



# Plant & Soil Sciences Extension Newsletter

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*“The window for spring-planted oat is between February 15 and March 10 with an optimum planting time during the last full week of February.”*

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## Spring Planted Oat

There are currently few opportunities remaining to produce late-winter to early-spring forage if you did not plant wheat pasture, annual ryegrass, or fall-fertilize tall fescue. One option to consider that may offer some hope for relief is spring-planted oat. Oat can be planted in late winter through early spring for pasture or hay. Even though there is substantial risk involved with this strategy due to weather, insects, and diseases, it may offer some help for increasing a short forage supply. The primary considerations for success are that it must be drill-planted on a prepared seedbed when the opportunity arises and managed accordingly.

There is not a wide selection of oat varieties available, but those varieties for use in the southern USA are preferable to northern USA varieties. Feed oat has been successfully used and can provide excellent nutrition for many classes of livestock. However, many of these have not been tested as seed oat and may contain weed seeds (noxious weed seeds in particular), have unknown seed germination, and foreign material. Feed oat sources are usually relatively cheap, but they are rarely a wise purchase. Oklahoma state seed law requires that seed being sold for planting purposes have a tag with a recent test result for germination, weed seed, and foreign material.

The window for spring-planted oat is between February 15 and March 10 with an optimum planting time during the last full week of February. If dry weather and above freezing temperatures occur in late January and early February, the planting date can be shifted closer to February 15. However, if conditions are wet, damp, and cold during late January and early February, then planting may be delayed until early March. Oat should be drill-planted on a conventionally prepared seedbed at a seeding rate of 80 to 100 pounds of seed per acre. Seeding depth can be as deep as 1½ inches, but a depth of only ½ to ¾ inch will increase the rate of emergence, establishment, and forage production potential. Forage production potential from a spring-planted oat crop will average 1500 to 2000 pounds of forage per acre. Based on the forage production of spring-planted oat, planning should include N fertilizer at a rate of 60 to 75 pounds actual N per acre after establishment.

Spring-planted oat harvested for hay, should be cut at early heading. Once the seedheads begin to emerge, there will be no appreciable increase in yield. Likewise, once the seedheads begin to emerge, there will be a substantial decrease in nutritive value due to the accumulation of stem tissue and also leaf loss. For grazing, oat plants should be a minimum of 6 inches tall. Spring-planted oat matures quite rapidly once the spring temperatures began warming. Each acre of spring-planted oat should provide between 35 and 60 days of grazing for a mature beef animal. Growing animals (750 pounds) can be stocked at approximately 1.5 animals per acre for 60 days.

Do not consider spring-planted oat to be the fool-proof solution to remedy a short forage supply. There are substantial risks involved due to weather, insects, and diseases. With planning and a little luck, a spring-planted oat crop may add some additional forage to an already short or non-existent forage supply.

Daren Redfearn

Plant & Soil Sciences Department, OSU

## Top-dressing winter canola

If you have not top-dressed your winter canola yet it is time to top-dress. Soil fertility and fertilizer management play a major role in the winter survival, yield, and quality of canola. Fertilizer recommendations for canola are similar to those for winter wheat, with two exceptions. Canola uses slightly more nitrogen and sulfur than comparable yields of wheat, and high nitrogen applications in the fall should be avoided, as they can lead to excessive fall growth and reduced winter survival. While some wheat growers apply all the nitrogen for wheat in late summer before planting, only a third of the total nitrogen for canola (roughly 30 to 50 pounds per acre) should be applied prior to planting. In addition, all phosphorus, potassium, sulfur, and other soil amendments before the final tillage operation.

*“Canola responds to nitrogen fertilizer applied in late winter while the plants are still dormant, much like wheat.”*

Canola responds to nitrogen fertilizer applied in late winter while the plants are still dormant, much like wheat. The majority (two-thirds) of the nitrogen should be applied when ambient temperatures are still low and just as plants begin to show increased growth. Top-dress applications should be based on an updated assessment of yield potential, less profile residual nitrogen, and the amount of N applied in the fall. Either solid or liquid forms of nitrogen can be used before green-up in the early spring. Once the weather warms and growth begins, solid materials are preferred for broadcast applications to prevent/avoid leaf burn. Following is the general formula to calculate top-dress nitrogen application:

**Top dress nitrogen application (lbs/acre)** =  $0.05 \times \text{Yield Potential (lbs/A)} - \text{pre-plant profile soil test nitrogen (lbs/A)} - \text{Pre-plant N applied (lbs/A)}$

It is important to avoid crushing winter canola with applicator tires after it bolts. Crushed plants will lodge and maturity will be delayed, which can slow harvest and increase the risk of shattering losses. For this reason, applicators with narrow tires are preferred.

Chad Godsey

Plant & Soil Sciences Department, OSU



*Canola after N top-dress in early Feb.*

## High Nitrogen and Low(er)ing Cattle Prices

Recent decreases in cattle prices and increases in the cost of nitrogen (N) fertilizer are causing pasture managers to question how to best manage pastures and make ends meet. The following is some general advice for tough economic times and some thoughts about using forage legumes.

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*“Overstocking is frequently the limiting factor for pasture production and puts grass under stress.”*

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1. **Know your pastures’ soils** before making large investments that may not pay off. Most pastures have several different soils, and good managers concentrate their efforts and inputs on those soils that are most likely to respond. The deep soils are better able to act as a reservoir for water and nutrients. Many of the very shallow soils have little potential to respond to inputs. Highly acid soils and those with little or no available phosphorus and potassium are not likely to respond quickly to small inputs. Rather than stopping all N fertilizer applications, pick the best soils in the best pastures and apply N judiciously according to the pastures’ and cattle’s needs.

2. **Do not overstock** pastures. Overstocking is frequently the limiting factor for pasture production and puts grass under stress. Most pastures have had enough stress during the wild weather swings during the last couple of years. It is usually less economical to buy hay and supplements than to grow good forage.

3. Where soils are suitable, **plant forage legumes** to supplement the N supply. Planting red clover in late winter and/or early spring has a good potential for adding to the forage production with little or no added N. Annual lespedeza can be planted during the spring to provide forage in late summer. Establishing legumes in pastures can be accomplished in many different ways; however, a few key practices improve the likelihood of success.

- Minimize the depth of thatch by grazing or mowing before planting small seeded legumes.
- Place the seed in the top of the soil, not on top of a deep thatch of grass.
- Choose areas to plant legumes where the soil is deep enough to store water and nutrients. Skip the shallow areas and where the soil does not support good plant growth.

Fact sheet [PSS 2590](#), “Forage Legumes and Nitrogen Production,” may help producers wanting to include forage legumes in their operations. This fact sheet

- Describes what can be expected by using legumes for N fixation,
- Outlines realistic benefits of legumes, and
- Dispels some unfounded expectations.

It also describes how legumes can be used in pure stands (monocultures) and in mixtures



with grasses. Legumes may be harvested (mechanically or by grazing animals), left on soil, or incorporated into soil. Legume cover crops, left on or tilled into soil, are used to protect soil from erosion, improve tilth, and supply N and other nutrients to subsequent crops.

[Daren Redfearn](#) and [John Caddel](#),

Plant & Soil Sciences Department, OSU

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## An online decision support tool for fertilizing crops

Plant nutrient prices currently are very high due to the world demand of fertilizers for food and biofuel crops. Therefore, nutrient input has become a major production cost for most crops in Oklahoma. It is the time to top-dress winter wheat and to make fertilization plans for summer crops. If you are interested in comparing the costs of different fertilizer sources and the total amount of money needed to cover all your fields, an interactive web-based computer program has been developed to provide assistance on making decisions related to plant nutrient management. The program can be accessed at: <http://www.soiltesting.okstate.edu> under **Soil Test Interpretation** (see figure below). This decision support tool allows users to obtain fertilizer recommendation based on soil test results, to calculate the amount of fertilizers needed to supply major nutrients for a selected crop, to compute the cost of fertilizing at current price, and to calculate the values of animal manure used as nutrient source.

If you are only interested in finding out how much it costs you to topdress, you can go straight to the “Nutrient Blending” page by clicking the corresponding button on top. For example, I want to apply 40 lbs/acre nitrogen to 75 acres using UAN solution (28-0-0). The price for UAN is \$365/ton. After this information is entered properly (shown below), click “Calculate Optimal Mixing”. The amount of material and cost per acre, and the total amount of material and cost for the 75 acres will be displayed on the bottom portion of the table. Similar calculations can be made for other types of fertilizers.

This program will be automatically installed in your computer after you used it, so you do not need to go online again in the future. Please contact Hailin Zhang ([hailin.zhang@okstate.edu](mailto:hailin.zhang@okstate.edu), 405-744-9566) if you have any questions on using this program.

[Hailin Zhang](#)

Plant & Soil Sciences Department, OSU

Oklahoma Soil Test Interpretation and Fertilizer Decision Support System

File Preferences Help

Introduction Soil Test Interpretation Nutrient Sources **Nutrient Blending** Value of Manure

Nutrients Needed (lb/A): N 40.0 P205 0 K2O 0 Field Size (A) 75.0

Select	NutrientSource	N	P205	K2O	ContentUnit	Price	PurchaseUnit
<input type="checkbox"/>	Anhydrous Ammonia	82	0	0	%	\$630.00	ton
<input type="checkbox"/>	Urea	46	0	0	%	\$530.00	ton
<input type="checkbox"/>	Ammonium Nitrate	34	0	0	%	\$400.00	ton
<input checked="" type="checkbox"/>	UAN	28	0	0	%	\$365.00	ton
<input type="checkbox"/>	Diammonium Phosphate	18	46	0	%	\$200.00	ton
<input type="checkbox"/>	Monoammonium Phosphate	11	52	0	%	\$240.00	ton
<input type="checkbox"/>	Muriate of Potash	0	0	60	%	\$200.00	ton
<input type="checkbox"/>	Feedlot Manure	24	21	24	lb/ton	\$10.00	ton
<input type="checkbox"/>	Poultry Litter	60	60	50	lb/ton	\$20.00	ton
<input type="checkbox"/>	Dairy Manure	12	10	12	lb/1000 gal	\$10.00	1000 gal
<input type="checkbox"/>	Lagoon Effluent	4	1	4	lb/1000 gal	\$3.00	1000 gal
<input type="checkbox"/>	User Defined	28	0	0	%	\$0.000	ton

Calculate Optimal Mixing

Optimal Nutrient Sources and Amounts to Minimize Cost

NutrientSource	Appl. Rate /A	N (lb/A)	P205 (lb/A)	K2O (lb/A)	Cost/A (\$/A)	Total Amount	Total Cost
UAN	143 lb	40.0	0.0	0.0	\$26.07	10714 lb	\$1955.36
TOTAL		40.0	0.0	0.0	\$26.07		\$1955.36

Lime Required (ton ECCE lime / A): 0.0 Lime Price (\$ / ton): 20.00

For 75.0 acres, 0.0 tons of ECCE lime is required at a total cost of \$0.00

## Greenbug Management in Winter Wheat with Glance 'n Go: [Using the Henson Rule](#).....

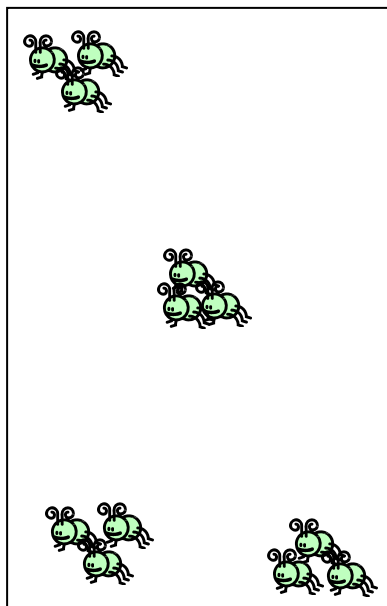
Aaron Henson, Agricultural Extension educator in Tillman county has been checking fields for greenbug infestations recently, and began to think about the differences in sampling decisions that he was seeing between the spring and fall editions of our Glance 'n Go system for greenbug sampling. He saw that there were big differences in the number of infested tillers that were needed to make a treatment decision between the fall form and the spring form. Because much of the wheat had emerged so late due to dry soil conditions, he thought that most fields resembled a typical field in October versus January (i.e. small plants that had just emerged). Logically then, he thought it would be more appropriate to use the Fall Edition of Glance 'n Go compared to the Spring form.

I called and talked with Aaron. After some discussion, I agreed that because the wheat plants were so small, it would be more appropriate to use a Fall form to sample, even though the threshold is the same. Now I would like to explain the rational behind what I am now calling "The Henson Rule".

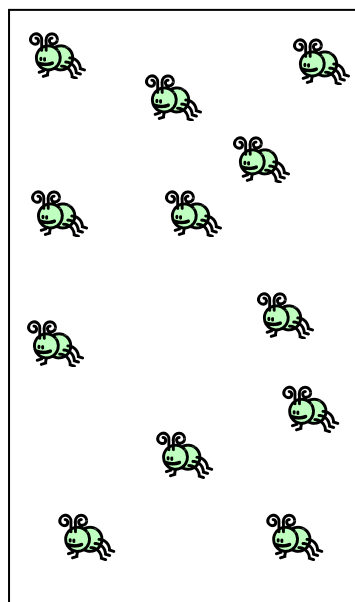
*“Glance ‘n Go has a fall and spring edition because, through our research, we found that aphid distribution patterns are different in the spring compared to fall.”*

Glance ‘n Go has a fall and spring edition because, through our research, we found that aphid distribution patterns are different in the spring compared to fall. Why? Because, in the fall, greenbugs become established by migrating winged aphids. When they land, they begin to produce young that live on the same plant as their mother. In spring, greenbugs increase from two sources, migrating aphids and over-wintered aphids that arrived in the fall. Our research showed that their distribution pattern in spring is more uniform, whereas fall distribution patterns are more clumped (See Figure). This means that there are more infested tillers the spring, even though the actual numbers in the field are the same in both fields.

**Typical Fall Field**



**Typical Spring Field**



The “Henson Rule” is applied when a field is planted late, or when it does not emerge until very late (typical of some fields this year). The only aphids that would be in the field are ones that migrated in during a warm spell. Thus, their spacing pattern would be more clumped, like you would normally see in the fall.

What is the Henson Rule? It states: if the field has very small plants (2-6 leaves) in January and February, use the fall Glance ‘n Go form to sample and make a decision to treat. Remember, the actual treatment threshold is the same; it is just that the spacing pattern is different.

A treatment threshold can be estimated by accessing the Greenbug Expert System which is located on the Entomology and Plant Pathology website at <http://entopl.okstate.edu/>. Just click on “Agricultural Models”, then Cereal Aphids Pest Management, and you will

find yourself in the Greenbug Expert System. By following some simple instructions, you can use the Economic Threshold Calculator to determine your treatment threshold.

Before choosing an insecticide, consider the effectiveness, cost of application and grazing restrictions that apply for each chemical. Products registered for greenbug control include Cobalt at 7-13 fl oz per acre, Dimethoate 4E at 0.5 to 0.75 pints per acre, Lorsban 4E at 0.5 to 1.0 pints per acre, methyl parathion 4EC at 0.5 to 1.5 pints per acre Mustang MAX at 3.2 to 4 fluid ounces per acre, Proaxis at 3.84 fluid ounces per acre, Prolex at 1.54 fl oz per acre and Warrior at 3.84 fluid ounces per acre. All of these registered products except Cobalt were tested in my greenbug insecticide screening trials over the past few years and were effective at controlling greenbugs. Cobalt is a mixture of chlorpyrifos (Lorsban) and gamma cyhalothrin, and should be effective.

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*“Before choosing an insecticide, consider the effectiveness, cost of application and grazing restrictions that apply for each chemical.”*

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Grazing and pre-harvest restrictions are as follows: Cobalt and Lorsban - 14 days for grazing, 28 days for harvest; dimethoate - 14 days for grazing, 35 days for harvest; methyl parathion - 15 days for grazing or harvest; Mustang MAX - 14 days for grazing or harvest; Proaxis/Prolex - 30 days for grazing or harvest; Warrior – 7 days for grazing, 30 days for harvest.

It is very important to follow these grazing restrictions. In 1994, several cattle poisonings occurred in Western Oklahoma that were associated with dimethoate applications. In most cases, the poisonings occurred because the cattle were released into the field early, while the dimethoate residues were still high. However, in a few cases, the residual dimethoate remained at higher than desirable levels for use as feed, even after the grazing restriction had passed. Observations suggested that dimethoate did not degrade as quickly as expected under that set of field conditions (dry and cold, with plants under extreme water stress). The best way to avoid cattle poisonings is to follow these steps:

- spray only when greenbugs exceed treatment thresholds
- apply at the lowest labeled rate to obtain adequate control
- make sure spray equipment is calibrated and in proper working order
- obey grazing restrictions
- use something other than dimethoate if wheat plants are under extreme water stress and temperatures are predicted to remain cold for a long time period.

A final reminder is to Always read and follow the label for application directions and use restrictions.

[Tom A. Royer](#)

Extension Entomologist

## Sustainable Agriculture Research and Extension is Gaining Momentum at Oklahoma State University

Oklahoma State University has increased the focus on institutionalization of sustainable agriculture research, extension and education during the last two years. A position of an Assistant Extension Specialist was filled in July 2007 with the Department of Plant and Soil Sciences. Similarly, the Oklahoma Cooperative Extension

Service (OCES) and College of Agricultural Sciences and Natural Resources (CASNR) jointly approved a vacancy of Assistant Professor in Sustainable Agricultural Systems which was filled in December, 2007 in the Department of Plant and Soil Sciences. The new 85% extension and 15% teaching position is meant to organize sustainable agriculture extension activities in the state by forming strong linkages within and outside OSU. It is also responsible for developing a course in sustainable agriculture. This position is well recognized and it is getting a lot of support from researchers, extension specialists and educators. The environmental quality and waste management Team Initiative Program (TIP) formed a Sustainable Agriculture sub-group at the end of 2007. Currently this sub-group is preparing its research, extension and education priorities. The development of a course in sustainable agriculture is underway and it will be offered in the fall of 2008 or spring of 2009.

The OCES excelled in transforming sustainable agriculture training and education plans to actions in 2007. Several workshops and seminars had been conducted in several areas of crop and animal production that directly contribute to sustainable agriculture in the state. Production manuals have been published and distributed among producers. Stakeholders from different sectors of agriculture convene to figure out sustainable agriculture research, extension and education needs of the state (please visit <http://oces.okstate.edu/oksusag> for details).

Having accomplished this much, there are many issues at stake. Oklahoma's intensive mono-crop farming system requires a change in attitude of both producers and a strategy by researchers, extension professionals and educators in order to have sustainable cropping systems. The immediate focus of the sustainable agriculture program in Plant and Soil Sciences would be designing a strategy to implement sustainable agriculture in different segments of the agricultural community and other clientele including farm communities, agribusiness, environmental and sustainable agriculture organizations, and consumers. This program also establishes a linkage among extension specialists, educators and agents to educate the public on issues of sustainable agriculture. Some of the focus areas will be organic amendment, agricultural diversification, organic farming and youth education.

Broadly speaking, the public needs to gain knowledge of the long-term consequences of today's agriculture on environmental implications, social issues, and profitability. Farming system issues related to sustainable agriculture need to be addressed at elementary levels within team efforts. Furthermore, a system thinking R&D problem-solving approach must be implemented. There is an important task ahead of us; to build an economically, environmentally and socially sustainable Oklahoma. It is time for Oklahomans to take the opportunity to build the most inhabitable state on the face of the earth.

[Kefyalew Desta](#)

Plant & Soil Sciences Department, OSU

## Wheat Disease Update – 31 January 2008

**Oklahoma - wheat streak mosaic virus (WSMV):** No reports or samples have been received since mid-January when a sample from near Kingfisher, OK tested positive for WSMV (and negative for HPV and BYDV).

**Oklahoma – other diseases/pests & observations:** Yesterday (Jan 30<sup>th</sup>) I attended producer meetings at Chattanooga (south central OK) and Hobart (southwest OK). Mark Gregory (Southwest Area Extension Agronomist), Aaron Henson (Extension Educator, Tillman County), and Kent Orrell (Extension Educator, Kiowa County) all reported seeing and hearing of aphid activity ranging from “light” to “spraying is needed or has already been done.”

Dave Worrall (wheat breeder, Agripro Wheat) told me this past week that he saw “fresh” pustules of leaf rust on wheat in north central Oklahoma. Although I didn’t see any leaf rust on my trip yesterday, I only stopped at the variety trial near Kingfisher. Only making this one stop was because of cold temps, strong winds, and the fact that the wheat in the majority of the fields I drove by was quite small. As I approached Hennessey and then returned to Stillwater, the wheat was bigger in most of the fields.

No reports lately from other states.

Bob Hunger

Plant Pathology and Entomology

## Upcoming Events

- No-till Oklahoma Meeting
  - Feb. 11<sup>th</sup> and 12<sup>th</sup>, Oklahoma City, Clarion Hotel (call Janelle Malone for more information 405-744-3669)

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