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PLANT & SOIL SCIENCES DEPARTMENT

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Cropping Systems Newsletter

OKLAHOMA COOPERATIVE EXTENSION SERVICE

Special points of interest:

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- **Selecting Soybean Varieties**
- **Planning Your Weed Management in Peanut for 2006**
- **Equipment Tips for No-Till Seeding of Summer Crops**
- **Soybean Planting Date Guideline**

Useful Links:

www.soybean.okstate.edu

www.canola.okstate.edu

http://alfalfa.okstate.edu

www.wheat.okstate.edu

http://forage.okstate.edu

Newsletter

No-till soybean drilled into existing corn stubble.

This is the first issue of the Cropping Systems newsletter. This newsletter is intended to keep producers and others up-to-date on current issues regarding agricultural production in the state of Oklahoma. Material included in the newsletter may focus on, but will not be limited to tillage, variety selection, weed management, disease, and pest management throughout the year.

If you have any suggestions for topics or want to receive the newsletter please feel free to call (405-744-3389) or email (chad.godsey@okstate.edu) Chad Godsey with your requests.

Inoculating Peanut and Soybean

Chad Godsey, *cropping systems specialist*

It is well documented that peanuts do not routinely respond to direct fertilization. Applying adequate amounts of phosphorus and potassium to rotational crops such as corn, grain sorghum, and cotton will meet the needs of the peanut crop. Nitrogen is typically not a concern with peanut production, since they are legumes and manufacture an adequate amount of nitrogen for their own needs. The plant supplies the bacteria with an environment and nutrients in which to survive and multiply. In turn, the bacteria convert atmospheric nitrogen into a form that can be used by the plant through a process called nitrogen fixation. In order for nitrogen fixation to occur *Rhizobium* bacteria must be present in the soil. Sometimes soils contain an adequate amount of *Rhizobium* bacteria, however, it is a risk not worth taking. In most cases, application of an inoculant calculates to <3 percent of your production costs so it is a wise investment. With proper seed inoculation using peanut-specific inoculants, you increase your chances of having good nodulation. Inoculating peanut seed in Oklahoma trials has consistently provided a 200 to 300 lb/acre yield increase compared with the control.

Inoculants can be applied to the seed (liquid), in a hopper-box mixture (powder) or directly into the ground (granular) with an in-furrow application. Liquid inoculants are currently the most popular. Powder inoculants should not be used if other sources of inoculant are available. Powder inoculants may not perform as well when compared with liquid and granular types, especially if an additive is not used to adhere the inoculum to the seed. Producers should consider the following when making inoculant choices:

1. The cost of inoculant per number of *Rhizobium* bacteria.
2. Consider how it will be applied and whether any preparation of the product is needed.
3. Compatibility with seed, fertilizer, and other chemical treatments. As a general rule of thumb, insecticides are more toxic than fungicides, which are more toxic than herbicides.

Extreme importance should be used when handling and storing inoculants as it is a live bacteria! Inoculants should be stored in a cool (<90°F), dry area and never exposed to sunlight. As with any other product, always read and follow label directions. Four to six weeks after planting, plants may be dug up and evaluated for nodulation. Typically, 25 to 100 nodules per plant are observed.

Inoculant (con't.)

Similar to peanut, soybean are legumes and manufacture an adequate amount of nitrogen for their own needs. They also need *Rhizobium* to assist in fixing nitrogen, therefore, it is critical that soybeans going into new fields be inoculated. It is generally, recommended that all soybean seed be inoculated due to the relative low cost of inoculant. The same precautions that were provided for peanut inoculum need to be exercised when handling soybean inoculum.

Selecting Soybean Varieties

Chad Godsey

Selecting the proper soybean variety is one of the most important decisions a producer will make. The first thing that a producer needs to consider is what varieties will provide high potential in their environment. The performance of a variety may vary from year to year, even within the same field. When varieties are tested over a range of locations and years their performance changes, which indicates that some varieties are better adapted to a specific environment than others. One resource available to check on the performance or adaptability of a certain variety in your region is to check the performance of the variety in the 2005 Soybean Variety Trial. These results can be viewed at http://www.soybean.okstate.edu

Soybean characteristics that need to be considered in variety selection include maturity, yield potential, disease and pest resistance, lodging score, height, and quality traits. Disease resistance has been a major topic over the past couple of years. Selecting soybean varieties that have resistance or tolerance to major diseases can be an effective and economical method to control disease. Resistant varieties also are available for soybean cyst nematode. If the history of disease or pest problems in a field is known, a resistant variety should be selected to target those specific problems.

When selecting a proper maturity group, soybean producers should select varieties that will fit into their cropping system. There are 13 recognized maturity groups (MG) for soybean varieties. These are designated as MG 000, 00, 0 and I through X. Those varieties classified as MG 000 are the earliest maturing varieties developed. They are adapted to the short summer growing season of northernmost United States and Canada. Varieties classified as MG II and III are best adapted to Midwestern states. Soybean varieties best suited for Oklahoma are of MG III, IV, and V.

It may be a wise decision to diversify variety selection. This includes selecting three to four varieties and use more than one planting date.

"Soybean characteristics that need to be considered in variety selection include maturity, yield potential, disease and pest resistance, lodging score, height, and quality traits."

Planning Your Weed Management in Peanut for 2006

Case Medlin, *extension weeds specialist*

Weed control in peanuts has certainly had its ups and downs in the last decade. Cadre herbicide made life easy for producers during the late 1990's and early 2000's and still has a fit today. However with the development of Palmer amaranth populations resistant to Cadre (and other ALS inhibiting herbicides such as Pursuit and Strongarm) across western Oklahoma, difficulties of weed management have returned. Strategies for controlling Palmer amaranth should be a priority for all peanut producers, regardless if they have witnessed a resistance problem or not. **Take the necessary precautions to avoid weed resistance because managing it is costly and troublesome, just ask your neighbor.**

A good herbicide management plan will incorporate herbicides with several modes of action to, (1) combat resistant weeds already present, or (2) delay the development of resistant weeds that are likely to become problems. Optimum control of Palmer amaranth should result from combinations of the following treatments.

Burndown

-Roundup (1 to 1.5 lb ai/A)

Preemergence

1. Prowl H_2O (2 pt/A) [must apply at least 0.75 inches of rain to activate] **with**

   a. Valor (2 oz/A) **or**

   b. Outlook (20 fl oz/A) **or**

   c. Dual Magnum (1.33 pt/A)

Early postemergence (Layby for Dual) – apply as soon as weeds emerge or 4 weeks after the peanuts emerge, whichever comes first

1. Gramoxone Inteon (8-16 fl oz/A) + Surfactant (**with**

   a. Outlook (20 fl oz/A) **or**

   b. Dual Magnum (1.33 pt/A)

   or

2. Cobra (12.5 fl oz/A) + Surfactant **with**

   a. Outlook (20 fl oz/A) **or**

   b. Dual Magnum (1.33 pt/A)

If used in a PRE application, Outlook or Dual Magnum cannot be used as a EPOST application, so plan accordingly.

Late postemergence (if needed)

1. Cobra (12.5 fl oz/A) + Surfactant **with**

   a. Outlook (20 fl oz/A) **or**

   b. Dual Magnum (1.33 pt/A)

If used in a PRE or EPOST application, Outlook or Dual Magnum cannot be used as a LPOST application, so plan accordingly.

One should observe label directions concerning application timing with respect to (1) peanut and weed growth stages, and (2) peanut harvest. A weed management system built from the treatments above will be pricey, but is the best recommendation for Palmer amaranth that we have formulated to date. Although formulating a plan from the above treatments may seem overwhelming, weeds present in the field other than Palmer amaranth may dictate your choices. For example, consider the following problem weeds:

Nutsedge

In fields with severe nutsedge problems one should consider Dual Magnum or Outlook as a preemergence application. Which ever product is not used in the preemergence application will most likely need to be applied in the early postemergence application to further extend residual control of Palmer amaranth. Other options for nutsedge include Cadre and Strongarm, but these products will not control the resistant Palmer amaranth that has plagued much of Oklahoma's peanut growing region.

Eclipta

A good herbicide for eclipta is Valor applied preemergence. This will leave Dual Magnum or Outlook to be used in postemergence applications.

Hophornbeam copperleaf

Once again, Valor applied preemergence is a good choice for copperleaf and will allow the application of Dual Magnum or Outlook in postemergence applications.

In our 2005 observations, using Prowl and Valor in a preemergence application followed by Gramoxone Inteon or Cobra tankmixed with Outlook or Dual Magnum provided the best overall weed control. This system incorporates at least three different modes of action. Timely postemergence application is critical with Gramoxone and Cobra as these herbicides have difficulty controlling large weeds.

Palmer amaranth growing early in the season.

"Take the necessary precautions to avoid weed resistance because managing it is costly and troublesome, just ask your neighbor."

Equipment Tips for No-Till Seeding of Summer Crops

Randy Taylor, *extension machinery specialist*

High fuel prices have increased the interest in no-till seeding systems. While establishing a uniform stand is a concern, minor attention to details with equipment can improve the probability of success. If you are thinking about no-till seeding this spring and summer, remember that proper seeder maintenance, adjustment, and assessment of field performance are the keys.

Proper Maintenance

Make sure the planter or drill is properly maintained and serviced. Worn parts such as opener disks and bushings can greatly reduce performance in a no-till environment. Check the operator's manual for advice regarding wear and service for opener disks. Planters and drills have many bushings on each row. These bushings will wear and create a 'loose' opener. Worn bushings can make it difficult to get consistent performance. For example, if bushings on the press wheel are worn it will be more difficult to get good seed/soil contact.

Proper Adjustment

Making sure the seeder is operating level is critical for achieving success in a no-till system. In general, the row units should operate level. If the toolbar is level, the row units should be level as well. Leveling the seeder will ensure that opener disks are engaging the soil at the correct angle and press wheels are creating proper seed/soil contact. You should also make sure that you have enough down force to keep the opener disks at the proper depth. Insufficient down force will reduce seeding depth and could impact stands. Down force is typically created with a spring adjustment. Refer to your operator's manual for the correct procedure.

Check Field Performance

When planting in a no-till system, stop and check seeder performance. This will require assessing residue condition, checking seed/soil contact, and determining seeding depth. Residue condition can impact field performance of seeders. If residue is damp, it will be difficult to cut and may 'hair-pin' in the seed trench. This will impair seed/soil contact and likely reduce stands. Seed/soil contact is usually obtained with press wheels. However, there are aftermarket devices such as seed firmers that can help. Make sure that there is firm soil around the seed so that it can germinate and emerge. Also check seeding depth. Make sure seed is consistently placed at the desired depth. Residue on the soil surface can reduce seeding depth as gauge wheels pass over it. Be sure to take this into account when setting the depth.

Remember, you can successfully plant into a no-till system if you pay attention to details with seeding equipment.

Seed firmers ensure that there is firm soil around the seed so that it can germinate and emerge quickly.

Soybean Planting Date Guideline

Chad Godsey

Following are some general guidelines on planting dates for soybean. These are general guidelines and soil moisture and other environmental factors need to be considered when planting soybean.

Early season (April) planting—plant as early in April as possible to avoid August drought. Plant Group III varieties for Sept. harvest and Group IV varieties for October harvest.

Late April planning—use same Group III or IV varieties but maturity will be delayed 2-3 weeks and yields are usually lower (about 2 bu/A per 10-day delay) compared to early April planting.

May to June 30 planting of short season varieties—use Group IV varieties for October harvest. May plantings may be vulnerable to summer drought and may produce lower yields than June plantings. Yields will typically be higher when planted between June 1 and June 15. June plantings will perform best in NE Oklahoma.

Full season Group V soybeans—plant June 1 to 30. These varieties perform best in Central, NE, and SE Oklahoma.

Planting soybeans into old corn residue.

Soybean Planting con't.

Full season Group VI soybeans—plant in June. Late planting up to early July may work if frost is late. These varieties perform best in SE Oklahoma but also perform well in Central Oklahoma.

PLANT & SOIL SCIENCES DEPARTMENT

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