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PLANT & SOIL SCIENCES DEPARTMENT

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Cropping Systems Newsletter

OKLAHOMA COOPERATIVE EXTENSION SERVICE

Special points of interest:

- Double –cropping decisions
- Harvesting Canola
- Thrips in peanut

The Decision on Double-Cropping

Chad Godsey, *extension cropping systems specialist*

Recent rains across the north and northeastern parts of the state have increased the probability of successfully double cropping after wheat harvest. Double-cropping soybeans or grain sorghum after winter wheat is possible in much of Oklahoma. This cropping system has several advantages. A crop, growing on the land all year, provides control of soil erosion. Spreading annual fixed costs such as land, taxes and machinery over two crops instead of one may increase gross returns per acre with relatively low increases in production costs. Thus, profits per acre may be increased. A successful wheat-soybean or wheat-grain sorghum double crop depends on management and weather conditions. Establishing an adequate stand and effective weed control are critical. In western Oklahoma, the lack of soil moisture after wheat harvest limits the feasibility of double cropping. Knowing the conditions to which double cropping is best adapted will provide for a successful second crop. Research has shown that double cropping may produce yields that are equal to or greater than conventionally planted soybeans or grain sorghum. In many years, the final decision to double crop soybeans should be made only after wheat harvest.

Wheat straw management

Wheat straw can act as a surface mulch to conserve moisture, impede runoff and prevent surface crusting. Given the condition of the wheat crop this year, amounts of residue will be much lower than normal and should not create problems for producers wanting to plant after wheat harvest is completed. No-till practices are suggested in double-cropping systems. However, residues can complicate planting and interfere with herbicides. These problems can be overcome with proper equipment and straw management.

In a no-till system, special attention needs to be placed on evenly spreading the small grain residue on the surface. Residue should not be bunched or windrowed unless it is to be baled and removed. Bunches of residue will make it difficult to get good seed to soil contact. Burning straw is a possibility but is not recommended as it exposes the soil surface to possible erosion. Research has indicated that burning does not improve yields and defeats the purpose of no-till as you lose valuable organic matter. Burning wheat residue should be considered a last resort.

Double-crop soybean management

Some questions that need to be asked prior to making a decision on double cropping are: Is there enough moisture to germinate the soybeans? Is there enough of the season left for a reasonable crop to mature before first frost? Can other problems such as weeds be controlled? Avoiding problems greatly improves the long-term profitability of double cropping.
In double-cropping, rapid germination and emergence of a uniform stand of soybeans are keys to success. Soil moisture is the critical environmental factor determining whether a good stand is obtained. If the soil is too dry for prompt emergence, many seeds may die, or emergence may be so late that the remaining season is too short for the crop to complete growth. If the top 2 inches of

Useful Links:

www.soybean.okstate.edu

www.canola.okstate.edu

http://alfalfa.okstate.edu

www.wheat.okstate.edu

http://forage.okstate.edu

soil are dry, and if soybeans will not germinate and emerge without more water, wait. If rainfall is not sufficient for stand establishment by the latest safe date to plant, abandon double cropping for that year or another crop after you receive rain. July 4 is generally a good rule of thumb as to the latest possible date to plant. In most years, soybeans planted after July 4 will not have time to fully mature before frost.

Row Spacing and Seeding Rates

Narrow rows (less than 20 inches) are recommended for double-cropped soybeans particularly when planting occurs late in the growing season. A decrease in row spacing is required to compensate for reduced vegetative growth and reduced branching of soybean plants. The seeding rate for 20 inch rows should be 8-10 seeds/row foot for a final stand of 6-8 plants/row foot and for 10 inch rows, 6-8 seeds/row foot for a final stand of 4-6 plants/row foot. Planting depth should be between 1 and 2 inches.

Variety selection is also important in double cropping as selecting early maturing varieties may greatly reduce yield potential compared to later maturing varieties. Generally, varieties in maturity group IV and V are the best suited for double-cropping in Oklahoma. Varieties in these maturity groups will grow taller and provide more total competition with weeds than early maturing varieties. When planted from June 15 to July 1, Group IV varieties will mature in approximately 110 days and Group V varieties will mature in 120 days.

Double-crop sorghum management

This time of the year is prime time for planting a mid to full season maturity grain sorghum variety. The same questions that were discussed earlier with double crop soybeans need to be addressed with sorghum. You must have enough available soil moisture for germination and be able to control weeds.

Seeding Rates

OSU recommends having 40-45,000 plants per acre for a final stand. Although, high yields can be obtained with plant population lower than that. Later planted grain sorghum does not have the ability to compensate for lower stands by tillering compared to earlier planted grain sorghum (April plantings). Research has shown that populations greater than 60,000 plants per acre may not fully developed heads. Table 1 shows data from a study conducted in 2004 at Enid that considered planting rate in a double crop scenario. The optimum planting depth differs with soil types and moisture conditions. In heavier soils, a planting depth of l inch is satisfactory. In sandy soils, seeds can be placed 2 inches deep without problems. Sorghum seeds can emerge from plantings deeper than 2 inches, but seedlings are slow to emerge, and final stand numbers may be reduced. The seed should be well covered with soil for excellent seed-soil contact to aid germination.

Double-cropping is not a practice for everyone, the decision should be based on available soil moisture an other factors discussed in this article. By adding the value of 20 to 30 bushels per acre of soybeans or 60-80 bushels per acre of grain sorghum to the value of the wheat crop, double-cropping after wheat becomes quite competitive economically with other cropping practices. Careful thought should be given to double-cropping decision in 2006 as we continue to experience hot and dry weather in many parts of the state.

Poor stand of soybean from lack of available soil moisture at planting time.

"Narrow rows (less than 20 inches) are recommended for double-cropped soybeans particularly when planting occurs late in the growing season."

Table 1. Grain yields and heads per plant in 2004.

Plant Population	Enid (double crop)	
	Grain Yield (bu/ac)	Heads/plant
20,000	73.6	1.73
30,000	72.9	1.19
40,000	83.3	1.08
50,000	80.3	1.05
60,000	85.5	0.95
70,000	79.2	0.97
L.S.D.	NS	0.32

Harvesting Winter Canola

Randy Taylor, *Extension Engineer, Machinery Systems*
Biosystems and Ag Engineering

Though harvesting canola may be much different than many crops traditionally grown in Oklahoma, it can be efficiently harvested with traditional wheat combines. You should be ready to harvest when seed moisture has dropped under 10%. Harvesting canola over 10% moisture can create storage problems. However if moisture gets much below 8%, excessive shattering loss can occur. General adjustment guidelines for gathering, threshing and cleaning are discussed here, but consult the operator's manual for adjustment information and starting points.

Gathering

Gathering the crop is challenging when canola is direct harvested. The low moisture content necessary for storage can result in shattering losses. Try to operate the reel speed as close to ground speed as possible with minimal contact with the crop. The reel should be set high and over the cutterbar. The crop should move gently into the header cross auger. Make sure the stripper bars on the cross auger are set so that the crop feeds uniformly to the center of the header and into the feeder house.

Threshing

Canola threshes rather easy and often most threshing occurs in the header and feeder house. In general, you should use cylinder/rotor speeds that are a little more than half of the speed used when harvesting wheat. High cylinder/rotor speeds are the primary cause of grain damage, so check the grain in the bin for cracked seed. Also examine the material on the cleaning shoe for damage. Excessive cylinder tends to grind stems and pods. The extra fine material makes it difficult to properly clean the grain and could result in grain loss from the cleaning system. On the other hand, a slower cylinder/rotor will decrease combine capacity. Therefore you want to operate the cylinder/rotor as fast as possible without damaging grain and plant material.

Since canola threshes relatively easy, a wider concave setting can be used. The wider setting will increase combine capacity while maintaining proper threshing. Check the operator's manual for the proper grates or inserts if your combine has that option.

Cleaning

Because canola seeds are so small and light, they can easily be lost from the cleaning system.

Cleaning occurs with a combination of shaking and air flow. You want to use less air speed when you are harvesting light crops such as canola. However, you need enough air flow to keep the material suspended just above the sieves. Depending on combine design, air flow is adjusted with fan speed or baffles. You should expect to effectively clean the crop with a fan (or baffle) setting of about half that normally used for wheat. It is a good idea to start with a lower setting and gradually increase it until separation of chaff and seed occurs with no seed being blown over the chaffer sieve.

The important item to remember about the cleaning system is that the fan and sieves work together. When you adjust the sieves it affects air flow. Think of the chaffer and cleaning sieves as stages. You want the chaffer (top sieve) to remove most of the larger material that was not separated at the straw walkers or rear of the rotor. The chaffer adjustment typically ranges from 1/4 to 5/16 of an inch. The material that does not go through the chaffer is discharged from the rear of the combine. Therefore all grain and unthreshed pods should pass through the chaffer. The cleaning or bottom sieve should be set to allow all grain to pass through. The gap should seldom be wider than 1/4 of an inch. Material that doesn't pass through the cleaning sieve is returned for threshing.

Find combine adjustment tips on the web at:

www.canola.okstate.edu

http://www.agry.purdue.edu/ext/canola/Harvest.htm

"The important item to remember about the cleaning system is that the fan and sieves work together. When you adjust the sieves it affects air flow."

Thrips Damage Potential in Peanut

Phil Mulder, *Extension Entomologist*

It is time to watch for thrips damage on peanut. Most thrips problems in Oklahoma peanut seem to be related to thrips migrating from wheat as it matures in the spring. They rasp tender leaves and terminals with their sharp mouthparts and feed on the juices. Leaves may turn brown on the edges, develop a silvery color, or become distorted and curl upward (commonly referred to as 'pouts'). Light thrips infestations can delay plant growth and retard maturity. Heavy infestations may kill terminal growth or even entire plants. Damaged terminals can take on an almost burned appearance. The duration and intensity of thrips infestations vary greatly according to season and geographic location. Once peanut plants are four to six weeks old, they tend to outgrow thrips damage and recover.

Scouting for thrips can be quite difficult. However, it is important to catch significant populations before economic damage occurs. Start looking for thrips as soon as plants begin to emerge. Look for thrips in the newest growth, usually in the unfurled quadrifoliate leaves. Work on hands and knees. Shake plants over a piece of white paper. If you see small, slender objects crawling, these are usually thrips. If there is residue of sand or soil on the plants, the thrips will be harder to see. Windy conditions require pulling some plants, placing them in a plastic bag, taking them out of the wind and examining the plants for thrips. Look for early signs of damage.

If peanut is treated with a systemic insecticide at planting, it should be scouted for thrips two weeks after plants emerge. If live, immature thrips are found, it means that thrips are laying eggs in the field and residual properties of the seed treatment may have elapsed. It is extremely rare that a follow-up foliar application would be necessary. In fact, with rare exception, is there any need to use systemic, at-plant applications as insurance against a problem. The major drawback to these treatments is cost and a lack of consistent yield increases from their use.

Table 1 presents the results of varying levels of insecticide management on thrips in a conventional-tilled peanut field in Perkins, Oklahoma from 2003. Runner-type peanuts (Tamrun 96) were planted on 23 May at the Perkins Research Station. Each plot consisted of peanuts planted four rows wide and 25 ft. long. Treatments were replicated four times and placed in a randomized complete block design. An in-furrow application of Temik was made before planting by using a hand-powered Precision Granular Applicator. Application was

made in a seven inch band, over the open furrow, and calibrated to deliver the prescribed amount of insecticide. The furrow was then covered by hand using a garden hoe. The in-furrow application of Orthene was made with a CO_2 pressurized applicator calibrated to deliver15 gpa. The post-emergent application of Orthene and Mustang-Max (2 rates) were applied after 90% emergence on 17 June uing a CO_2 wheelbarrow sprayer calibrated to deliver 20 gpa. Monitoring for thrips populations occurred at 3, 7, 14, and 21 days after treatment (DAT) with post-emergent applications. Yield and grade were determined by digging, combining, drying, and weighing peanuts from the two middle rows of each plot.

Table 1 shows the effects of insecticides on early-season thrips populations. Populations were relatively low and significant differences were revealed at 3 DAT up to 14 DAT. No differences were found 21 DAT. During the initial week following application of the post emergent treatments, the lowest thrips populations were recovered from peanuts treated with Temik (Table 1). During that time, peanuts treated with Temik had significantly fewer thrips than those treated with either Orthene (IF) or Mustang-Max (low rate). Similarly, peanuts treated with Temik also had significantly fewer thrips than those left untreated. Peanuts treated with chemicals other than Temik had thrips populations similar to untreated plants. Significantly lower yields were revealed between peanuts treated with Temik and those treated with Mustang-Max (both rates) or plants left untreated. In addition, peanuts treated with Orthene (post-applied) yielded significantly less than untreated peanuts, but did not differ from the low yields obtained in peanuts treated with Temik.

Damage to peanut terminal bud caused by thrips feeding.

While these results are not typical of the performance experienced with each of these chemistries for thrips control, they do point to the inconsistent nature of thrips damage and its effects on peanut yield. In previous years, with similar studies, results completely the opposite of those obtained in 2003 were obtained with no decisive reason for the inconsistencies seen. The one recurring theme from many of these studies is that low to moderate levels (0-50 thrips per 5 leaves) of stress from thrips damage has resulted in a relatively consistent yield increase. This scenario might change appreciably if tomato spotted wilt ever became a viable threat to Oklahoma; however, up to now, the threat from this thrips vectored disease has seen little to no impact on the state.

Table 1. Effect of insecticides on thrips populations in terminal leaves and yield – Perkins Research Station, Perkins, OK, 2003.

	Mean Total Thrips/5 Leaves*				
Treatment (Rate – lb a.i./A)	3DAT	7DAT	14DAT	21DAT	Yield
Temik (1.0)	4.5 c	6.3 b	5.0 abc	2.3 a	1815.0 c
Orthene IF (0.66)	27.8 ab	22.0 a	8.5 a	5.3 a	2620.9 ab
Mustang-Max (0.010)	37.5 a	23.3 a	5.5 abc	3.5 a	2526.5 ab
Mustang-Max (0.012)	23.8 abc	14.3 ab	3.8 bc	5.5 a	2686.4 ab
Orthene Post (0.5)	13.8 bc	18.3 ab	2.0 c	4.3 a	2301.4 bc
Untreated	35.3 ab	22.5 a	6.8 ab	3.3 a	2848.3 a

* Means, within columns, followed by the same letter are not significantly different

(ANOVA; LSD; P = 0.05).

Upcoming Events/Meetings

- **July 18—Southern Plains Canola Conference Dodge City, KS (more info. at a later date)**
- **July 19—Southern Plains Canola Conference Enid, OK**
  Hoover Building, Garfield County Fairgrounds
- **July 20—Southern Plains Canola Conference Altus, OK (more info. at a later date)**

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The *Cropping System 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 chad.godsey@okstate.edu

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