LOUISIANA CROPS NEWSLETTER

Cotton, Corn, Soybeans, Sorghum, and Wheat

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Cotton

Early season insect issues in cotton typically begin with thrips and this year is no exception. Thrips are beginning to appear in young cotton (1st to 4th true leaf) with tobacco thrips composing the primary species present with western and eastern flower thrips present at lower numbers. Adding to this issue, Syngenta has confirmed resistance to thiamethoxam, the active ingredient in Cruiser, Avicta Complete, Avicta Duo and Acceleron N seed treatments in four populations of tobacco thrips collected in the Mid-South. Therefore, cotton treated with thiamethoxam may not give adequate control of tobacco thrips populations in Louisiana, however; western flower thrips still appear to be susceptible. Based on limited data, resistance appears to be confined to thiamethoxam and has not been detected with imidacloprid.

Foliar treatments should be made when immature thrips are present and/or when large numbers of adults are present and damage is occurring. The presence of immature thrips often signifies that the insecticide seed treatment has lost is efficacy. Avoid spraying solely based on plant injury since the damage has already occurred. Below are some considerations when deciding what foliar insecticide to use.

Dimethoate:

Positives: Relatively inexpensive, good efficacy at high rates, less likely to flare spider mites and aphids than acephate

Negatives: Ineffective towards western flower thrips, less effective than acephate or bidrin when applied at lower rates

Acephate

Positives: Relatively inexpensive, effective towards western flower thrips

Negatives: May flare spider mites and aphids if present, may be weaker against tobacco thrips

Bidrin

Positives: Effective, less likely to flare spider mites and aphids than acephate

Negatives: More expensive, less flexibility with applications early season

Radiant

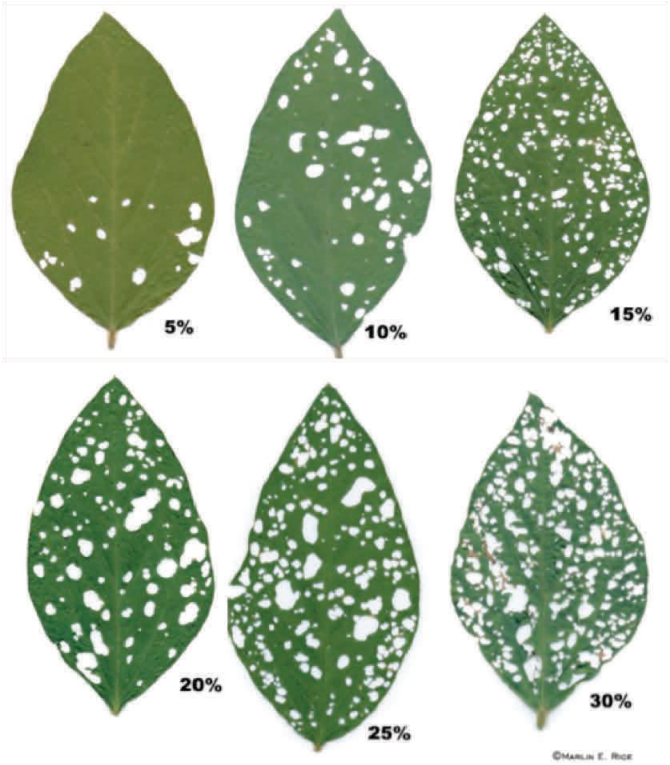
Positives: Effective, least likely to flare spider mites and aphids; more effective towards western flower thrips than tobacco thrips

Negatives: More expensive, requires adjuvant

Insecticide choice depends on a number of factors such as cost, impact on secondary pests and spectrum of thrips species present. If a foliar thrips treatment is justified, do not wait for a glyphosate application and only spray when necessary to avoid flaring spider mites and aphids.

Soybean

Insect issues in soybeans, thus far, have been limited to a few reports of bean leaf beetle, corn earworm and thrips feeding on young beans V4-V6 in maturity. Soybeans, unlike cotton, can withstand a large amount of insect injury prior to R1 (bloom). Research over the past 20 years has determined that pre-bloom soybeans can withstand defoliation up to 30% and not result in a measurable yield loss. Therefore, defoliating insect numbers and damage often have to be very significant before an insecticide application is justified. Estimating defoliation levels can often be difficult leading many to over-assess the actual amount of leaf tissue removed from the plant. Below is a good illustration of defoliation percentages, in soybean, from Iowa State University Extension Service. These levels can be used throughout the season for management decisions.



Picture Courtesy of Iowa State Extension Service

Furthermore, Louisiana has the unfortunate distinction of having the highest levels of pyrethroid resistance in corn earworm populations in the United States, we also have some pyrethroid resistance in bean leaf beetle. The use of a pyrethroid alone for corn earworm control is highly discouraged and may result in poor control regardless of insect instar. If an insecticide application is warranted, the use Prevathon, Belt+pyrethroid, Besiege or a pyrethroid+acephate will give adequate control of corn earworms in soybeans. For bean leaf beetle, acephate may be a better option than a pyrethroid.

Thrips injury in soybeans is very rarely an issue that justifies and insecticide application. Insecticide seed treatments work well to keep soybeans protected and thrips numbers have to be extremely high to cause any significant yield loss.

Corn

Insect issues have been minor in corn early season. A few fields had issues with below ground insects such as wireworms and rootworms; however these were primarily confined to reduced/no-till fields and fields with late or inadequate burn downs. We are also seeing signs of stink bug injury. Most of the injury is not economical and occurred a number of weeks ago; we think brown stink bugs are the primary culprit.

In larger (V8 – V12) non-Bt, refuge, corn instances of corn earworms infesting the whorl is increasing. Many of these fields have sporadic damage and with no fields reaching a treatment level of injury. Treatment of worms in the whorl is often not warranted and rarely needed.

Grain Sorghum

Sugarcane aphids (SCA) have been detected on Johnson grass in Northern and Central Louisiana as well as alates (winged aphids) migrating into grain sorghum on the Dean Lee research station. Research conducted by the LSU AgCenter demonstrated insecticide seed treatments provide early season control of SCA for up to 40 days after planting. Once the IST is exhausted, grain sorghum should be routinely scouted for the presence of aphids. Expect ISTs to last 30-40 days. Research conducted by the LSU AgCenter and Texas Agrilife extension service has set a preliminary threshold of 50 aphids per leaf colonizing 20% of plants in the field.

Soybean Growth and Development

Ronnie Levy
Soybean Specialist

Wet conditions throughout some of the state have delayed soybean planting. Most of Southwest Louisiana has received excess rainfall for the past two months. Many producers have had very few dry days and are waiting for rains to stop before planting. This will cause a large number of acres to be planted late. The growth and development of soybeans can be effected by delayed planting. Yield is basically determined by how much crop growth occurs and the proportion of the dry weight partitioned into reproductive matter. Obtaining optimum yield also depends on the process in which the crop proceeds through the normal phases of its life cycle culminating in maturity. Reduced yield may occur if certain critical developmental periods are not long enough.

Crop growth of any soybean variety will be influenced by environmental factors and the lengths of certain developmental periods. The most important environmental factor affecting growth is the interception of light by the crop canopy. Light interception enhances growth because the plant transfers light energy into chemical energy which is used to fix CO_2 from the atmosphere into carbohydrates. These carbohydrates are the basic energy source for plant growth.

Stresses, associated with late planting are hot temperatures and drought, and can adversely affect crop growth. Whenever any stress occurs, plant growth can become limited, disrupting the relationship between leaf area index, light interception and crop growth rate. Drought stress affects growth mainly by restricting cell expansion and reducing photosynthesis. Crop growth will be limited even if light interception is optimal.

Severe stresses, such as drought, can reduce the amount of dry weight partitioned to the pods during pod filling, thus decreasing yield. Good yield depends on more than obtaining a high crop growth rate. The soybean crop must also pass through the normal developmental periods of its life cycle and have an adequate length for each one. Soybeans have two growth habits, determinate and indeterminate growth. The main distinguishing feature is that indeterminate soybeans continue main stem growth indefinitely after first flowering, whereas determinate soybeans terminate main stem growth shortly after first flowering.

Indeterminate varieties generally are classified as early maturity soybeans (Maturity Group IV or less), whereas determinate soybeans are generally in the late maturity groups (Maturity Groups V through VIII). The maturity classification for soybeans is based on the days from emergence to maturity for a specific maturity group in its area of adaptation and when planted at the optimal date.

The life cycle of soybeans is divided into two general categories, the vegetative period and the reproductive period. The vegetative period extends from emergence until first flowering, whereas the reproductive period lasts from first flowering until maturity. Definitions for developmental periods have been clarified by a system devised by W. R. Fehr and C. E. Caviness et al. 1971, two soybean breeders from Iowa State University and the University of Arkansas, respectively.

Neither vegetative nor reproductive developmental periods are characterized by exclusively vegetative or reproductive events. During the vegetative period, floral parts are initiated and develop within the bud. Assuming proper environmental conditions, these floral primordia eventually become developed flowers, at which time they emerge from the bud and can be seen. Appearance of the first flower signals the end of the vegetative period and the start of the reproductive period. In both indeterminate and determinate soybeans, considerable vegetative growth continues during the reproductive period.

Since the terminal apex of indeterminate soybeans continues vegetative growth after first flowering, more leaves and main stem growth occur throughout most of the reproductive period. The vegetative state of the terminal apex also maintains apical dominance over the main stem nodes during most of the life cycle. Thus little branching occurs in indeterminate soybeans, and most of the yield is produced by main stem pods.

In contrast, the terminal apex in determinate soybeans remains vegetative for only a short time after first flowering. A few days after appearance of the first flowers, the terminal apex will also bloom, terminating the growth of the main stem. This is why such soybeans are called determinate varieties. Vegetative growth does not stop in other parts of the plant, however. With flowering of the terminal apex, apical dominance is released and profuse branching is initiated from the lower main stem nodes until shortly after initiation of seed filling.

Length of the vegetative period has a large influence on the yield potential of determinate soybeans, since main stem growth terminates shortly after first flower. Indeterminate soybeans are less affected, since main stem growth continues after this event. Adequate time is needed to produce enough nodes for optimum pod production. Yield can be greatly affected by late planting. When planting late, populations should be adjusted higher to compensate for reduced vegetative growth.

There are many advantages to early planting. Germination and emergence are slower in cooler soil temperatures but soybean plants are less sensitive after first trifoliate (V1) producing about two nodes per week. Later planted soybeans simply cannot catch up with soybean node development of earlier planted soybeans. Earlier soybean planting increases crop yield potential by allowing plants to generate more stem nodes. Plants need to produce as many stem nodes as possible, simply because stem nodes are where the plant produces flowers, then pods, and ultimately seeds within those pods.

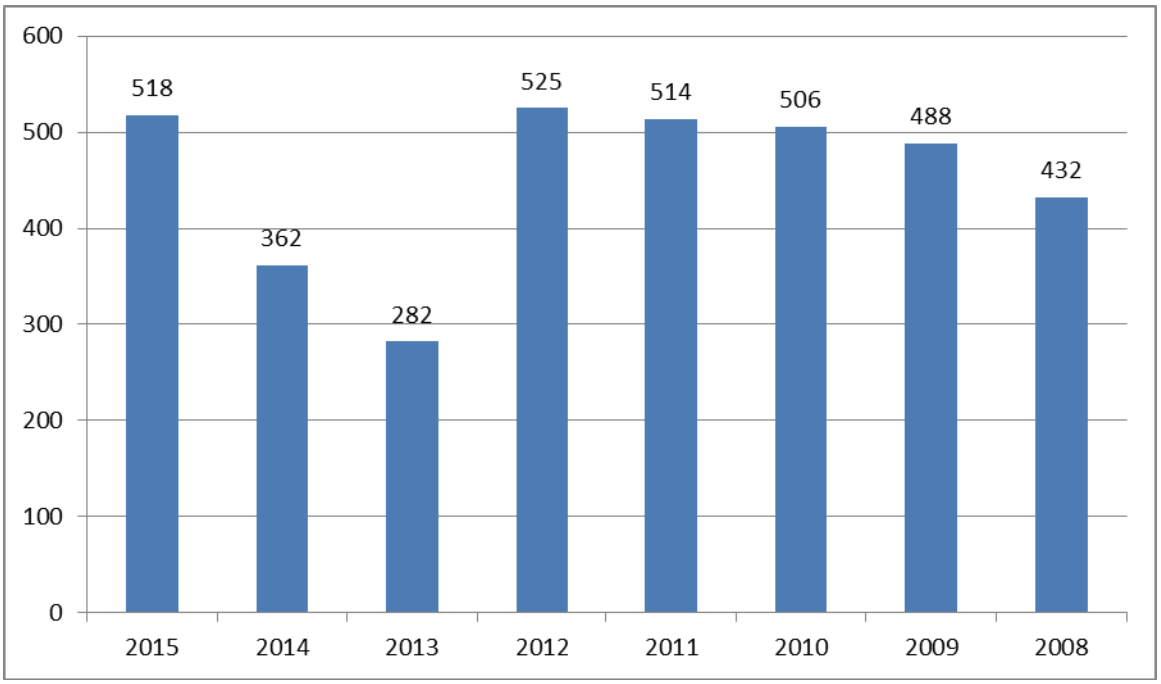
In order for plants to acquire carbon dioxide to produce dry matter, the stomates in the leaves must open, allowing water inside the leaf to escape and carbon dioxide to be taken in for photosynthesis. Crop water use includes evaporation loss directly from the soil, and water lost as transpiration from the leaves. Crop water use efficiency can be improved by reducing evaporative water losses. Early planting helps reduce water loss because the cooler soil and air temperatures in early plantings reduce water evaporation compared to temperatures in late May and early June plantings. Canopy closure earlier in the season reduces solar radiation on the soil surface, lessening soil water evaporation. Higher humidity in a closed canopy also minimizes soil water loss.

Cotton Growth and Development

Dan Fromme
Associate Professor-State Cotton & Corn Specialist
LSU AgCenter

Since, April 1st we have accumulated about 43% or 156 more heat units when compared to the same time period in 2014 (Figure 1). Early in the season, it takes about 50 heat units to produce a new node.
Assuming a planting date of April 1, we would have three more nodes in 2015 versus the same planting date in 2014.

Figure 1. DD60s or heat units accumulated for cotton, April 1-May 15, Dean Lee Research and Extension Center, Alexandria, Louisiana, 2008-2015.



As mentioned above, it takes a certain amount of DD60s to reach a certain event in the growth and development of the cotton plant. We know there is some differences among varieties (example-location of first fruiting branch); however, most varieties are similar enough that a growth stage table as related to DD60s can be developed. Water stress and fertility levels will also impact growth rate.

Table 1. Growth stages indicated by accumulation of DD60s.

Growth Stage	DD60s
From planting to emergence	50-60
From emergence to first fruiting branch	300-340
From emergence to first square	425-475
From emergence to first white bloom	825-875
From emergence to peak bloom	1385-1435
From emergence to first open boll	1700-1750
From emergence to 60% open boll	2180-2230

Wind Damage to Corn Plants

Dan Fromme
Associate Professor-State Corn & Cotton Specialist
LSU AgCenter

Recent storms accompanied by high winds have rolled through Louisiana and have caused corn plants to lean. There are three kinds of damage which include minor leaning or bending of plants, uprooting or lodging of plants (root lodging), and the "green snap" phenomenon where stalks literally break off above a stalk node.

The corn plant is most vulnerable to strong winds when it is in the latter stages of the rapid growth stage (V7 to pollination) prior to pollination. This is when plant dry matter and stalk internode elongation occurs very rapidly. Rapid elongation of the stalk internodes often will outpace the lignification of the same tissue. Lignins provide the structural integrity or strength to the stalk.

When assessing the damage, one should wait at least 4 to 5 days to allow the damaged plants to have an opportunity recover.

When plants are simply leaning or bending over, this represents the least amount of worry. These plants should recover to an upright position. However, if the damage occurred at the beginning of pollination or pollen shed and silking there may be some shading of the exposed silks by the leaves and stalks located nearby. Therefore, pollination may not occur successfully.

Plants that are root lodged often recover by "goose necking" or gradually returning to an upright position. Similar to plants simply leaning from wind, if leaning occurs near or at the onset of pollination and silking there may be some shading of the exposed silks by the leaves and stalks of nearby plants and pollination may not occur.

Last but not least, is "green-snapped" plants and the likelihood of their recovery is very low. Plants that snap off below the harvestable ear obviously represent a yield loss. Plants that snap off above the harvestable ear may produce grain, but less than desired. When this reduction in harvestable plants occurs this late in the season, there is very little opportunity for compensation from the neighboring plants. Therefore, the estimated yield loss will be approximately equal to the percent green snapped plants.

Upcoming Calendar of Events

June 16, Hill Farm Poultry Field Day at the Hill Farm Research Station, Homer.

June 17, Northeast Research Station Pest and Crop Production Field Day, St. Joseph.

June 20, Garden Fest at the Botanic Gardens at Burden, Baton Rouge.

July 1, 106th Rice Research Station Field Day, Crowley.

July 9, Dean Lee Research and Extension Center Field Day, Alexandria.

July 15, Sugarcane Field Day at the Sugar Research Station, St. Gabriel.

Oct. 8, Landscape Horticulture Field Day at the Hammond Research Station, Hammond.

Oct. 15, Beef Cattle and Forage Field Day at the Dean Lee Research and Extension Center, Alexandria.

Oct. 22-Nov. 8, AgMagic, an agricultural awareness exhibit for youth at the State Fair, Shreveport.

For additional calendar information on LSU AgCenter Parish and Statewide events, visit our website at www.lsuagcenter.com/calendar

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Louisiana Cooperative Extension Service

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