. 25	Broken Bow	Elks Club

Soil moisture levels start recharge period low

The fall soil moisture recharge period officially began when the mid-September freeze brought an abrupt halt to the 1995 growing season. With most crops two weeks behind normal growth due to late spring planting, significant recharge wasn't anticipated until early October. Although the freeze may have resulted in grain damage, soils across the state were allowed an additional two weeks to build up moisture reserves for the 1996 growing season.

Unfortunately, atmospheric conditions haven't been beneficial to major grain-production areas. Significant above normal precipitation (120% or greater) since the freeze has occurred over the Panhandle, Sandhills, and portions of northeast Nebraska. Most of the southern tier of counties have received less than 25% of normal, while the central tier of counties have generally received 25-120% of normal. (See the *Precipitation Table below for a more complete update.*)

As noted earlier this fall, it will take 120-150% of normal precipitation through next April to completely

recharge soils. This is a general figure. Individual fields may vary considerably depending on the crop, soil type, and precipitation.

The Palmer Drought Severity Index (PDSI) estimates that the average soil moisture available by district as of Oct. 14 was: Panhandle (29%), North Central (57%), Northeast (77%), Central (39%), East Central (32%), Southwest (35%), South Central (34%), and Southeast (40%). The High Plains Climate Center models estimate soil moisture reserves are approximately 10% lower than Palmer estimates. (Actual soil moisture reserves at a specific location can vary from 25% lower to 20% higher than model estimates.) The Palmer Index indicates that the East Central and Southeast districts are moderately dry, but no district is under drought conditions.

Based on previous weather, it is possible to assign probability levels to future soil moisture reserves. The

(Continued on page 206)

Precipitation summary

	9/23-10/17			1/1-10/17			4/1-10/17		
	Act.	Nrm.	%	Act.	Nrm.	%	Act.	Nrm.	%
Ainsworth	3.54	1.28	277	27.68	20.48	135	25.00	18.11	138
Alliance	.74	.81	91	14.67	15.28	96	14.31	13.80	104
Arthur	2.05	.92	223	19.33	17.38	111	18.70	15.75	119
Beatrice	.95	2.15	44	26.83	27.18	99	24.47	23.55	104
Central City	1.89	1.83	103	18.69	23.96	78	16.65	20.90	80
Clay Center	2.09	1.82	115	21.68	24.32	89	20.07	21.25	94
Concord	3.07	1.91	161	23.87	24.36	98	21.78	20.69	105
Curtis	.04	1.09	4	13.70	19.25	71	13.70	17.20	80
Elgin	2.40	1.52	158	23.98	22.68	106	23.98	19.89	121
Gordon	1.65	.83	199	18.98	16.51	115	18.27	14.85	123
Grant	1.14	.84	136	16.34	17.66	93	15.51	15.49	100
Holdrege	.21	1.53	14	18.58	22.88	81	16.71	20.05	83
Lincoln	.72	2.07	35	20.81	25.16	83	18.60	21.83	85
McCook	.04	1.08	4	17.31	18.87	92	17.31	16.61	104
Mead	.94	2.69	35	17.99	31.11	58	16.02	27.06	59
North Platte	1.14	.96	119	15.75	17.73	89	15.16	15.76	96
O'Neill	2.59	1.41	184	26.00	21.31	122	23.36	18.65	125
Ord	2.13	1.49	143	25.94	21.86	119	22.80	19.20	119
Red Cloud	1.41	1.68	84	23.11	23.97	96	20.83	21.00	99
Rising City	1.22	1.95	63	22.88	23.44	98	21.11	20.02	105
Scottsbluff	.91	.75	121	16.91	13.77	123	16.56	11.73	141
Shelton	.54	1.51	36	23.28	22.58	103	20.78	19.52	106
Sidney	1.22	.75	163	19.13	15.14	126	18.70	13.62	137
Tarnov	1.85	1.66	111	26.38	23.46	112	23.70	20.46	116
West Point	2.32	1.99	117	15.48	25.42	61	14.77	21.93	67

Research shows vertebrate pests a real concern following CRP

The Conservation Reserve Program has produced nearly 1.5 million acres of exceptional habitat for wildlife in Nebraska. Unfortunately, some rodents and birds that inhabit these CRP fields damage agricultural crops. Voles, mice and ground squirrels dig up planted seeds and/or clip off emerging seedlings. Pheasants and larks pull up emerging seedlings.

There are few cost-effective methods to control wildlife damage. No toxicants or repellents are registered for in-field application to reduce damage by small rodents; however, there is commercial interest in developing a toxicant that provides cost-effective and environmentally safe protection for these situations.

Ongoing UNL research is examining the potential for damage from wildlife in those acres adjacent to CRP fields or in post-CRP fields. A research/demonstration project was conducted to: 1) determine the impact of rodents and birds on corn planted in bromegrass fields previously enrolled in CRP, and 2) determine the efficacy of in-furrow applications of zinc phosphide for controlling rodent damage to no-till corn seed and seedlings. This study was conducted in a 500-m long, four-row strip of field corn that was no-till planted into a 256ha CRP field after the bromegrass was shredded and sprayed with a herbicide. Plots were laid out within the area and every fourth plot was treated in-furrow at planting with a zinc phosphide rodenticide. At planting welded wire enclosures which would exclude rodents or birds were strategically placed in the test field. Comparisons were made between seedling numbers in the untreated, zinc phosphide, and

enclosure areas. While the differences among the treatments were not statistically significant because of high variability among individual samples, there was as much as a 20% reduction in plant populations between those rows in the enclosure and those left untreated.

Additional research is needed to develop methods to reduce wildlife damage in crop fields that are adjacent to CRP fields or which use conservation tillage practices.

Scott Hygnstrom
Extension Wildlife specialist

Soil moisture recharge *(Continued from page 205)*

Climate Prediction Center estimates soil moisture monthly and then assigns probability levels for three months into the future. Soil moisture is categorized as being under drought, normal, or wet conditions.

Using soil moisture estimates at the end of September and projecting them out to the end of December, the East Central and Southeast districts are the areas of immediate concern. Using previous weather as a basis for estimating future soil moisture given current conditions, there is a 52% probability any given area within the East Central district will experience drought by late December. For the Southeast district, there is a 39% probability that drought conditions will be experienced.

A complete breakdown of probability projections for soil moisture levels at the end of December based upon soil moisture levels at the end of September follow. Three numerical values are given for each district. The first value is the percent probability of drought conditions, second is the percent probability of normal conditions, and third is the percent probability of wet conditions.

Projected soil moisture percent probabilities

	<i>Drought</i>	<i>Normal</i>	<i>Wet</i>
Panhandle	5	59	36
North Central	0	0	100
Northeast	0	3	97
Central	6	44	50
East Central	55	28	17
Southwest	0	5	95
South Central	3	44	53
Southeast	39	39	22

If drier than normal conditions are experienced during October, probability levels will shift toward normal and drought conditions. Conversely, if above normal precipitation occurs, there may be a shift toward normal or wet conditions.

The recent trend on 90-day outlooks is for below normal temperatures and normal precipitation. The 30-day outlook shows equal chances of receiving below normal, normal, or above normal precipitation and temperatures. The short range models indicate the weather pattern should move toward below normal temperatures and above normal precipitation.

Al Dutcher
State Climatologist
Agricultural Meteorology