

Tillage options

Dr. Jeff Edwards, Extension Small Grains Specialist

As we enter the fall of 2005, high diesel prices are on the minds of many Oklahoma wheat producers. Okay, let's face it, high fuel prices are on the minds of all farmers, and with \$64 a barrel crude oil prices, there does not look to be much relief on the horizon! Due to high fuel costs, most producers are looking harder and harder at tillage operations and whether or not additional passes are necessary. So, let's discuss some alternatives to clean-till production practices.

No-till. By the time this newsletter goes out, most producers who are going to no-till have already made that decision and everyone else has made at least one tillage pass. So, in this newsletter we will concentrate on options for ground that has already been worked and leave the no-till discussion for next spring. I would, however, encourage those of you who are considering no-till to watch neighbors this fall and learn from their experiences.



Stale seedbed management. Simply put, stale seedbed management means getting seedbed prepared and then not conducting any further tillage, and those of you who have heard me speak on this subject know that I feel stale seedbed management has a real fit for Oklahoma. If moisture and conditions allow, Oklahoma farmers are generally very aggressive in tillage operations soon after harvest and most of the previous crop's residue has disappeared by now. Under these conditions there is really only one reason to conduct additional tillage operations.....weed control. The alternative would be to use a reduced rate (0.75 lb ai.) of glyphosate to control weeds. Advantages of using herbicide as opposed to tillage include speed, efficacy, cost, and moisture savings, all of which can benefit the bottom line.



Mulch till. I am using the term mulch till in a very general sense here with the objective of getting producers to ask themselves "*how clean does a seedbed have to be?*" It seems our legacy of deep tillage and moldboard plowing has left us with the image of a perfectly clean seedbed as being a good seedbed. I urge producers to question this notion, however, and consider a cost/benefit analysis of leaving some residue on the soil surface. On the down side, residue on the soil surface can increase the severity of diseases such as tan spot. On the upside, however, having crop residue present on the soil surface will reduce erosion, reduce soil crusting, and increase water infiltration rates, which can translate to increased forage production and grain yield. (Refer to OSU Extension Fact Sheet F2252 *Raindrops and Bombs, The Erosion Process* for more information on erosion and how to prevent it).

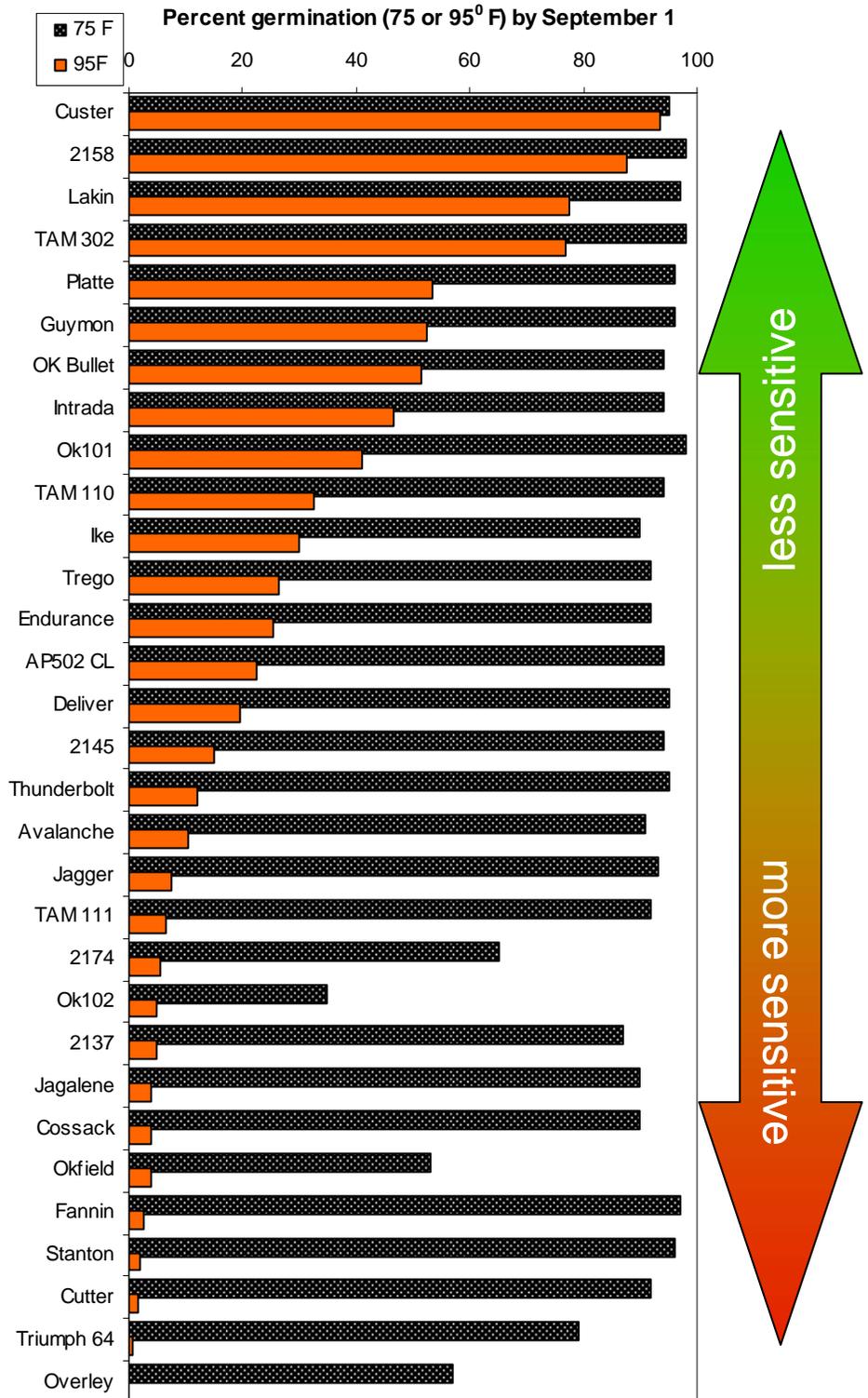
High temperature germination sensitivity

Dr. Jeff Edwards, Extension Small Grains Specialist

High temperature germination sensitivity (this trait has also been labeled as **post harvest dormancy** in the past) refers to the ability of wheat to germinate under hot soil conditions and can have a real impact on wheat producers who plant early to increase forage production.

The figure to the right provides germination information we gathered in August of 2004. Seed harvested from each variety in 2004 were tested for germination at 75 (black bars) and 95°F (orange bars). The majority of varieties had very good germination at cool temperatures, and by September, 10 all varieties had greater than 80% germination at 75°F. Several varieties, however, had difficulty germinating at the 95°F temperature, with Overley having the lowest germination percentage at higher temperatures.

As mentioned earlier, high temperature germination sensitivity will be more of an issue for farmers planting early (prior to October 1) into hot soil conditions. The take-home message with high temperature germination sensitivity is to be aware, and plant varieties that are sensitive last rather than first.



Variety Trial Results are on the Web!!

Variety trial results for forage production, yield, and protein can all be found at www.wheat.okstate.edu

Consider diseases when determining planting date for wheat

Dr. Bob Hunger, Extension Wheat Plant Pathologist

For a version of this article with photographs please go to: <http://www.entopl.okstate.edu/Pddl/advisory.htm>
And click on the *Current Issue* (vol. 4, no. 13, August 1, 2005)

Wheat is commonly used as forage for cattle and to produce grain in Oklahoma, which enhances the economics of farming. In such a dual-purpose system, wheat is planted as early as late August to maximize forage production, whereas in a grain-only system, wheat would most likely be planted in October. Although disease development depends on many factors including the presence of inoculum, temperature, rainfall, and variety planted, early planting increases the likelihood that diseases such as wheat streak mosaic virus, the aphid/barley yellow dwarf virus complex, and the root and foot rots will be more prevalent and more severe.

Root and foot rots: Root and foot rots are caused by fungi, many of which can result in poor stands in the fall. Specific diseases include dryland root rot (*Fusarium*), sharp eyespot (*Rhizoctonia*), common root rot (*Bipolaris*), take-all (*Gaeumannomyces*), strawbreaker or eyespot (*Pseudocercospora*) and browning or Pythium root rot (*Pythium*). Controlling root and foot rots is difficult. There are no resistant varieties or fungicide treatments that control all of these diseases at a consistently high level. Although late planting (after October 1 in northern OK, and after October 15 in southern OK) helps to reduce the incidence and severity of root rots, it will not entirely eliminate their presence or effects. If you have a field with a history of root rot, plant that field as late as possible or plan to use it in a "graze-out" fashion. In addition to planting date, take-all is greatly favored by a high soil pH (>6.5). Thus, when liming fields to correct for acid soils, be sure not to raise the pH above this level. Elimination of residue also helps control take-all, and can be somewhat helpful in reducing some of the other root rots. However, research has shown that elimination of residue by tillage or burning does not affect the incidence or severity of strawbreaker. For more information on wheat root rots, take-all and strawbreaker, see OSU Extension Facts F-7622 or go to the web page for the Plant Disease and Insect Diagnostic Laboratory at: <http://www.ento.okstate.edu/ddd/hosts/wheat.htm>.

Aphid/barley yellow dwarf virus (BYDV) complex: BYDV is transmitted by many cereal-feeding aphids, and hence, is associated with aphid infestations. Fall infections by BYDV are the most severe because the virus has a longer time to damage the plant as compared to infections that occur in the spring. Several steps can be taken to help control BYDV. **First**, a later planting date (after October 1 in northern OK, and after October 15 in southern OK) helps to reduce the opportunity for fall infections. **Second**, some wheat varieties (e.g., Custer, 2174, and Ok102) tolerate aphids and/or BYDV better than others; however, no wheat variety has absolute resistance to the aphid/BYDV complex. **Third**, control the aphids that transmit BYDV. This can be done by applying contact insecticides to kill aphids, or by treating seed before planting with a systemic insecticide (see the next three articles for further scouting and control information). Unfortunately, by the time contact insecticides are applied, aphids frequently have already transmitted BYDV. Systemic, seed-treatment insecticides such as Gaucho 480 (Imidacloprid - Gustafson Corp.) and Cruiser (Thiamethoxam – Syngenta) can effectively control aphids after planting, but in some years aphids do not occur and hence the treatment may not be as beneficial as in years when aphids are numerous in the fall. Be sure to thoroughly read the label before applying any chemical. For more information on the aphid/barley yellow dwarf virus complex, go to the web page for the Plant Disease and Insect Diagnostic Laboratory at: <http://www.ento.okstate.edu/ddd/hosts/wheat.htm>.

Wheat streak mosaic virus (WSMV) & the high plains virus (HPV): WSMV was found in western Oklahoma, western Kansas and in the Texas panhandle in both the fall of 2004 and spring of 2005. HPV also is transmitted by the wheat curl mite (WCM) and can infect both wheat and corn. Both viruses have been found in Oklahoma, Kansas, and Texas. WCMs and these viruses not only survive in crops such as wheat and corn, but also in grassy weeds and volunteer wheat. In the fall, mites spread to emerging seedling wheat, feed on that seedling wheat, and transmit the virus to the young wheat plants. Wheat infected with WSMV or HPV in the fall is either killed by the next spring or will be severely damaged. Planting late in the fall (after October 1 in

northern OK and after October 15 in southern OK) and controlling volunteer wheat are two practices that provide some control of WSMV and HPV. However, it is critical to destroy volunteer wheat at least two weeks (three weeks is better) prior to emergence of the fall-seeded wheat because the WCMs have a life span of only 7-10 days. Thus, destroying volunteer wheat at 2-3 weeks prior to emergence of seeded wheat will reduce or eliminate mite numbers in the fall. For more information on WSMV and HPV, see OSU Extension Facts 7636 (WSMV) or go to the Plant Disease & Insect Diagnostic Laboratory web page at: <http://www.ento.okstate.edu/ddd/hosts/wheat.htm>.

Wheat pest scouting calendar

Dr. Tom Royer, Extension Entomologist

You probably have received some free calendars this year, but this one is a bit different. It is our Small Grain Insect activity calendar. Use it as a reminder of when potential insect pest activity in your wheat could occur. Remember, this is just a **GUIDE FOR SCOUTING**, not a spray scheduler, so use it to focus your insect scouting activities for the coming year.

SMALL GRAIN INSECT ACTIVITY CALANDER

Insect	J	F	M	A	M	J	J	A	S	O	N	D
Armyworm												
Army Cutworm												
Bird Cherry-Oat Aphid												
Brown Wheat Mite												
Chinch Bug												
Corn Leaf Aphid												
English Grain Aphid												
Fall Armyworm												
False Wireworm												
Grasshopper												
Greenbug												
Hessian Fly												
Pale Western Cutworm												
Russian Wheat Aphid												
Wheat Curl Mite												
Winter Grain Mite												
Wireworm												

Light bands indicate presence in field, dark bands indicate critical times when damage is most likely or injury could be prevented.

Potential insect pests to keep watch for in early-planted wheat: Don't let "um" sneak up on you!!

Dr. Tom Royer, Extension Entomologist

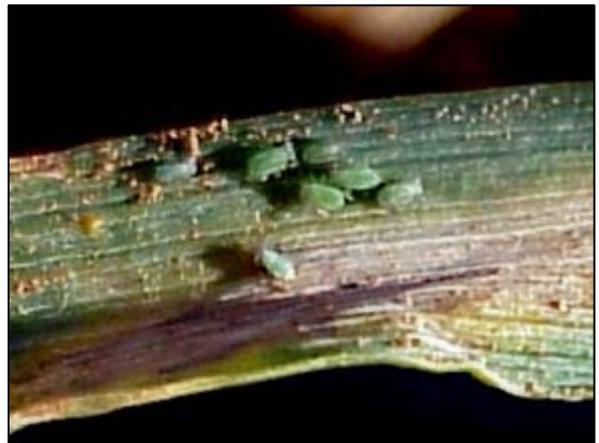
Your wheat crop is vulnerable to insect and mite damage from planting through harvest. I have listed a few early-season pests to keep watch for as the wheat emerges from the soil:

Chinch Bug: Chinch bugs don't normally cause problems in wheat, but occasionally they are numerous enough in pastures and migrate into seedling wheat to feed before they settle down and hibernate for the winter. Check the edge of a suspect field for dead and dying seedling plants and examine the base of weakened plants for chinch bugs. You may be able to spray a 30-60 foot strip around the edge of the field. Chinch bugs are more easily controlled when the insecticide is applied with 20-30 gal/acre of water using a ground application.

Fall armyworm: Fall armyworms are an occasional pest in the fall. Check leaves for "window paning" (clear areas on the leaf blade). Treat field if 3-4 larvae are found per foot of row, and feeding damage is evident. Fall armyworms are easier to control when less than ½ inch long.

Grasshopper. Check the edges of fields. Grasshoppers often migrate in from road ditches when their food is depleted. Recommended treatment thresholds are: 7-10 grasshoppers per square yard in vegetation next to the field, or 3 grasshoppers per square yard in the field. For more information, see OSU Facts **F-7196**, *Grasshoppers and Their Control in Rangeland, Pastures and Crops*, which can be obtained from this website: <http://pods.dasnr.okstate.edu/docushare/dsweb/HomePage>

Greenbug: Use Glance 'n Go forms for scouting fields (See picture to right and next article). For seedling wheat, the Treatment Threshold is **1 greenbug per plant**, otherwise, calculate a Treatment Threshold using the [Greenbug Calculator](#) in the Greenbug Expert System, or follow the directions provided on the laminated version of the Glance 'n Go form.



Hessian Fly: Hessian fly larvae can cause plants to become stunted and dark green and can even reduce or kill tillers, depending on when they occur. Minimize risk to a field by controlling volunteer wheat, and burying wheat residue. Consider using a seed treatment with Gaucho or Cruiser to protect seedlings if the wheat is seeded in no-till or reduced tillage system, or if there are nearby fields with high amounts of exposed wheat residue. No curative insecticide control is available.

For control recommendations, check out OSU Current Report **CR-7194**, *Management of Insect and Mite Pests of Small Grains*, which can be obtained from this website: <http://pods.dasnr.okstate.edu/docushare/dsweb/HomePage>

Wheat scouting tools available from OSU!

Dr. Tom Royer, Extension Entomologist

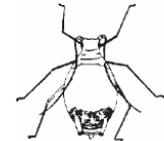
Get your own copy of the Greenbug Expert System CD, and the laminated set of Glance 'n Go forms for greenbugs in winter wheat. We have updated our Glance 'n Go scouting forms this year so a field scout can assess the activity of the parasitic wasp when making a decision to treat or not treat a field for greenbugs. The Greenbug Expert System, a computer program that was developed by the USDA-ARS, SST Technologies, and OSU has also been extensively revised and is available as a CD, or can be accessed at <http://entopl.okstate.edu/gbweb/index.htm>



Mummy (Parasite)
Tan, bloated body

Updates for the Expert System include:

- Revision of the pesticides registered for use in wheat in the Pesticide Selector.
- Changes in the Greenbug calculator that suggest using a threshold of **1 greenbug per plant for seedling wheat.**
- A set of revised Glance 'n Go sampling forms.



Bird Cherry-Oat Aphid
Olive-green with red patch on back of body

Either of these products can be obtained by contacting your County Extension Agricultural Educator, or requesting a copy via my e-mail address:

rtom@okstate.edu. Include your name, mailing address and phone number with your request. If you have any questions about using Glance 'n Go or the Expert System, check out the following OSU Current Report: **CR 7191**, *The Cereal Aphid Expert System and Glance 'n Go Sampling for Greenbugs: Questions and Answers* which can be accessed at <http://entopl.okstate.edu/gbweb/index.htm>



Greenbug
Green with dark stripe down back

Soil testing promotes correct application of fertilizers

Dr. Hailin Zhang, Soil Fertility Specialist and Soil Testing Lab Director



Most people would not add gasoline to their cars without first checking the fuel gauge. However, some producers essentially do just that on their crop fields - applying fertilizer without first testing their soil for plant *available* nutrients and soil *acidity*. It is possible to apply unneeded fertilizer or animal manure if the nutrient status of cropland or pasture is unknown.

Soil samples that determine the nutrient status of the soil are an investment, not a cost. This is because fine-tune nutrient management will result in more efficient fertilizer use, which can increase yields, reduce out-of-pocket expenses and potentially reduce environmental pollution.

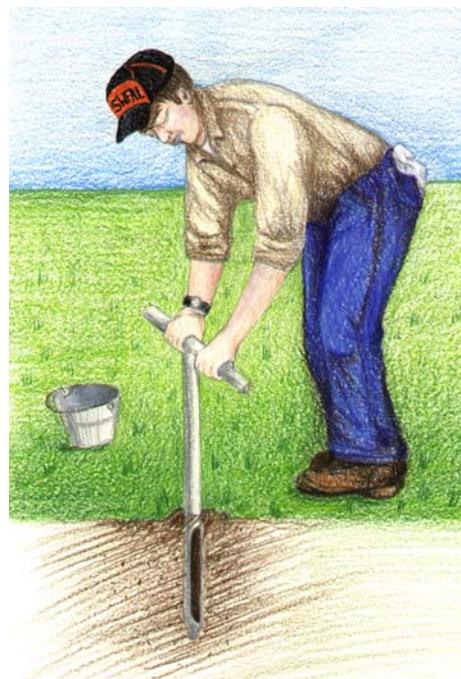
Careful soil sampling is essential for an accurate fertilizer recommendation. A sample must reflect the overall or average fertility of a field, so that subsequent analyses, interpretations and fertilizations accurately represent the nutrient status of the soil. Soil varies by location, slope and past management practices. Thus, it is important for a soil sample to represent a uniform field area.

The first step is to determine a sampling area. Each area should have a similar crop and fertilizer history, and soil characteristics such as color, slope, texture, drainage and degree of erosion should appear similar. Exclude small areas within a field that are obviously different. These can be sampled separately if they are large enough to warrant special treatment. One sample should represent no more than 40 to 50 acres. Some producers find using a soil survey map to be helpful in identifying a sampling area.

When sampling a field, follow a random zig-zag pattern to get a minimum of 20 cores from the sample area. Mix these subsamples thoroughly and save *about* one pint for analysis. Fewer subsamples taken in a given area result in less accuracy in evaluating the *true* nutrient status of the soil, *which may mislead in making fertilizer recommendation.*

Surface samples should be done at tillage depth or six inches for routine analysis. Deeper samples down six to 24 inches subsoil should be taken for nitrate-nitrogen analysis *along with the surface samples.* Typically, the best time to test soil is before each cropping season, allowing for enough time to send off samples to a laboratory, have them tested and get back a fertilizer recommendation. It is time right now sample for winter wheat.

Soil sample bags and other information related to soil testing are available through all OSU Cooperative Extension county offices. County Extension will mail samples to the OSU soil testing laboratory and assist the producer in interpreting test results. More information can be found at <http://www.soiltesting.okstate.edu>.



Subscription information

The *Wheat Production Newsletter* is published in electronic format on an as needed basis throughout the year. To receive an electronic copy in pdf format, send an email with **subscribe** as the subject line to jeff.edwards@okstate.edu

A handwritten signature in black ink that reads 'Jeff Edwards'.

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