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Crop Watch No. 2004-16, July 23, 2004

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

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Nebraska
Lincoln

No. 2004-16, July 23, 2004

Wheat seed quality issues surface again in 2004

In 2003 the incidence of common bunt (stinking smut) was much higher than normally encountered by wheat producers in the central Great Plains. This stimulated many producers to treat their seed last fall prior to planting.

Common bunt problems are again surfacing in Oklahoma, Kansas and Nebraska as the wheat harvest is completed. I'm not sure we fully understand why this is occurring, but it points to a need to pay closer attention to seed quality by having it cleaned and treated before fall planting.

Unless you are growing certified seed, it is best not to use your own seed for planting this fall. Also, if a producer obtains seed from another source such as a neighbor, it should definitely be treated with a seed treatment fungicide before planting. The best defense against common bunt is to plant treated certified seed. The economic risk of having bunt in the harvested grain is enormous. In most instances the elevator will

reject the wheat which leaves the grower with few alternatives. The bunted wheat could be used in ethanol production if the plant will accept it. Feeding it to livestock usually is not feasible particularly if the level of bunt is high. The strong odor makes the grain unpalatable to swine and cattle.

The preferred methods of treating seed are to either use a commercial seed treater that fits onto the auger and applies the chemical as the wheat moves

at least a 30% incidence of scab. Severity on individual heads ranged from light to heavy. The concern with scab is two-fold. First it could mean a toxin situation in the harvested grain. Scab-infected grain can contain the mycotoxins, vomitoxin and zearalenone. Vomitoxin causes vomiting in nonruminant animals and is the cause of the "feed refusal factor" if fed to swine. Zearalenone is an estrogenic mycotoxin and may cause infertility in domestic ani-

***Protect potential wheat yield in 2005 --
plant seed that has been certified and
commercially treated.***

through it, buy treated seed or have a seed conditioner treat it after purchase. These methods ensure more uniform coverage of the seed which is important in eliminating the smut spores on the outside of the seed coat. When treating seed in the drill box, it is critical that the seeds be uniformly covered. Definitely avoid having some seeds heavily covered and others lightly or poorly covered. With some products, applying too much fungicide can restrict germination.

Fusarium head blight (scab) was widespread in wheat in eastern Nebraska this year. This is another head disease that will cause producers to evaluate seed quality after harvest. I saw fields this June with

mals. The presence of scab in harvested grain does not ensure that mycotoxins have been produced, but any suspect grain should be tested if it is to be fed to livestock. Contaminated grain can be blended with uncontaminated grain to bring the toxin level below the threshold.

Scabby grain contains tombstone kernels, which if used for seed can lead to seedling blight and reduced stands. Seed harvested from fields that had scab should not be used for planting. If for some reason it is to be used as seed, it definitely should be cleaned to remove the infected kernels and then treated with a fungicide before planting.

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Ag briefs

Karen DeBoer, Extension Educator in Cheyenne County: Wheat harvest is progressing rapidly across the southern Panhandle. There are no significant insect problems to report, however, weeds are becoming a problem in the wheat stubble. Producers are encouraged to control any volunteer wheat that may have germinated around harvest time in order to control wheat curl mites and the potential development of the wheat streak mosaic virus.

Ralph Kulm, Extension Educator in Holt and Boyd counties: Irrigated crops look very good. Corn is pollinating and the soybeans are blooming. Insects have not been a big problem. Some producers are finding low numbers of western bean cutworms. I have not heard a report of soybean aphids in Holt County. Bean leaf beetles are hard to find in most fields. Dryland crops are hanging on but are in desperate need of moisture. Irrigators are pumping a lot of water and not liking it with the high price of fuel.

Wheat seed

(Continued from pag 147)

The table below is a partial list of wheat seed treatments that can be used to prevent common bunt, stinking smut and seedling blights.

Vitavax 34	Enhance
Vitavax-PCNB	Enhance Plus
RTU Vitavax Extra	Vitavax 200
Dividend XL	Raxil MD & XT
Raxil MD Extra	Raxil-Thiram
Baytan 30F	
RTU-Baytan-Thiram	

This would be a good year to buy and plant certified seed that has been treated. In the long run, the additional expense may pay.

John Watkins
Extension Plant Pathologist

Paul Hay, Extension Educator in Gage County: The brown is on. Bluegrass lawns are dormant and the crops are starting to feel the heat a bit. Low levels of soybean aphid have been reported.

Bruce Treffer, Extension Educator in Dawson County: With the recent rains, most of the corn looks good and is in the tasseling stage, although approximately 10,000 acres in the southeastern corner of the county sustained severe hail damage. Hay is growing slowly and quality is low, although quantity is good. Pastures are looking better.

Tom Dorn, Extension Educator in Lancaster County: As reported previously, last Monday (July 12), I found very small numbers of soybean aphids in a couple soybean fields in western Lancaster County. I revisited these same fields this Monday (July 19) and could find aphids on a higher percentage of plants (perhaps 10% of plants this week as opposed to 3-5% last week). Last week, I never found more than one to three small aphids on a leaflet. This week, I found small colonies ranging from 4 to 15 aphids

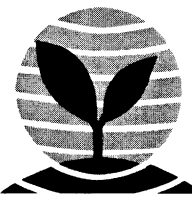
on a very few leaves. While aphid numbers seem to have increased over the past week, these fields are far below the treatment threshold of 250 aphids per plant. I'll continue to scout these fields to monitor aphid numbers.

Andy Christiansen, Extension Educator in Hamilton County: Quite a few acres have been sprayed for western bean cutworm since about July 14. The moth flight is falling off rapidly and European corn borer moth numbers are increasing. Some fields are reported to have heavy rootworm beetle populations. Crops are beginning to dry out after a week of dry, hot weather, so irrigation is getting into full swing.

F. John Hay, Extension Educator in Pierce, Madison and Wayne counties: Corn and soybeans are doing very well. There has been some spraying for corn borer. Soybeans are mostly in full bloom, but we haven't seen any soybean aphids yet. A hail storm went through about nine miles west of Pierce causing crop damage to corn and soybeans.

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

Lime-induced chlorosis:

June rains lead to Platte Valley Yellows

Lime induced chlorosis (also called Platte Valley Yellows and iron chlorosis) was a problem of soybeans in some areas in June and early July. Lime induced chlorosis occurs only on high pH soils with free lime, that is calcareous soils. It is worse with prolonged wet conditions, as experienced in some areas in June.

While the problem causes symptoms of iron deficiency, iron in the plant is adequate but bio-availability is low. When calcareous soils are wet and aeration is reduced for an extended time, bicarbonates are produced. Bicarbonates are easily taken up by the plant and apparently react with iron in the plant to reduce its availability.

The two most feasible management practices are:

- 1) to plant tolerant crops or varieties and
- 2) to reduce plant spacing in the row.

Corn is much more tolerant than soybean, but there are many tolerant soybean varieties. Seed companies typically rate soybean varieties for iron tolerance. Where lime induced chlorosis is common, soybean should be planted with wider row spacing (30-inch rows are better than drill sowing) and with a high plant density in the row. The benefits of the higher in-row plant density may be a quicker depletion of soil water in the root zone so that soil aeration is restored more quickly and a diminished bicarbonate effect as the available bicarbonate is taken up by more plants with each individual plants getting less.

The problem is often in small patches in a field and may occur infrequently. Where the problem is more persistent, in-furrow placement of chelated iron at planting

time may be economical.

There is evidence that an abundant supply of another anion (the bicarbonate ion has a negative charge) such as nitrate or sulfate reduces chlorosis, possibly due to substitution for bicarbonate uptake by the plants and greater availability

of iron in the plant. This should be tested in well designed and implemented on-farm trials before it is widely applied to verify its economic feasibility.

Charles Wortmann, Extension Nutrient Management Specialist

Researcher profile

Wortmann studies fertilizer use related to no-till and water quality

Most of our CropWatch contributors have both research and extension appointments, allowing them to relay current research results more quickly to their extension audiences. The following research profile features the work of Charles Wortmann, Extension Nutrient Management Specialist.

Since joining the UNL Department of Agronomy and Horticulture in 2001, my research in Nebraska has been focused on:

- The improvement of no-till row crop production and
- Nutrient management for water quality protection.

My appointment is 70% extension and 30% research. The research is closely linked to extension activities and attempts to address issues that frequently arise from discussions with producers.

In addition, with INTSORMIL support, we have research with collaborators in Ethiopia and Uganda to evaluate alternative practices for soil and water management in semi-arid areas and to develop a database on sorghum production for eastern and southern Africa. (INTSORMIL is the International Sorghum and Millet Collaborative Research Support Program, which has its office at the University of Nebraska.)

For many farmers the value of no-till production is unquestioned and it should probably be practiced by more farmers. The question is how



Charles Wortmann

can we further improve no-till? Our research is addressing three major topics:

1. **Starter fertilizer for no-till corn and sorghum production.** There is evidence from other states of a high probability of response to starter fertilizer with no-till systems. We conducted 12 sorghum trials and 14 corn trials in eastern Nebraska to determine crop response to different nutrient combinations in starter fertilizer and to different placements.

(Continued on page 151)

Researcher: Wortmann *(Continued from page 149)*

Briefly, at typical planting times, sorghum has only a low probability of yield response to starter fertilizer and it probably is not profitable. Additional starter fertilizer trials, with row cleaning treatments included, are being conducted with early planting (around May 1) of sorghum. Corn had a yield response much more frequently; we are still analyzing the data to relate probability of response to production conditions, to placement and to starter fertilizer type. Starter fertilizer trials have been conducted in Dixon, Washington, Saunders, Lancaster, and Gage counties.

2. Fertilizer use trials for high yield no-till crop production to improve UNL recommendations. We have conducted four of these trials and two are underway this summer. Conducted in Gage and Saunders counties, these trials are part of the Nebraska Soil Fertility Project. Results will be combined with those from 30 other trials conducted across the state. Data will be fully analyzed after the 2004 trials. Preliminary results, however, do not indicate justification for significant modification of the UNL guidelines on fertilizer use for corn.

3. Occasional tillage of no-till, e.g. once in 15 years, as a means to improve no-till. Occasional tillage may give several benefits of agronomic and environmental significance. There may be increased potential to increase soil organic matter and to improve soil physical properties to a greater depth. Nutrient stratification may be decreased which may result in increased yields and reduced phosphorus runoff to water bodies. Occasional tillage gives an opportunity to incorporate lime and nutrients such as from a heavy manure application, to control difficult weeds, and to break-up compaction. Research is underway at the University of Nebraska Rogers Memorial Farm east of Lincoln and at the Agricultural Research and Development Center near Mead to determine

if occasional tillage can achieve these benefits, if yield will be increased, and if the benefits outweigh the costs and negative effects.

My work in water quality protection is primarily through extension efforts, such as training consultants/advisors and livestock producers in better manure management practices; however, there are two major research topics:

1. Determining the effects of applied manure on water and phosphorus loss to runoff. This work is being conducted at a field research facility at the University of Nebraska Agricultural Research and Development Center. Time of manure application has been found to be important -- more phosphorus is lost with winter application. The effect of manure on improving soil physical properties has persisted for three years with less runoff and erosion where manure was previously applied; however, soil phosphorus is much higher where manure was previously applied so that, even though runoff is less, phosphorus loss is more from these plots compared to those that didn't receive manure.

This research entered a new phase in 2004 with the plowing of some plots with very high soil phosphorus near the surface but low phosphorus below a depth of 4 inches. The hypothesis is that if a one-time plow tillage can incorpo-

rate the surface soil with excessive levels of phosphorus without a significant increase in erosion, phosphorus loss in subsequent years will be reduced.

2. Evaluating management practices at a watershed level to reduce nutrient loss in runoff and to calibrate and validate computer models and simpler decision support tools for assessing field losses of nutrients in runoff. This research is currently being conducted in a Lancaster County watershed. We intend to extend the work to northeastern and west central Nebraska.

In Ethiopia, our research began in 2002 and is focused on tillage systems to reduce water loss to runoff and on soil fertility management. In Uganda, we have a "farmer research" to verify or fine-tune several soil fertility management practices and to develop a reduced tillage system for small-scale, resource poor farmers. Discussions are underway to begin other research in Mozambique later this year.

Mark Strnad, who works with me as a technologist, three graduate students at UNL, two graduate students in Ethiopia, and my collaborators in Ethiopia and Uganda are essential to the implementation of this research program.

Charles Wortmann, Extension Nutrient Management Specialist

Reading crop water use tables

CropWatch provides daily updates of growing degree day, evapotranspiration and precipitation levels for 19 Nebraska sites (more for precipitation data). The data is available from the *CropWatch Weather* page at <http://cropwatch.unl.edu/weather.html>. Information is grouped by location, crop, and planting date.

These tables are updated daily and available 24/7. The estimated crop water use is calculated based

on local weather information collected at an automated weather station. The numbers represent responses from a well-watered crop. If you tend to underirrigate, these values will be higher than you might experience when monitoring your soil water levels. See this week's *CropWatch on the Web* for a fuller story by Extension Irrigation Specialist William Kranz on how to use this information for irrigation management.

Laundering pesticide contaminated clothing: Steps that can protect you and your family

The protective clothing you wear when applying pesticides and how you handle and launder that clothing often are the first lines of defense in avoiding accidental pesticide poisoning. Handling clothing correctly also can help protect your family from unintended and indirect poisoning mishaps.

Protective clothing.

The primary route for pesticides to enter the body is through the skin. Protective clothing can provide an extra margin of safety when handling toxic materials; mixing and loading pesticides, especially concentrated chemicals; spraying fields; re-entering sprayed fields; and cleaning equipment.

There is no set type of clothing that works for all types of pesticides, but in general, garments should cover the skin to prevent pesticide absorption into the skin. Wear long sleeved shirts and long legged pants of tightly woven fabric that's free of holes. Collars should be buttoned. Shirt tails should be tucked inside pants. Gloves should be worn and the cuff of the glove should cover the cuff of the shirt. Pant legs should cover the outside of the boot or shoe.

Check individual pesticide labels for specific recommendations regarding protective clothing and equipment or check one of the Extension publications available on this topic.

Laundering pesticide contaminated clothing

Obviously, clothing that is worn during a pesticide application may become contaminated with the pesticide. Keep any clothes worn while applying pesticides separate from the family's laundry and let the person who does the laundry know that it was worn while

applying pesticides.

Protective clothing should be laundered after each wearing, using methods indicated on the pesticide label. The following guidelines for safe laundering of pesticide contaminated clothing are from a University of Nebraska publication, "Enhancing personal protection of pesticide applicators through effective laundering procedures teaching guide" by Professor Joan Laughlin of the Department of Textiles, Clothing and Design.

Recommendations

- Wear waterproof gloves when handling pesticide contaminated clothing.
- Always pre-treat with a pre-wash product.
- Launder separately from other clothing.
- Use hot water, at least 140°.
- Use powdered (phosphate) detergent for water soluble chemicals.
- Use heavy duty liquid detergent for oily soils in hard water.
- Use 1.25 the usual amount of detergent for fabrics with no finish and 1.5 the usual amount on fabrics treated with soil/water repellent finishes.
- Use a 12-minute wash cycle.
- Fabric softener and bleach have no effect on the pesticide removal but can be used with no concern.
- Use fabric starch because pesticide residues cling to the starch and can be easily removed in subsequent wash cycles as the starch is washed away.

- Line dry. Many pesticides break down in sun light.

- Keep fabrics as clean as possible because residue of other soils increases attraction between the pesticides and the fabric, and makes residue removal more difficult.

- Launder protective garments daily to avoid repeated contamination which hinders laundry effectiveness.

- Store cleaned protective clothing in plastic garbage bags away from other clothing.

- Clean washer after use by swabbing down the inside of the washer tub, run the washer through a cycle with a full tub of hot water and no detergent, or operate with detergent before washer is used to launder family items.

It is important to note that some chemicals respond uniquely to laundering conditions. Always consult the pesticide label for specific laundering precautions.

For more information, consult: University of Nebraska Cooperative Extension Form 453, *Pesticide Use for Homeowner Safety*, by Rose Marie Tondl and Larry Schulze.

Diane Vigna, Extension Specialist for Textiles and Apparel

Pesticide safety

For further information on pesticide training and safety, visit the UNL Pesticide Education and Resources Web site at <http://pested.unl.edu>

For *emergency* pesticide safety, call these hotlines:

Poison Center, Omaha	(800) 955-9119
CHEMTREC Pesticide Accident:	
	(800) 424-9300
Nebraska State Patrol	(800) 525-5555

Grass and forage production

Adjust grazing as cool-season grasses undergo stress

With summer heat finally here, cool-season plants are likely to suffer. With alfalfa, clovers, bromegrass, orchardgrass, fescues, and wheatgrasses hot periods slow growth and diminish forage quality as plants burn up the good nutrients. Following initiation of regrowth after defoliation, root reserves rebuild slowly.

Warm-season grasses are just the opposite. Millet, sudangrass, sorghums, and our native

bluestems, gramas, switchgrass, and other warm-season grasses thrive when the temperature is about 90 degrees. Their metabolism runs at peak efficiency when it is hot so they grow rapidly while maintaining reasonable forage quality and good root growth.

Of course, this assumes these plants have adequate moisture. Once they dry up, these grasses will overheat too, just like cool-season

grasses do at lower temperatures.

As you graze or hay, be aware of the stress weather is putting on your forage. When it's too hot, be prepared to allow plants to recover for a long time before next use, and don't expect high feed values. As the season and temperatures shift, proper expectations and management adjustments can limit plant and producer stress.

Bruce Anderson
Extension Forage Specialist

Planting turnips for winter grazing

If you're interested in producing a high quality pasture for late fall and early winter grazing, try planting turnips into wheat or oat stubble after harvest. Beginning in October, turnips will provide good grazing that often lasts into the new year. Also, turnips are cheap to plant since seed can cost less than \$5 per acre.

Seedbed preparation and planting can be done several ways. Some turnip growers work soil like a fully prepared alfalfa seedbed. Others heavily disk their ground, but leave it fairly rough. And a few growers spray Roundup or Gramoxone on wheat or oat stubble to kill weeds and then plant no-till.

Whatever method you choose, good early weed control is essential. Turnips do poorly if weeds get ahead of them, but once started, turnips compete very well. Since no herbicides are labeled for turnips, weeds must be controlled either by tillage or by using contact herbicides like Roundup or Gramoxone before planting. Then plant quickly to get the turnips off and running.

Plant only 1 to 3 pounds of turnip seed per acre. Turnip seed is very small, so barely cover it. If you drill your seed, just scratch the

surface with your openers. Simply broadcasting seed onto tilled soils works well for many growers, especially on rough seedbeds where rainfall washes soil on to the seeds for soil coverage.

Then wait. With a few timely rains you will have excellent green feed for October, November, and December.

Bruce Anderson
Extension Forage Specialist

Avoid or use caution with manure in alfalfa

If you have manure to spread during summer, sometimes the only place available is an alfalfa field, but manure can cause problems on alfalfa. Liquid manure can burn leaves due to salt injury, and dry manure can smother plants if it is applied too heavily or in large chunks. Manure can spread weed seeds and the nitrogen in manure can stimulate grasses already in the alfalfa to become more competitive. Also, manure application equipment can damage alfalfa crowns and compact soil.

Obviously, if other land is available, spread manure there to avoid these problems, but, if you have no other choice, follow these suggestions:

First, apply less than three thousand gallons of liquid manure or ten tons of solid manure per acre to minimize salt burn or smother-

ing. If manure is dry, adjust the spreader to break up large chunks that can smother growth.

Second, spread manure immediately after removing a cutting to minimize direct contact with foliage.

Third, only spread manure when fields are dry and firm to limit soil compaction and avoid damaging plant crowns.

And finally, apply manure to fields with lots of grass if you wish to stimulate grass yield, or select fields with little grass if you want to minimize grass competition.

Manure is an excellent source of nutrients and can enhance biological activity and soil physical properties. When applying it to alfalfa, however, be careful so that you don't do more harm than good.

Bruce Anderson
Extension Forage Specialist

Temperatures favor good crop growth; extended rains forecast for early fall

After experiencing below normal temperatures across the state for the better part of June, temperatures in July have soared into the 90s and on occasion, breached the century mark. Crop development continues to remain ahead of the five-year average and well ahead of last year's pace. The biggest contribution to this statistic lies in the fact that corn and soybean emergence across the entire corn belt was 10-14 days ahead of the five-year average.

For the standard 2500 GDD corn variety, it appears that normal temperatures for the rest of the growing season would put the crop at maturity within the first seven days of September. For 2700 GDD varieties, maturity would occur between September 15 and September 30 across the southern half of the state. Some areas of the Panhandle, north central, and northeastern Nebraska may be vulnerable to freeze damage. This is especially true if freezing temperatures this spring forced producers to replant.

As of July 18, 50% of the U.S. corn acreage was in the silking stage, compared to the five-year average of 42% and 35% last year. Nine percent of the crop had already reached the dough stage, compared to the five-year average of 6%. The most remarkable statistic was that 76% of the crop was rated in the good or excellent category, the highest ranking for this point in the season over the last five years.

Soybean statistics appear to be imitating corn. Nationally, soybean blooming had begun in 68% of the crop, compared to the five-year average of 52% and 42% last year. Sixty-eight percent of the national crop was rated in the good to excellent category. For this time of the year, the 2004 crop has the second highest favorable rating, only a couple of percentage points lower than last year. Last year, however, drought conditions during late July

through August, coupled with aphid infestation, diminished U.S. yields.

Closer to home, the Nebraska Agricultural Statistics Service rates Nebraska's corn crop at 83% good to excellent, well ahead of last year and the five-year average. The soybean crop was rated at 80% good to excellent, almost doubling last year's ranking and well ahead of the five-year average.

Some areas of northeast, east central, south central, and southeastern Nebraska have seen spottier rainfall during the last two weeks and are in need of a generous precipitation event. Short-term weather models indicate that Nebraska should see large swings in temperatures during the next few weeks. Short, but intense, hot

periods will be interrupted by intense cool downs. These temperature swings should increase the likelihood of thunderstorm activity with localized heavy rains.

In the longer term, the Climate Prediction Center (CPC) has finally issued a positive precipitation forecast for Nebraska. CPC indicates a tendency for above normal precipitation during from August through October across the Central Plains region. The highest probabilities for above normal precipitation are centered directly over Nebraska. If this occurs, it would be the first time in the last five years that the state experienced above normal precipitation during the first half of fall.

Al Dutcher

Extension State Climatologist

Scouting underway for cutworms, grasshoppers, aphids in northeast NE

Western bean cutworm moth flights have been very high and producers should be scouting for egg masses and small larvae in silks. In the northeast some treatments should begin very soon, within the next couple of days.

Grasshoppers are very scattered. Many areas that received above average rainfall have had very few hoppers. However, I have a plot near Center, which is averaging 50 to almost 100 grasshoppers per 10 sweeps of a net (about 15-20 per square yard). Most producers are ignoring them because the good vegetative growth has "kept up" with the hopper feeding. Some adults are now being seen and most grasshoppers are in the 4th and 5th instars, meaning any attempts at chemical control should use the highest labeled rates available for the crop.

Spider mites have not been reported. The weather has not been

good for them in corn (moderate temperatures and high humidity); however, these critters work differently in soybeans and they could show up there at any time.

Soybean aphids are present and lurking. If you looked hard enough, you could probably find them in nearly every field. Most fields have small numbers although a couple of fields in northeast Nebraska have been reported to be over 100 per plant. This is not yet at the threshold level (250 per plant) and weather will play an important part in what will happen through August. The high temperatures early in the week may have slowed them down but cooler temperatures are predicted and this could cause an increase in populations. Growers should be scouting their fields every three to four days to keep up with the rapid growth potential of this insect.

**Keith Jarvi, IPM Extension
Assistant, Northeast REC**

Crop Clinics Aug. 18 and Aug. 26 near Mead

Late season field issues & precision agriculture

Agribusiness professionals and crop producers can take a close-up look and learn from late-season field conditions and take in an introductory precision agriculture training at two University of Nebraska Cooperative Extension clinics in August.

A crop management and diagnostic clinic will be Aug. 18 and an introductory precision farming clinic will be Aug. 26. Both workshops start with 7:30 a.m. registration at the university's Agricultural Research and Development Center near Mead.

The crop management and diagnostic clinic provides a chance for participants to look at late-season crop and pest problems and

learn from noted subject matter specialists in areas important to crop production profitability, said Keith Glewen, extension educator.

Topics include: successful alfalfa establishment techniques, corn and soybean disease diagnostics, corn pollination problems, tillage and tires -- their effects on compaction -- and using remote imaging to diagnose crop problems.

Registration before Aug. 11 is \$125, and afterward, \$175. Nine Certified Crop Advisor credits are anticipated with 3 in pest management, 4.5 in crop production and 1.5 in soil and water.

The introductory precision farming training is designed for producers and consultants looking for assistance in launching their precision agriculture program, said Dave Varner, extension educator. Individuals who are considering the purchase of precision agriculture technologies or just beginning to use

them should attend this clinic, Varner said.

Topics include: precision agriculture overview, yield monitor basics, global positioning systems, establishing farm geographic information systems, and the dollars and sense of precision ag.

Registration before Aug. 19 is \$125 and after Aug. 19, \$175. Six Certified Crop Advisor credits are expected to be awarded for this clinic -- 1 in soil fertility and 5 in crop production.

For more information or to register, contact the ARDC, CMDRC Programs, 1071 County Road G, Ithaca, Neb. 68033, call (402) 624-8030, fax (402) 624-8010 or e-mail cdunbar2@unl.edu.

Detailed information and registration also is on the Web at <http://ardc.unl.edu/training.htm>.

Cooperative Extension is a division of the university's Institute of Agriculture and Natural Resources.

Chickpea Tour July 27

Late season production management and harvest techniques will be the focus of a chickpea tour at the Watson farm on Tuesday, July 27, beginning at 10:30 a.m. It will be a great opportunity to see how different varieties of chickpeas -- also known as garbanzo beans -- have responded to this year's environmental stresses. The program also will provide a forum to discuss marketing strategies.

Hosted by Bruce and Mark Watson, the tour will be held at the Watson farm 4 miles east of Highway 385 at Berea on Johnson Rd. and then 0.5 miles north. Anyone interested in learning more about chickpea production is encouraged to attend.

If you would like to participate in this program or need further information, please contact David Baltensperger, Extension Crop Breeding Specialist, University of Nebraska, Panhandle Research and Extension Center, 308-632-1261 or the Box Butte County Cooperative Extension Office, 308-762-5616.

Vineyard production and marketing focus of August 7 Harvest Field Day

Advances in Nebraska's growing wine and grape industry will highlight the Harvest Field Day Aug. 7 at the University of Nebraska's research vineyards at the Bob Curttright Vineyard near Nemaha. Hosted by Nebraska Cooperative Extension, the field day offers information about viticulture methods as well as advances in university wine and grape research.

The field day, which will feature both commercial and research vineyards, will show growers how to recognize veraison -- the point when grapes begin to turn color -- as well as methods for calculating probable yield, fruit acidity and sugar levels before harvest. Participants will view

more than 60 grape cultivars and breeding lines and learn about harvesting and processing. Other topics will include soil analysis, trellising, solar-powered equipment, and fencing and netting techniques.

Demonstration plantings of other potential value-added fruit crops also will be featured.

Registration begins at 9 a.m. with tours starting at 9:30. Preregistration is \$20 and registration the day of the event is \$25. Lunch is included. For more information, contact Donna Michel at (402) 472-8747 or dmichel@unl.edu, or visit the university's viticulture Web site at <http://agronomy.unl.edu/viticulture/index.htm>.