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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

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Packing the biggest punch with postemergence herbicides

Dry weather tends to reduce the performance of postemergence herbicides because the waxy cuticle on the leaf surface thickens and plant growth slows. To offset this spray additives can be added to improve herbicide performance by increasing penetration of the leaf surface.

Post herbicide activity is strongly influenced by spray additives. Most, but not all, post herbicides require the use of spray additives. There can be a 'fine line' between increased weed control and crop injury. Consult the herbicide label for specific information.

The most commonly used spray additives include oils, surfactants, and certain fertilizers. Oil concentrates include both petroleum and seed derived oils and are usually composed of at least 17% emulsifier plus oil. Methylation of seed oils (MSO) improves their performance.

Inside

Oil concentrates are generally used at 1-1.25% by spray volume or 1-2 pints per acre depending on the herbicide, oil, and spray volume.

Surfactants are compounds that reduce the surface tension of liquids. Used with post herbicides they cause spray droplets to spread out and "wet" the leaf surface. This results in increased penetration of the leaf surface and increased activity. Nonionic surfactants (NIS), meaning no electrical charge on the molecule, are the most commonly used surfactants. Surfactants are usually used at 1/4 % by spray volume or 1 quart per 100 gallons of spray mixture.

Surfactants and oils generally perform the same function: increasing penetration of the leaf cuticle. Generally one or the other, but not both, would be used in a spray mixture. Where both an oil and a surfactant are suggested with a particular herbicide, the oils tend to increase activity the most.

Ammonium containing fertilizers are effective spray additives with 28-0-0, 32-0-0 solutions, and 21-0-0 spray grade ammonium sulfate, the most commonly used formulation. The ammonium in these materials enhances the uptake of certain herbicides by a mechanism not well understood. While oils and surfactants function primarily at the leaf surface, the ammonium ion functions inside the cell wall. Ammonium fertilizers are not

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Cracks, many much deeper than these, are typical in fields and pastures across drought-stricken areas of the state.

Drought extends further across state

Much of southwest and western Nebraska is now reported to be in a severe drought and central and eastern Nebraska is categorized as abnormally dry, according to the most recent update to the National Drought Monitor.

While some parts of the state received minimal moisture mid-week, extended forecasts through the post July 4 weekend showed little chance of significant rainfall. Growing crops are quickly outstripping the soil moisture replenished by May rains. Al Dutcher, UNL state climatologist, said conditions could deteriorate rapidly over the next few weeks, leading to a possible "flash drought."

The Drought Monitor Map is available at *http://www.drought.unl.edu/dm/monitor.html*

Updates

Management tips June 28-July 15

- **Use a soil probe to check subsoil moisture at least as deep as the roots are.** Corn roots are two and a half feet deep at about 12th leaf collar, and soybean roots are that deep at full bloom.
- **Irrigation water nitrate samples for nitrogen management need to be taken after pumping for at least four hours, and preferably after 24 hours.** Sample early in the week to ensure timely laboratory analysis, and mail the sample immediately. Your NRD may have a cost-share program on this. For more information see "Testing Irrigation Water," G93-1157, available on-line at *http://www.ianr.unl.edu/pubs/irrigation/g1157.htm.*
- **Are you irrigating soils less than one percent organic matter?** Test the irrigation water for sulfur as well as nitrate-N. It may have more than enough sulfur to meet the needs of your crops.

White heads noted in wheat fields

While participating in the wheat variety trial meetings in Furnas, Red Willow, Keith and Perkins counties and while collecting leaf rust samples in southwest Nebraska, the presence of white heads were noted in both production fields and variety trials.

The pattern occurred as isolated plants in which the entire plant was affected. The plants were prematurely ripening with all of the heads being affected. These plants were producing grain, but it was shriveled. The pattern did not fit freeze injury and there were no signs of take-all or scab. Examination of the affected plants revealed discolored crowns and a poor root system. Based on this, it appears that the plants were prematurely dying from crown and root rot.

John E. Watkins
Extension Plant Pathologist

Field updates

Bob Wright, Extension Entomologist at the South Central Research and Extension Center: We started to see western corn rootworm beetle emergence at Clay Center Tuesday, June 25.

Beetles emerging when corn plants are in the whorl stage will feed on leaves, scraping away the surface tissue leaving a bleached, parchment-like scar on the upper leaf surface. This damage is not economically important. As soon as silks and pollen are available beetles will feed on these tissues.

Karen DeBoer, Extension Educator in Cheyenne County: Wheat harvest may begin next week in eastern Cheyenne County. The wheat has matured quickly due to recent hot weather and lack of rainfall. Affects from the May freeze can be seen in some fields with wheat heads that are white and contain no berries. Also, many of the wheat heads did not fill very well with only 2 or 3 berries in some heads.

Ron Seymour, Extension Educator in Adams County: Although, most crops look very good, dryland fields are showing symptoms of heat and drought stress. Strong southernly winds and high temperatures have dried soil surfaces quickly. Depending on the crop, soil moisture is moderately dry in the top 2 feet and very dry below that depth.

Grasshoppers continue to be common in field borders. Irrigated field corn plants are in the 7-leaf stage and look very good. Most of the corn has been ridged and farmers have either begun to apply water or are setting out irrigation pipe. Irrigated soybeans have four nodes, have been cultivated and look very good. Wheat fields are ripening rapidly and should be ready for harvest within the next 7-10 days. Grain sorghum plants are in the 7-8 leaf stage and look very good. Alfalfa fields range in height from 8 to 18 inches and look very

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Factors affecting glyphosate performance

Glyphosate sometimes fails to control weeds adequately. Generally, failures are related to climatic conditions such as rainfall before the herbicide is rainfast, drought, failure to use AMS, too high water volume, stress on weeds growing in dense stands, and cold temperatures, especially under cloudy conditions. The glyphosate rate should be selected based on weed species, stage of growth, vigor and size of weeds, dust, and cost.

Weeds under drought stress caused by lack of rainfall or high weed density, or covered with dust are difficult to control, especially if low rates of glyphosate are used. Approved AMS should be used with all glyphosate products. Stress also may be caused by diseases, insects, and either too little or too much water. Do not add other surfactants, wetting agents, or buffering agents unless the label requires them. Glyphosate efficiency may be reduced on some weed species when mixed with fertilizer solutions.

Several factors can contribute to less than desirable control, depending on the situation and time of year glyphosate is applied. Glyphosate works best under good conditions for plant growth, especially when weeds are small. Labels give specific information on weed height and rate to use for different species. Weeds differ in the sensitivity to glyphosate. *Table 1* lists those weeds that are tougher to control with glyphosate. Unless a preemergence herbicide is added, two applications of glyphosate may not be sufficient to control weeds season long in Roundup Ready crops. Some weeds such as carpetweed, tumble pigweed and puncture vine may emerge after the last application. Perennial weeds may escape the glyphosate rate used in Roundup Ready crops because rates are too low.

Glyphosate should not be allowed to stay in the tank for more than 24 hours because glyphosate degrades and additional glyphosate would need to be added to compensate for the loss of glyphosate.

Reasons for slow control in the early spring or late fall

Speed of kill depends on the rate used and air temperature. It takes longer to kill volunteer wheat, downy brome, and jointed goatgrass after September 20 than before. In the spring, cool temperatures usually slow the kill of volunteer wheat, annual bromes, and jointed goatgrass. However, suggested rates usually end with the same degree of control if applied early or late. Tough to control weeds, such as prickly lettuce or kochia, may need to be tank-mixed with 2,4-D or dicamba or a commercial formulation containing these herbicides should be used. This spring, glyphosate failed to control kochia in thick stands under drought stress, but did control scattered plants. The glyphosate label states that kochia should not be treated in the button stage.

Reasons for poor weed control in Roundup Ready soybean or Roundup Ready corn

Poor control is related to stage of weed growth, weed species, and weather conditions. Sometimes glyphosate + Pursuit may not control emerged common lambsquarters. Cloudy cool weather may lead to reduced control of some Russian thistle and kochia biotypes. Dust along gravel roads has reduced control with glyphosate. Velvetleaf control has diminished with evening applications of glyphosate.

Reasons for poor weed control in stubble

Glyphosate performance in wheat stubble fields is affected by many factors. These include spray volume, time of day when sprayed, temperature, rainfall, weed species, stage of weed growth, weed density, water logging, drought stress, wind, climatic conditions, water hardness, distribution of crop residues, cropping history, and vigor of the winter wheat crop. Other factors reducing weed control with herbicides include cutting off tops of weeds during harvest, glyphosate-tolerant weeds, thin wheat stands, dust, and poor straw and chaff distribution. Sometimes large weeds intercept the herbicide so that it doesn't reach shorter weeds. In the case of dense stubble, consider increasing the rate. This may be why glyphosate labels suggest

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Postemergence

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surfactants and do not replace the need for surfactants or oils in a spray mixture.

Ammonium containing fertilizers are used at 2-4 quarts or 2-4 lb per acre and can be used with equal effect with post herbicides *except glyphosate.* With glyphosate only ammonium sulfate (AMS) should be used as the additive. AMS is effective in countering the effect of calcium, iron and magnesium in our water, cations that complex and deactivate glyphosate. The other ammonium containing fertilizers are not effective in counteracting the effect of these cations.

The benefit of using spray additives with post herbicides is greatest under adverse conditions, when it is hot and dry and weeds are stressed. Give yourself an edge and use the best additive for the herbicide.

Alex Martin
Extension Weed Science Specialist

Glyphosate *(Continued from page 139)*

increasing the glyphosate rate in no-till systems.

Tank mixes of glyphosate and atrazine have led to reduced control of barnyardgrass and yellow foxtail. There is some evidence that evening spraying reduces the antagonism caused by atrazine.

If weeds are cut off when harvesting, you may need to allow sufficient regrowth to occur before applying glyphosate. With broadleaf weeds it may be advisable to add 2,4-D or dicamba to the mix. Weeds must be sprayed before they produce seeds or use to much soil water.

Operators becoming more knowledgeable about sprayers, herbicides, weeds, and conditions that improve performance can overcome many of these factors. Simply adding ammonium sulfate to the water before adding glyphosate can improve control, especially when weeds are under stress. Increasing the glyphosate rate can solve many of the poor weed control problems. Using 100% overlap will decrease strips from plugged tips.

Table 1. Weeds that may escape glyphosate in Roundup Ready crops or fallow in Nebraska.

Species	*Mechanism*
Summer annuals	
Barnyardgrass	Some tolerance
Buckwheat, wild	Moderately tolerant
Carpetweed	Delayed emergence
Cupgrass, prairie	Moderately tolerant
Foxtail, yellow	Some tolerance
Horseweed	Resistant biotypes
Kochia	Drought stress and cold temperatures
Lambsquarters, common	Moderately tolerant on tall plants, especially when mixed with Pursuit
Pigweed, tumble	Delayed emergence
Smartweed, Penn.	Some tolerance
Spurge, prostrate	Some tolerance, delayed emergence
Spurge, spotted	Tolerant
Spurge, toothed	Moderately tolerant
Puncturevine	Delayed emergence
Purslane, common	Some tolerance, delayed emergence
Thistle, Russian	Cold temperatures
Winter annuals	
Lettuce, prickly	Some tolerance
Perennial or biennial weeds	
Dandelion	Moderately tolerant
Eveningprimrose spp.	Tolerant
Groundcherry spp.	Some tolerance
Milkweed, common	Tolerant
Nutsedge, yellow	Tolerant
Windmillgrass, tumble	Tolerant

Climatic conditions that affect weed control

Conditions at the time of herbicide application are important in obtaining maximum control. Glyphosate is the most popular herbicide to use after wheat harvest. High temperatures (95°F or higher) zero to three days before spraying reduces control with glyphosate. Rain within 24 hours reduces control of some weed species with some formulations of glyphosate. Some labels state they are rainfast within two hours; however, some species of weeds, such as barnyardgrass, under drought stress may not be controlled adequately. Most applicators wait until dew is off the plants before spraying. Time of day may make a difference with some weeds. Poor control of velvetleaf has been observed with glyphosate when applications are made in the evening. In surveys taken after wheat harvest we have not seen differences in weed control. However, in research plots control of barnyardgrass decreases with lower rates applied in the evening, especially when under drought stress. Rain up to a week after spraying stressed weeds reduces control, probably due to inadequate translocation of glyphosate.

Gail A. Wicks, Extension Weeds Specialist, West Central REC

Field update

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good. Second cutting has begun on a few fields. Pasture grasses are beginning to show some heat and moisture stress but generally look good.

Terry Gompert, Extension Educator in Knox County: Grasshoppers are on the move. They are about 1/3 inch in size. Much of the pasture land does not justify treatment because of the low forage tonage. Field margin treatments may be needed to keep the hoppers from entering crops and alafalfa.

Pasture and hay yields are about 60% of normal. That matches the rain fall numbers too. Corn still looks good except in sandy spots.

Wheat yields hit record low in drought areas

As wheat harvest begins, yields for Nebraska's No. 3 crop could be the worst in 50 years in drought stricken areas, a University of Nebraska agronomist said.

Drought conditions have left many fields with low yield potential, said Drew Lyon, dryland crops specialist at the Panhandle Research and Extension Center in Scottsbluff. Hot, dry weather shortened wheat's grain filling period and amplified stresses from pests and diseases such as wheat streak mosaic and crown and root rot.

Yields in the central and southern Panhandle are projected to be less than 20 bushels per acre, Lyon said. With prices sitting below or around $3 per bushel and some fields yielding only 5 to 8 bushels per acre, many farmers may not be able to cover harvesting costs and will leave some fields unharvested, he said.

Poor yields don't seem to be significantly influencing market prices, which are well below the 20-year average. The 2002 wheat harvest season begins with a large global carryover supply, which may overshadow low yields and inhibit price improvements, said Paul Burgener, an Institute of Agriculture and Natural Resources agricultural economics research analyst, also at Scottsbluff.

"We've seen high production levels worldwide," Burgener said. "When you get that much wheat out there, it just depresses prices. It makes for fairly difficult economic times."

While U.S. wheat exports remain fairly unchanged, ample production in major wheat-producing nations such as Australia, Canada and Russia have added competition and supply to the market, he said.

However, wheat prices are expected to stabilize or improve, said Lynn Lutgen, NU marketing specialist. "There's no reason to really see a big harvest-time drop in prices," he said. The market has maintained a fairly narrow basis, which is good news for wheat growers, Lutgen said. As futures prices increased, cash prices followed.

Adequate worldwide wheat supplies will prevent a large price increase, but drought's impact on other markets could reasonably raise wheat prices, Lutgen said. Market prices for soybeans and corn are suddenly beginning to respond to the drought with significant price jumps this week, Lutgen said.

"When all three crops are threatened with hot, dry weather, price changes in other crops will carry over to wheat," Lutgen said. "Because of that, farmers need to follow other markets and watch for pricing opportunities for wheat. When corn and soybean prices increase, wheat prices also increase."

Western Nebraska already has seen a 20-cent price increase for hard red winter wheat, Burgener said. But prices still aren't increasing as much as farmers would like.

Despite prices, alternatives are limited. Some fields may go uncut, but most growers will harvest unless yields are exceptionally low, said Robert Klein, cropping systems specialist at the West Central Research and Extension Center in North Platte.

Wheat may be too mature to retain much nutrient value as hay and too short to leave adequate crop residue if baled for straw. Residue already will be limited because dry conditions prevented wheat from achieving much height, Klein said.

Baling or grazing livestock on unharvested fields further depletes what little residue is available.

"Farmers will have to do their best to maintain crop residue to protect against wind and water erosion and to benefit next year's crops," Klein said.

Wheat residue is important in Nebraska for corn, grain sorghum and other rotations, he said. The residue helps collect soil moisture and suppress weeds.

Last year's wheat residue helps conserve moisture for crops this summer, Klein said.

As for wheat, it may be too late for moisture to improve yields in most fields.

"Rain could help some areas depending on how far along the wheat is," Klein said. Lower temperatures, below 85°F, also could increase yields for wheat still in the filling stage, but most wheat is currently maturing.

Some wheat already has been harvested. If hot, dry conditions continue, harvest in southern Nebraska will be in full swing this week, Klein said.

Harvest is expected to begin next week in the Panhandle, Lyon said.

"The farmers are really optimistic," Klein said. "Of course, you've got to be in the farming business. You just do the best you can given the situation."

Shannon Hartenstein
IANR Student Newswriter

For more ag news

The *AgNews* section of the *CropWatch* Web site at *http://cropwatch.unl.edu/agnews.htm* features news releases and research stories from UNL and other sources, such as this story on wheat yields. For more stories, see *http://cropwatch.unl.edu* or *the NU Institute of Agriculture and Natural Resources* Web site at *http://www.ianr.unl.edu/*

Proper irrigation aids pastures and alfalfa

As producers gear up for another hot Nebraska summer, some simple tips for managing irrigation will improve chances of maximizing pasture and alfalfa production.

Low prices for row crops and more promising livestock markets in recent years convinced more Nebraska producers to convert center pivot-irrigated cropland to irrigated pasture. Success with irrigated pasture requires proper management, said Bruce Anderson, University of Nebraska forage specialist.

"With row crops, irrigation generally is used to supply moisture to a 4-foot root zone," he said. "Many plants in irrigated pastures, though, tend to be more shallow rooted and may have 95 percent of their roots in the first 2 or 3 feet of soil. They become moisture stressed more quickly, and soil moisture at the 4-foot level may not be very useful."

For pastures, water use will average about a quarter-inch per day, Anderson said. Water use starts much earlier in the season for pastures than for row crops, too.

"Start irrigating early for pastures if the rain isn't doing its job," Anderson said.

Pastures need to be irrigated more frequently than crops. Ideally, producers should apply one-half to three-fourths of an inch at least twice a week.

To minimize compaction, producers should avoid irrigating where animals are grazing or will soon graze before the surface dries.

Alfalfa irrigation is very different from pasture irrigation. In alfalfa fields, improper irrigation can stimulate weeds and weaken the stand, Anderson said.

"Alfalfa can require up to 40 inches of water a year and sometimes over four-tenths of an inch a day," he said. "It's no wonder irrigators find it difficult to keep up with these demands. As a result, alfalfa is often irrigated as soon as the hay is removed from the field until the next cutting."

Constant watering, though, can hurt alfalfa because it increases the chance that grassy weeds like foxtail and perennial grasses like bluegrass will invade the alfalfa. Constant watering also encourages rood disease in alfalfa and reduces the soil oxygen content.

Since alfalfa roots can penetrate below 6 feet, the best irrigation strategy encourages deep rooting of alfalfa and dry surface soils during harvest, Anderson said. He suggested that producers stop irrigating a few days before harvest to allow the soil surface to dry and become firm. They also should not irrigate after harvest until regrowth is 3 to 4 inches tall.

By delaying irrigation, Anderson said, "shallow-rooted weeds like foxtail and bluegrass won't be able to grow until alfalfa already has a head start."

"Your alfalfa will regrow more rapidly because the roots will find more oxygen they need in soil that has not been saturated with water," he said. "Of course, this assumes that you have been deep watering when you do irrigate so there is deep water available for alfalfa roots that weeds can't reach."

Heather Corley
IANR Newswriter

See UNL's *Market Journal* for video and audio discussions on risk management and marketing at
marketjournal.unl.edu

Managing seedling alfalfa during drought

Alfalfa seedlings experiencing drought during their first summer may struggle to survive. Luckily, alfalfa seedlings are tough. Despite their slow rate of growth and tender appearance, many of them manage to survive stressful conditions and become productive hay-makers.

But some years are harder on these seedlings than others, and this is one of those years. Because of the extended heat and dry weather, alfalfa seedlings are experiencing more stress than usual. Anything you can do to reduce stress and competition will help.

The place to begin is weed control. Weeds use moisture and intercept light, two critical needs of seedlings. If weeds aren't too large and they are growing actively, herbicides are a good option. Otherwise, clipping may be necessary. If you must clip, be careful that you don't smother seedlings with your clippings. And leave a tall stubble so seedlings don't go into shock after clipping due to the sudden change in their micro-environment.

Also scout for insects. Leafhoppers, aphids, grasshoppers, and other insects cause extra problems during stressful weather. Timely insecticide application or mowing is more important than ever.

Finally, consider mowing or topping off your dryland alfalfa, even if there isn't enough there to harvest. The larger the plant, the more soil moisture it needs to survive. Making plants smaller by clipping will reduce the plant's moisture requirement, relieving some stress and conserving what little precious moisture still remains.

Bruce Anderson
Extension Forage Specialist

Check the heat index when planning work

Watch for warning signals of heat stress

Hard physical labor during periods of high heat and humidity are a given for Nebraska's farmers. While producers can't control the weather, often they can mediate its effects on their health by taking a few precautions.

"As much as you can, help your body become acclimated to the heat. That can help when we get to the hottest part of the summer," said Dr. Bob Muelleman, a University of Nebraska Medical Center professor and chief of the Nebraska Health System emergency room.

Working up to a good sweat for an hour or two a day for 10-14 days can help your body become accustomed to the heat and initiate its own safety measures. The body will start sweating at a higher volume and at a lower temperature and will reabsorb its sodium, Muelleman said. Then when a heat wave hits, your body will be better prepared to deal with the extreme temperatures.

"The body is pretty good at maintaining a normal body temperature through evaporation of sweat," Muelleman said. On really hot days, with maximum exertion, you can sweat up to two quarts an hour. However, if it's too humid and the sweat can't evaporate, your body won't be able to cool down as well and there is an increased health risk.

"When people ask me if it's the heat or the humidity [making it uncomfortable], it's the humidity," Muelleman said. As the relative humidity increases, it feels warmer than the actual air temperature because you can't sweat and naturally cool your body.

Predicted air temperatures on weather reports can indicate a potential problem, but it's important to account for the humidity. To help people recognize when they may be more at risk of heat stress, the National Weather Service (NWS) now issues heat index warnings when the temperatures and humidity are expected to be high. *(See page 144 for a Heat Index table.)*

The National Weather Service reports that among natural hazards, heat kills more Americans than lightning, hurricanes, tornadoes, floods or earthquakes. Winter's cold, a natural hazard also quite familiar to the state's rural community, is the only hazard causing more deaths.

For example the NWS heat index indicates that with an air temperature of 90°F and a relative humidity of 40%, it will feel like it's 91 outside -- not much of a difference. However, the same 90°F temperature with a relative humidity of 75% will feel like 109°Fand put an individual at risk for heat stress.

Effects on the body

A person can develop a heat-related illness on any hot, humid day, given a variety of health and climate factors. When your body temperature rises, your body tries to compensate. Your heart starts beating faster, you breathe faster, and your blood vessels dilate to bring more blood closer to the surface to cool.

These physical changes that develop when working outside in the heat also can increase the risk of complications from other illnesses such as coronary artery disease, congestive heart failure, emphysema or asthma, and it can make it harder to control diabetes. Some individuals also will be at higher risk for heat illnesses or heat stroke, Muelleman said, if they're taking drugs which inhibit sweating. These might include antihistamines; drugs prescribed for some psychological illnesses, blood pressure medicines; or any stimulants or drugs that increase your metabolism. When in doubt, ask your pharmacist if any medications you're taking may affect your ability to sweat or be in the heat for an extended time.

Symptoms of heat illnesses

Heat-related illnesses range from fatigue and cramps to heat exhaustion and heat stroke.

-- **Cramps** due to excessive sweating typically develop in the thigh muscles and indicate a deficiency of electrolytes. Taking in electrolytes through fruit or sports drinks can help alleviate this.

-- **Heat exhaustion** symptoms include nausea, chills, dizziness and dehydration. Once you notice these symptoms, stop what you're doing and cool off. Apply wet rags to help your body cool.

- **Heat stroke** is much more serious. Symptoms include a lack of sweat, headache, rapid pulse, altered mental state, confusion, lethargy, seizures, and even unconsciousness and a body temperature over 101°F.

If the body temperature isn't quickly lowered, heat stroke can be fatal, Muelleman said. If you suspect someone is suffering from heat stroke, seek medical help and take immediate action to start lowering his or her body temperature. While you wait for an ambulance, help the person into the shade or to a cool place, wet their bodies or wrap them in a wet sheet to increase evaporation, and provide them with water.

While you can't control the heat

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Heat index *(Continued from page 143)*

National Weather Service Heat Index Chart (Temperature & Relative Humidity)

Relative humidity	*Air temperature (Fahrenheit)*															
	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
90	**119**	**123**	**128**	**132**	**137**	**141**	**146**	**152**	**157**	**163**	**168**	**174**	**180**	**186**	**193**	**199**
85	**115**	**119**	**123**	**127**	**132**	**136**	**141**	**145**	**150**	**155**	**161**	**166**	**172**	**178**	**184**	**190**
80	**112**	**115**	**119**	**123**	**127**	**131**	**135**	**140**	**144**	**149**	**154**	**159**	**164**	**169**	**175**	**180**
75	**109**	**112**	**115**	**119**	**122**	**126**	**130**	**134**	**138**	**143**	**147**	**152**	**156**	**161**	**166**	**171**
70	**106**	**109**	**112**	**115**	**118**	**122**	**125**	**129**	**133**	**137**	**141**	**145**	**149**	**154**	**158**	**163**
65	103	**106**	**108**	**111**	**114**	**117**	**121**	**124**	**127**	**131**	**135**	**139**	**143**	**147**	**151**	**155**
60	100	103	**105**	**108**	**111**	**114**	**116**	**120**	**123**	**126**	**129**	**133**	**136**	**140**	**144**	**148**
55	98	100	103	**105**	**107**	**110**	**113**	**115**	**118**	**121**	**124**	**127**	**131**	**134**	**137**	**141**
50	96	98	100	102	104	**107**	**109**	**112**	**114**	**117**	**119**	**122**	125	128	**131**	**135**
45	94	96	98	100	102	104	**106**	**108**	**110**	**113**	**115**	**118**	**120**	**123**	**126**	**129**
40	92	94	96	97	99	101	103	**105**	**107**	**109**	**111**	**113**	**116**	**118**	**121**	**123**
35	91	92	94	95	97	98	100	102	104	**106**	**107**	**109**	**112**	**114**	**116**	**118**
30	89	90	92	93	95	96	98	99	101	102	104	**106**	**108**	**110**	**112**	**114**

Note: These heat index values were devised for shady, light wind conditions. Exposure to full sun can increase heat index values by up to 15° F.

Heat exhaustion can occur when the heat index is 90°-105°F and is probable when the heat index is over 105°F (indicate by bold in the table.) Heat stroke is possible when the heat index is above 105°F, and very likely when it is above 130°F. **(Temperatures above this level are shaded in the table to indicate the most severe threat.)** Individual health concerns, physical activity, and prolonged exposure to the heat can increase the risks of heat-related illnesses.

and humidity, you can control your activity level. When you begin to notice the first signs of heat illness, reduce or stop activity, get in the shade, remove any excess clothing you can, apply cool cloths to your body to help lower body temperature, drink fluids and take it easy. If children are helping you in the field, be sure to watch for warning signs and let them take a break and cool down when they need it. The first signs of heat exhaustion for children are when they become flushed, crabby, and don't feel well.

Drinking plain, old-fashioned water works well to replace fluids if you've been outside for several hours, but if you've been sweating profusely for more than a few hours, you'll need to replace electrolytes too. Eat a banana, drink fruit juices, or drink a sports drink that provides electrolytes. You may need to replace up to two quarts of fluid for every hour spent in strenuous exercise. Avoid drinking alcohol or caffeinated beverages.

This summer's heat waves are around the corner and likely will come while you're harvesting wheat or scouting your fields. Be sure to keep water readily accessible for drinking and for helping your body cool down, check the weather for that day's heat index, and notice your body's signals.

Lisa Jasa
CropWatch Editor

Calculating your heat index

Several web sites offer tables or on-line calculators to estimate the heat index in your location. Try the National Weather Service site at *http://www.srh.noaa.gov/elp/wxcalc/heatindex.html*

Farm mediation clinics

The farm mediation program sponsored by the Nebraska Department of Agriculture has several July clinics:

July 9 - Grand Island
July 9 - Norfolk
July 11 - Alliance
July 16 - North Platte
July 16 - Beatrice
July 19 - Ainsworth
July 22 - Norfolk
July 23 - Lexington

The clinics offer individual and confidential information on farm finances; the laws, regulations and policies governing Farm Services Agency (FSA); debt restructuring and other legal options; and how the mediation program can help work with lenders on a workable solution. Make appointments through the Farm Hotline at 800-464-0258.

The Farm Mediation contact at the NDA is Marian Beethe, (402) 471-6890 or marianjb@agr.state.ne.us

NU crop clinics offer first-hand experience

Agribusiness professionals and crop producers will learn from taking a close-up look at field conditions, research and techniques at a July 18 Cooperative Extension Crop Management Diagnostic Clinic.

The training will be at the University of Nebraska Agricultural Research and Development Center near Mead from 7:45 a.m. to 4:30 p.m.

The clinic will help participants stay informed about today's ever-changing world of crop production and is an excellent opportunity to gain first-hand, in-field experience while obtaining continuing education credits, said Keith Glewen, program co-coordinator and extension educator in Saunders County.

"Last year's participants indicated the average profits gained from attending were at least an additional $5.54 per acre," Glewen said. "Those just out of school, well-seasoned producers and crop production professionals all will benefit from this clinic and be able to use this information daily."

The clinics provide an unbiased approach by highly skilled trainers, Glewen said. Participants will learn first-hand from noted subject matter specialists in areas important to crop production profitability and what the presenters have experienced in their research.

Presenters are NU faculty and agricultural industry representatives. Topics include: making important crop production decisions, soybean pests, sprayer management, fertilizer application equipment, hands-on crop nutrient management plan decisions, herbicide mode of action, accessing NU recommendations, insects, diseases and weeds.

Early diagnostic clinic registration is $115 until July 11. After that, registration is $165. Approximately six Certified Crop Advisor credits are anticipated.

This is one of the three clinics scheduled for this summer. An Aug. 20 clinic will cover field-crop diseases, late-season insects, fall nutrient management and fall-tillage implications. A precision farming clinic will be Sept. 4.

For more information or to register, contact the NU ARDC, CMDC Programs, 1071 County Road G, Ithaca, Neb. 68033, call (402) 624-8030, fax (402) 624-8010, e-mail cdunbar2@unl.edu or visit the World Wide Web at *http://ardc.unl.edu/crop.htm.*

Sandi S. Alswager
IANR News and Publishing

Producers warned of telemarketing calls

Nebraska's Director of Agriculture is warning farmers and ranchers to be wary of recent telemarketing sales of farm chemical pesticides. Agriculture Director Merlyn Carlson said the Nebraska Department of Agriculture has received complaints about telemarketers allegedly making misleading claims.

The Iowa Attorney General has filed lawsuits alleging that two companies operating out of New York and Florida are engaged in deceptive and fraudulent practices in the telemarketing sales of pesticides. The companies market the pesticides Triple Threat, Turf King, and C-Lex.

"They claimed their products would exceed the performance of similar products on the market, but they failed to disclose that their products were highly diluted compared to other reputable products," Iowa Attorney General Tom Miller said recently when filing the lawsuits.

Taking precautions against West Nile Virus

The potential exists for the West Nile Virus to be found in Nebraska this summer.

A mosquito-borne disease first discovered in 1999 in New York City., the virus can cause West Nile encephalitis. The virus was found for the first time in the Western Hemisphere in 1999 in the New York City area. Since then, it has spread rapidly throughout the eastern half of the United States. It was found in four states in 1999, 12 in 2000, and 28 in 2001, including Iowa and Missouri. The virus is expected to appear in Nebraska this summer.

A West Nile Virus surveillance program is being conducted in Nebraska by Wayne Kramer of the Nebraska Health and Human Services System.

Guidelines for avoiding exposure to the virus involve:

- avoid exposure to mosquito bites;
- make sure windows and doors screens are repaired;
- wear long-sleeved pants and shirts when active outdoors at dusk or dawn, and
- use insect repellants such as DEET.

Additional information is available at several Web sites.

West Nile Virus fact sheets:
http://www.hhs.state.ne.us/epi/wnv.htm
http://www.ncpmc.org/NewsAlerts/westnilevirus.html.

Nebraska West Nile Virus Surveillance program:
http://www.hhs.state.ne.us/puh/epi/wnv/wnvindex.htm

Bob Wright, Extension Entomologist, South Central REC

First western bean cutworm moths caught

The first Western bean cutworm (WBC) moths of the season were caught June 21 in a light trap near Aurora. These moths should begin to show up soon in other locations throughout Nebraska. As moth numbers increase, mating will commence and the females will begin to lay eggs on corn and dry bean plants. The appearance of the first moths provides a signal that farmers and crop consultants should begin to scout fields for the white, dome-shaped eggs. Western bean cutworm moths lay eggs in clusters of five to 200 on the top surface of the upper most leaf of a corn plant and on any leaf surface of dry beans. The eggs require five to seven days to develop, during which time the egg color changes to tan and then to purple immediately before they hatch.

After the small, dark brown larvae hatch on corn plants, they move to the whorl or tassel to feed on the tender yellow leaf tissue or on the tassel itself. Once the tassel emerges or if it has already emerged when the eggs hatch, the larvae will move to the green silks. The developing larvae will feed on the green silks moving down the silk channel until they reach the ear tip. The larvae will feed in the ear tip until they are fully developed. If the infestation on one ear tip is so great that the larvae become crowded, a few individuals may move outside the ear and begin to feed on the side of the ear.

Western bean cutworm that hatch on dry bean plants, feed on blossoms and young, tender leaf material. The larvae will attack bean pods as they develop, eventually feeding on the developing seeds.

In corn

Even though field scouting for western bean cutworm in field corn should begin when the first moths are caught, control decisions should be made shortly after the moth flight peaks. The moth flight usually peaks between July 10 and July 24 .

When scouting for western bean cutworms in corn, check 20 plants in at least five areas of each field. Look for eggs on the top surface of the upper most leaf or look for larvae in the tassel. If 8% of field corn plants, 5% of seed corn plants or 5% of popcorn plants have egg masses or larvae, consider applying an insecticide.

Western bean cutworm moths prefer to lay eggs in corn plants that are in the late whorl stage compared to those that have completely tasseled. Pay particular attention to later planted fields or those with uneven development. Western bean cutworm eggs that hatch when corn plants are in the whorl stage of growth have a high rate of survival. The larvae are well protected in the whorl or tassel.

If an insecticide treatment is warranted in corn fields, it should be made when 95% of the plants in a field have tasseled. This timing of the application increases the chance that the worms will be exposed to the insecticide resulting in better control.

In dry edible beans

Milk jug type pheromone or scent traps are recommended to monitor potential western bean cutworm infestations in dry edible beans. Mount traps on a post about 4 feet above the ground, on the north and south edges of each field. The traps should be located in areas with at least some vegetation around them. The pheromone source should be pinned to the under side of the milk jug lid. A mixture of four parts water and one part antifreeze with a few drops of liquid soap should be placed in each cut out milk jug. Instructions for constructing a milk jug trap and where to buy moth pheromone may be found in the University of Nebraska NebGuide, *Western Bean Cutworm in Corn and Dry Beans (G98-1359)*, available from your local Cooperative Extension Office or on the Web at *http://www.ianr.unl.edu/pubs/insects/*

Check traps every few days until the peak of moth flight. When the traps are checked, the moths should be removed, counted, and liquid should be added. If the number of moths accumulated up to the peak of the moth flight totals less than 700, the risk of significant damage is minimal. The risk of seed damage is moderate if 700-1000 moths are accumulated in each trap. The risk of damage is significant if more than 1000 moths are collected from the initiation to the peak of the moth flight. If the moth flight is moderate, use the infestation in a nearby corn field as a decision making guide. If the adjacent corn needs an insecticide treatment for western bean cutworm, the beans also should be treated. Bean fields requiring an insecticide application should be treated 10-20 days after peak moth flight.

Ronald C. Seymour, Extension Educator in Adams County
Gary Hein, Extension Entomologist Panhandle REC

Be on the lookout for chinch bugs

Although we normally think of chinch bugs as pests of sorghum, they also may damage other grass crops.

This week Tom Dorn, Extension Educator in Lancaster County, reported chinch bugs had moved from a poor stand of wheat into a corn field and wiped out the first 24 rows.

Control in corn may be difficult because chinch bugs are feeding at the base of the stalk, and may be hidden behind leaf sheaths or below ground during the heat of the day. Good coverage is needed for good insecticide control. Best control would be achieved with ground applications to the base of the plant.

A variety of insecticides are effective against chinch bugs, including Capture 2EC, Sevin, Furadan 4F, Lorsban 4E, Asana XL, Warrior, and Mustang 1.5EC. See NebGuide G806, *Chinch Bug Management; http://www.ianr.unl.edu/pubs/insects/g806.htm*

Bob Wright, Extension Entomologist, South Central REC