Plant & Soil Sciences Extension Newsletter

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Plant & Soil Science Extension

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Is it possible to plant winter canola with a row crop planter on 30 inch centers?

By Chad Godsey

Last year prior to winter canola seeding we had several producers ask about planting canola on 30 inch rows with a row crop planter. A review of past studies conducted outside of Oklahoma resulted in mixed results, so we established a few locations to investigate the yield potential of canola planted on 30 inch rows. The purpose of wanting to plant on 30 inch rows is to increase the ability to manage residue in no-till systems with the use of row cleaners. We compared 30 inch versus 15 inch and seeding rates from 2 to 5 lb per acre with row spacing of 30 inches. Seven and half inch rows were not included because in previous studies we have concluded that yield of 15 inch rows are equal to 7.5 inch rows.

Plots were established and planted on Sept. 17 to DKW 46-15. Both locations were planted following an average yielding wheat crop harvested in 2009. A Great Plains NT drill was used for the 15 inch row spacing treatments. The coulter used was a turbo-till fluted coulter. All 30 inch treatments were planted with a Monosem vacuum planter equipped with Yetter row cleaners. All treatments were planted at 5 mph.

Stand counts were taken in each plot 5, 7, 9, 13, and 55 days after planting to get a rate of emergence and final fall stand count. A winter survival stand count was taken on March 16, 2010.

Results - Below are some key points that we observed.

Emergence

- Overall, the planter treatments emerged quicker and more evenly. This was probably due to more uniform seeding depth in the planter treatments.
- A greater percent emergence was observed with planted plots when compared to drilled plots. This was especially true at the lower seeding rates (2 and 3 lb/ac).
- Two to three lb/ac seems to be adequate for 30 inch row spacing. With the higher seeding rates (4 and 5 lb/ac on 30 inch rows) a large portion of those plants died off because the in-row population was too high.

Winter Survival

- A greater percent of plants died in

(Continued on page 2)

Treatment No.	Seeder	Spacing (in)	Residue Management	Tillage	Seeding Rate (lb/ac)
1	Planter	30	Yes	no till	2
2	Planter	30	Yes	no till	3
3	Planter	30	Yes	no till	4
4	Planter	30	Yes	no till	5
5	Drill	15	No	no till	5
6	Drill	15	No	Conv.-till	5
7	Drill	15	Coulter	no till	5

Planting winter canola (cont.)

the 30 in row spacing. All 30 in treatments ended up having a stand count in the 2.5 to 3 plants/ft2 regardless of seeding rate.

• The 15 in row spacing had more plants per square foot than the 30 in row spacing.

Yield

• No differences were observed between treatments. Overall, yields were lower than expected. At Covington, soil pH ranged from 4.5 to 5.1 between reps, so this may have limited yield. At Red Rock insect and weed pressure limited yield.

• Under high yielding environments I think we may see a 10% reduction in yield when planting on 30 in rows. Choosing a cultivar that branches profusely appears to be important as we did not observe complete row closure on the 30 in row spacing.

In summary, if you are in a no-till systems with heavy residue and do not want to burn or destroy residue a row crop planter on 30 inch rows can be used to manage residue. Seeding rate can be reduced from the typical 5 lb/ac to a range of 2-3 lb/ac if planted on 30 inch rows. Also, select a variety/hybrid that branches a lot and also that has a low crown height. Most seed dealers should have this information. Another thing that may be important to some producers is that winter canola grown on 30 inch rows is now insurable.

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Get out and check pastures for fall armyworm

By Tom Royer

It appears that my concern about fall armyworms in pasture, based on a report from my Kentucky colleague Dr. Doug Johnson has been supported. Recall that I reported on fall armyworm moth catches from Johnson's fall armyworm trap network on August 27 in our Pest e-alert newsletter. In his own words, he said "I do not wish to be the little boy crying wolf, but his event is unprecedented in the years that the University of Kentucky - Integrated Pest Management (UK-IPM) program has collected pheromone trapping data."

On September 2, Jefferson County Extension Educator Mike Jeffcoat reported fall armyworm infestations in bermudagrass pastures. Fall armyworms can kill seedling wheat and decimate a pasture in short order, so both need to be watched carefully from now through mid-October.

Mike took some great pictures of fall armyworm damage symptoms in bermudagrass. Look for caterpillars with a prominent inverted "Y" on their head capsule and for "window paned" leaves. Scouting fall armyworms in pasture is easy. Get a wire coat hanger, bend it into a hoop, place it on the ground, and count all sizes of fall armyworms in the hoop. Examine plants at several

locations along the field margin as well as in the interior. The hoop covers about 2/3 of a square foot, so a threshold in pasture would be an average of two or three ½ inch-long larvae per hoop sample

In wheat (once it has emerged) scout for fall armyworms by examining plants in several (5 or more) locations in the field. Fall armyworms are most active in the morning or late afternoon. Look for "window paned" leaves and count all sizes of larvae. As with pasture, examine plants along the field margin as well as in the interior, because they often move in from road ditches and weedy areas. The suggested treatment threshold is 2 to3 larvae per linear foot of row in wheat.

If the treatment threshold is exceeded, it is much easier to "get them" with an insecticide application when they are small (less than ½ inches). For control guidelines and information on registered insecticides for fall armyworm, consult OSU Fact Sheet CR-7193 Management of Insect Pests in Rangeland and Pasture and CR-7194 Management of Insect and Mite Pests of Small Grains.

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Add $100 per acre to your bottom line

By Jeff Edwards

The 2010 OSU Wheat Variety Performance Tests (available at www.wheat.okstate.edu) clearly showed that some wheat varieties are stars and others are underperformers. On average, there was a 19 bushel per acre difference between the highest and lowest yielding cultivar at a test site in 2010. At $5.00 per bushel this means that on average there was a $95 per acre difference in potential wheat revenue at these sites. The smallest spread between the highest and lowest yielding cultivars was at Gage where a 10 bushel per acre spread resulted in a $50 per acre difference in potential revenue. The largest spread was at Lamont where a 29 bushel per acre difference between the highest and lowest yielding cultivar resulted in a $145 difference in potential wheat revenue.

None of us can accurately predict which cultivars will be the top yielder at a particular site prior to sowing, so the scenarios above could be described as 'best case'. By using the previous year's data, however, we can come up with a short list of varieties that are highly likely to be in the top yield grouping the following year and thereby highly likely to increase wheat profitability. Wheat producers should aim to have as many of their acres as possible sown to these top-tier varieties.

It is not too late to upgrade to a better variety this year, even if you have already saved seed for planting. The cost of upgrading to certified seed is roughly equivalent to the certified seed purchase price minus the market value of farmer-saved seed. So, if a farmer could purchase certified wheat seed for $11 per bushel and current cash price of wheat was $4.50, the cost to upgrade to certified seed would be about $6.50 per acre (assuming a 1 bushel per acre seeding rate). If the new variety will provide about 1 to 2 bushels per acre in increased yield potential, then upgrading to certified seed of the new variety was a good investment. In most cases upgrading to a newer variety will provide much greater yield increases than 1 to 2 bushels.

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How valuable is your hay?

By Daren Redfearn

This year, there has been ample rainfall that has resulted in an enormous amount of forage production and hay of varying quality. It is possible that some hay has high quality and some hay that would have had high forage quality, but it was rained on during the curing process. Finally, there will be some hay available that is low quality due to it being overly mature as a result of delayed hay harvest schedule. There are two questions to consider when feeding hay.

Is it better to purchase and feed a low quality hay or high quality hay?

To answer this question, we need two key pieces of information. The easiest piece of information to obtain is the animal nutritional needs. Nutrient requirements are not consistent for all classes of livestock, so we need some knowledge of their body weight and stage of production. For more information on nutrient requirements of beef cattle, please see OSU Extension Circular 974 (Nutrient Requirements of Beef Cattle). *(http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1921/E-974web.pdf)*. The second piece of information is the forage test results. At a minimum, it is important to know the crude protein (CP) and total digestible nutrient (TDN) values for hay supplies.

During the winter hay feeding period, a general rule of thumb is that it will take about 1000 pounds of hay to feed a mature cow for 30 days (33 pounds of hay per day), assuming none is wasted. The following example can be used to help explain the relationship between forage quality and stage of production. In a 1000-pound bale of bermudagrass hay with 5.0% CP and 45% TDN, there are 50 pounds of CP and 450 pounds of TDN. An 1100-pound mature cow in the middle third of pregnancy requires 1.4 pounds of CP and 9.7 pounds of TDN each day. From a couple of simple calculations (Table 1), we can determine that the CP requirement for this animal is 42 pounds and the TDN requirement is 291 pounds for 30 days. We can quickly determine that this hay should be adequate to maintain the 1100-pound mature cow in the middle third of pregnancy if her daily hay consumption is at least 28 pounds.

What happens when the nutritional requirements of an animal change?

The nutrient requirements for this same 1100-pound cow the first 90 days after calving require 2.9 pounds of CP and 16.8 pounds of TDN each day. Our quick calculations show this hay is now deficient in both protein and energy for this animal in a different stage of production (Table 1). Assuming she consumes 33 pounds of hay per day, both her protein and energy requirements will be deficient. Generally, it is difficult to make animals consume more than about 33 pounds per day of low quality hay. In this instance, both additional protein and energy should be provided to meet the nutritional requirements.

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Table 1. Relationship of total nutrients provided by bermudagrass hay and a comparison of nutrient requirements by the same animal during different stages of production.

Nutrients provided [1]		Nutrients required [2]			
		Middle 1/3 gestation		90 days post-calving	
CP	TDN	CP	TDN	CP	TDN
50 lbs	450 lbs	42 lbs	291 lbs	87 lbs	504 lbs

[1] Nutrients provided by 1000-pound bale of bermudagrass hay with a forage quality analysis of 5% crude protein (CP) and 45% total digestible nutrients (TDN).

[2] Nutrients required by an 1100-pound beef cow during the middle 1/3 gestation and 90 days post-calving.

200 pounds is not the same as 2,000

By Jeff Edwards

I have received several questions regarding liming materials and application. This is a good thing because it means that more people are soil sampling and addressing low soil pH. I am concerned, however, with the types of questions I am getting regarding the application of pelletized lime. Most of these questions essentially ask if a couple hundred pounds of pelletized lime will perform the same as ½ or one ton of regular ag lime. The answer is NO. If your soil test recommends one ton of 100% ECCE lime you will need one ton of ECCE lime, regardless of the source. I will attempt to explain why in the next few paragraphs.

What is soil acidity? Soil acidity is a measure of the amount of hydrogen (H+) ions in the soil solution. The lower the pH, the more H+ ions there are in the soil solution. Lime (CaCO3) corrects soil acidity as it dissolves into Ca and CO3. Calcium (Ca) has a positive charge like H+ and displaces the H+ ions from the surface of soil particles, etc. The carbonate (CO3) reacts with the H+ ions to form carbon dioxide (CO2) and water (H2O). The purpose of this chemistry lesson was to show that one molecule of calcium carbonate will neutralize two H+ ions. There is no shortcut around this reaction. The lime recommendation you receive with your soil test is calculated based on the amount of H+ ions you need to neutralize in your soil and the number of calcium carbonate (CaCO3) it will take to get this done.

Can I get by with less pelletized lime than ag lime? No. It is true that some liming materials are more effective than others. The effectiveness of a liming material is expressed as the effective calcium carbonate equivalent (ECCE). The ECCE is based on the purity of the material and the fineness of the material (finely ground lime will react more quickly than coarse-ground lime). Most agricultural lime sources in Oklahoma are about 65 – 85 % ECCE. So, if the soil test called for one ton of lime, you would need to apply 1.33 tons/A of a 75% ECCE material to get the job done. If a pelletized lime source were 90% ECCE it would take 1.11 tons/A of this material to get the same job done, not a few hundred pounds. Once again, if the soil test calls for a ton of ECCE lime, you need a ton of ECCE lime.

What about banding pelletized lime? We have two studies (near Altus and Wakomis) comparing broadcast ag lime to in-furrow pelletized lime and in-furrow 18-46-0 (DAP). This research is still in its preliminary stages, so it is too early to glean recommendations from the results; however, what we do know from previous research is that in-furrow DAP is an effective band-aid treatment in low pH soils. It is also important to note that the mixing of pelletized lime and DAP is not recommend because the calcium in the pelletized lime can bind to the phosphorus in the DAP and make it unavailable to plants.

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OSU Enterprise Budget Software

Have you heard the saying, "If you can't pencil a profit, you aren't likely to plow one."? Enterprise budgets estimate profitability for agricultural enterprises while documenting management practices, resources, and technology used. OSU's Microsoft Excel budget spreadsheets provide users access to important agricultural science information during an "interactive" budget building process. The spreadsheets are designed to provide a planning and educational tool that contains estimates of production costs and returns based on the current and/or expected economic environment as well as the management practices typical of an area.

A one-page budget report summarizes key production items and prices, operating and fixed costs, plus break-even prices and yields. Supporting reports, such as fertilization or feeding practices specified, may also be printed. The software provides users access to important agricultural references during an "interactive" budget-building process. It incorporates historical data and specialist recommendations while allowing modification by the user. Examples of historical data include area yields and average prices. Examples of specialist recommendations include fertilizer requirements for specified forage or grain yields. Links to Internet databases and references point users to additional information. Business management requires producers to focus on budget planning as much as production performance.

For additional information, contact your local OSU Extension Educator-Agriculture, Area Agricultural Economics Specialist or visit the website at http://agecon.okstate.edu/budgets/.

Upcoming Events

2010 Peanut Field Tours

Sept. 21, 2010 Beckham County Activity Center
Sayre, Okla. - 9 a.m.

Sept. 23, 2010 Caddo County Research Station
Ft. Cobb, Okla. - 8 a.m.

OSU Winter Crop School

Dec. 14-15, 2010 Wes Watkins Center - OSU Campus
Stillwater, Okla.

2010 Peanut Field Tours – and the release of Red River Runner

Peanut Improvement Team

Location and time:

September 21, 2010 – Beckham County – Starts at 9:00 am
(meet at Activity Center first)
Beckham County Activity Center
312 East Madden, Sayre, OK
(Doughnuts and Coffee)

September 23, 2010 – Caddo Research Station – Starts at 8:00 am
Blasting 8:00 am Field Tour at 9:00 am Fort Cobb, OK
"Official" release of Red River Runner, weed and disease updates, and peanut variety discussion (Lunch Served following field tour)

Meeting Highlights:

Release of Red River Runner. "Hull blasting" will be available at all locations, so farmers should bring a representative sample of pods from the field to blast to determine maturity and anticipated digging dates.

Fort Cobb Location:

The field day will be kicked-off with the "official" release of the much anticipated Red River Runner peanut variety Attendees will have an opportunity to view variety test plots, peanut disease studies, and weed control studies.

Sayre Location:

After blasting we will discuss what worked in 2010 and what did not.

OKLAHOMA PEANUT COMMISSION

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