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Soybean Management Advice

John M. Woodruff, Extension Agronomist-Soybeans

Compensating for Late Planting

The ideal time for planting Georgia soybeans is May 10 to June 10. Planting during this time will usually give top vegetative growth and yield. Because of photoperiod sensitivity, soybean growth and yield decline sharply with time after this period. Getting soybeans planted at the ideal time is a challenge because nearly $\frac{3}{4}$ of Georgia soybeans are double cropped after winter-spring crops. When planting cannot be made during the ideal period, there are three things that can be done to help compensate for late planting.

1. Plant tall-growing/late maturing soybean varieties. These varieties will accumulate more vegetative growth than early maturing varieties with late planting, and pending favorable weather during pod-fill, may give increased soybean yield. See the Georgia Soybean Production Guide for varieties recommended for late planting in your area.
2. Plant in close rows (12-24"). Soybeans tend to show some response to close row spacings (something less than 36") even with early planting. The response become more significant as planting is delayed beyond early June. Planting in close rows is a good strategy for late planting if soil compaction can be managed.
3. Increase soybean seeding rate. With early planting, soybeans are not very responsive to population density. With early planting, soybean stands of 75,000 to 175,000 plants per acre will usually give about the same yield. In this setting, low population plantings compensate by producing many more lateral branches per plant than high population plantings. As planting is delayed to late June, low population plantings do not produce enough lateral branches to adequately compensate. The low population density can also allow for many pods formed near the ground which can reduce harvest efficiency. A normal seeding rate for May-early June planting is about 145,000 seed/A. For very late June planting, increasing soybean seeding rate to around 175,000 seed/A can also be a way of getting more vegetative growth, higher heights of pods and higher yield.

Do everything possible to get soybeans planted by June 10. When not possible, making these three adjustments can help compensate for some of the yield loss that occurs as planting is delayed beyond the ideal time.

Replant Decisions

A stressful decision often facing growers is “Should I keep the original soybean stand or replant?” In deciding whether to keep the original soybean stand or start over one must consider not only soybean yield response to population density, but economies of replanting, reduced yield potential of late planting, dynamic influences of pests on low vs high populations, harvest efficiency, etc.

A typical soybean planting of 145,000 seed/A (about 10 seed/foot for 36” spacing) will usually give 5-6 plants/ft of row under ideal conditions. When planting time conditions become less than ideal due to (a) adverse soil conditions (such as crusting, high temperature, low moisture, flooding, etc), (b) seed decay and (c) soil insects, soybean stands will often be much less than ideal. Fortunately, because soybeans have ability to compensate for low population density, replanting may not be economically justified. Georgia research has shown that two plants/row foot (36” rows) will give about the same yield as 5-6 plants/row foot. Even one plant per foot will give about 80% the yield of normal populations for May plantings. When costs of replanting and reduced yield due to late planting are factored, it may be desirable to keep the original stand if soil pests can be effectively managed.

In most Georgia fields, poor soybean stands will be worst in some field areas (due to soil type) than in others. In this situation, spot planting the weak stand areas may be appropriate. Planting adjacent to the original row may allow for non-destruction of original plants. This approach would have merit if mechanical cultivation is not needed and if the same variety or a variety of the same maturity could be used for replanting.

Some things that help get and maintain good soybean stands include:

- (1) Start with good seed. If possible, purchase certified seed that have 80 percent + germination.
- (2) Plant/place seed in moist soil. If this can't be done, irrigate or wait for rain before resuming soybean planting.
- (3) If heavy rains occur soon after planting to cause soil crusting, rotary hoeing 4-6 days after planting can help seedlings emerge.
- (4) If lesser cornstalk borer insects have already become a local problem, assume they will be a problem for you too. Plan for an "at planting" insecticide in this scenario. See the 2008 Georgia Soybean Production Guide for lesser cornstalk borer treatment.

Soybean Physiology Trivia Worth Noting

1. Purple flowered soybean varieties will have purple colored stems near the soil line soon after emergence. Likewise, white flowered varieties will have the normal light green to white colored stems at this time.
2. Because of photoperiod sensitivity, soybean maturity date will be delayed only about one day for every week that planting is delayed after mid-May.
3. Because of photoperiod sensitivity, soybean yield will be reduced 1/3 to 1/2 bu/day for every day that planting is delayed after June 1. (The rate of yield decline with time will be less for late vs. early maturing varieties).
4. Determinate soybean varieties accumulate just about all of their vegetative growth by R3 (beginning pod fill). For this reason foliage feeding insects are often much more destructive during reproductive growth.
5. Seventy to eighty percent of soybean flowers abort, even in high yield environments. Rarely does flower abortion translate into yield reduction.
6. There is often a two-three week delay from flowering (R2) to noticeable pod growth (R3).
7. The outside soybean row next to the field edge or irrigation alley can have 50 to 75% higher yield than interior rows. For this reason soybean test plots for yield measurement should be end trimmed (two feet of edge plants removed) and surrounded by border rows of the same variety. Failure to do so will give erroneous, skewed and meaningless results.
8. Soybean maturity date is fairly consistent from year to year for any given variety, planting date, and location. This is one of the responses to photoperiod sensitivity. Extreme drought may alter maturity date.
9. Green soybean leaves and stalks at maturity are not normal. Such may occur when (a) pods are heavily damaged by stink bugs or other sucking insects, (b) some early maturing varieties are planted early and (c) repeated and/or high rate application of certain foliar fungicides are made.

Lesser Cornstalk Borer (LCB)
Phillip Roberts – Extension Entomologist
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Lesser Cornstalk Borer (LCB) outbreaks in soybeans are typically associated with hot, dry conditions, late planting dates, and/or burned crop residues. We recently observed LCBs in an early planted soybean trial. We would consider the risk of LCB attack to be high at this time and a preventive insecticide treatment at planting should be considered, especially if planting into burned wheat stubble. During recent days we have observed several wheat fields being burned following harvest. Smoke and burned plant residues attract LCB adults. If a preventive treatment is not used, developing seedlings should be monitored closely on a regular basis for the presence of LCB larvae, seedling damage, and stand loss. Established LCB infestations can be difficult to control.

LCB larvae are bluish purple with dark bands around the body. Fully developed larvae are about ½ inch in length. Larvae are typically found in the upper few inches of soil and construct silken tubes covered with soil particles that are attached to the soybean stem. Larvae bore into the main stem of soybeans at or just below the soil surface and tunnel up the main stem which causes plants to initially wilt and ultimately die. A single larva may damage multiple plants. It is uncommon for LCB to



LCB larva and associated silken tubes.
Photo by Steve L. Brown, ipmimages.org

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damage soybeans larger than 12 inches in height. Adult LCBs are small moths about ½ inch in length that fold their wings when at rest. Male LCB moths are tan with a dark stripe down the center of the back and females are uniformly dark. These moths are easily recognized and the presence of numerous moths suggests impending larval infestations.

Soybean seedlings should be scouted for LCB until plants are about 12 inches tall. Look for wilting or dying plants and try to determine if future stand loss is probable (insects easily found and actively damaging plants). In fields where wilted and dying plants are observed, examine the upper few inches of soil near the base of affected plants. Be observant for silken tubes attached to the main stem (it is a good idea to dig affected plants and the surrounding soil with a small spade). Also split the stem of affected plants and look for signs of larval tunneling. Larvae may be found in the silken tubes, the main plant stem, or surrounding soil. A rescue treatment is



LCB tunneling in main stem.
Photo by David Riley, ipmimages.org

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recommended if the stand is threatened and/or 10 percent of seedlings are infested with LCB larvae.

Application of Lorsban granules or a Lorsban spray is recommended for control of LCB. When used at planting (preventive treatment when risk of LCB attack is high), Lorsban 15G granules should be applied as a T-band over an open seed furrow in front of the press wheel and incorporated into the top ½-1 inch of soil with suitable equipment. For postplant treatment with Lorsban 15G, the granules should be incorporated in a 4-10 inch band to a depth of ½-1 inch using a suitable cultivator. Granules should be applied with applicators that will provide uniform distribution over the row. For at-plant applications of Lorsban 4E (spray), apply a 4-6 inch band centered over the row. Position the spray nozzle in front of the planter shoe or press wheel or after the press wheel followed by a drag chain for light incorporation. For a postemergence rescue treatment, apply as a directed spray in a 9-12 inch band at the base of the plant. For plants less than 6 inches tall, apply over-the-top in a 6-12 inch band. Lorsban should not be applied as an infurrow treatment.

Also be observant for other seedling insect pests. Monitor fields for seedling pests until the plants are 12 inches tall. Look for insects on the plant (three cornered alfalfa hopper, grasshoppers) or in the soil around the base of plants (lesser cornstalk borer, cutworms, sugarcane beetles). Evaluate stand loss (% of dead or dying plants) and try to determine if future stand loss is probable (insects present and actively damaging plants).

Grasshopper populations are much higher compared with recent years and have been problematic on other crops in some areas. Grasshoppers may feed on foliage and/or the main stem of seedlings (i.e. cutting plants which resembles cutworm damage).

Threecornered alfalfa hoppers (TCAH) have also been observed in some early planted soybeans. TCAH nymphs and adults girdle main stems and petioles by a series of punctures circumscribing the stem or petiole. Main stem girdling on small soybeans near the soil surface may result in plant mortality and harvesting losses from plant lodging or breakage later in the season.



Threecornered alfalfa hopper nymph.
Photo by David Adams, ipmimages.org



Threecornered alfalfa hopper adult.
Photo by Clemson Univ. – USDA Coop.
Ext. Slide Series, ipmimages.org

UPDATE ON ASIAN SOYBEAN RUST
Bob Kemerait, Extension Plant Pathologist
June 2008

As of 4 June 2008, Asian soybean rust is NOT known to be present in the state of Georgia. Asian soybean rust was reported in Gadsden County, near Quincy, Florida, on kudzu during the last week of May. We will watch to determine if rust spreads into our counties along the Florida border, such as Grady, Decatur, and Seminole. Currently, hot and dry conditions prevail in Georgia and these conditions are not conducive for rapid spread of rust. Additionally, soybeans are more susceptible to the disease when the crop has reached reproductive growth. Most of the commercial crop in Georgia is still in early vegetative growth stages. We will keep growers updated on the risk to Asian soybean rust throughout the season.

Early-planted soybean sentinel plots (MG IV, MG VI, and MG VII) have been established in Decatur, Colquitt, Tift, Appling, Toombs, Laurens, Washington, Burke, Effingham, Pike, Spalding, Clarke, Floyd, Union, and Pulaski Counties. Kudzu sentinel plots have been established in Seminole, Decatur, Tift, Worth, Brooks, Appling, Johnson, Laurens, and Dooly Counties. Additional patches of kudzu will also be monitored as well.

A team of scouts headed by Mr. Caleb Clements visits each sentinel plot site each week and collects random leaf samples that are returned to our diagnostic laboratory in Tifton. Once in Tifton, each leaf is carefully screened for the presence or absence of Asian soybean rust by Ms. Lina Paclibar Young using several techniques including microscopy. Ms. Young then uploads the results of her study to the USDA IPM-pipe Soybean Rust Website. Growers in Georgia can view her findings and my commentary by logging into www.sbrusa.net. The funding for this program and for the salaries for the scouts and Ms. Young comes from the Georgia Soybean Commission and from USDA IPM-pipe program. Without this funding, the sentinel plot monitoring program would not be possible.