LOUISIANA CROPS NEWSLETTER

Cotton, Corn, Soybeans, Sorghum, and Wheat

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Sampling for Wireworms in Production Fields

Sebe Brown and David Kerns: LSU AgCenter Entomologists

Wireworms are slender, hard bodied, wire like insects that are the immature stage of click beetles. They are shiny brown in color and typically ½ inch to 1 ½ inches in length. Wireworms can injure cotton, corn, sorghum and soybeans during the early stages of seedling growth, and adverse conditions such as cool temperatures and excessive moisture resulting in stalled seedling growth leaves plants more susceptible to injury. Wireworm damage will often result in stunted plants, dead hearts in corn and irregularly shaped holes that become more pronounced as the crop grows.

"Dead heart" caused by wireworms

Wireworm injury at growing point

Sampling

Wireworms will typically build large populations in reduced tillage, sandy fields that have not been have not been rotated (ie. corn behind corn). Three to four weeks before planting, bait stations should be placed in various locations around the desired field to detect the presence and density of wireworm populations. A 1:1 mixture of one cup untreated corn seed and one cup untreated wheat seed should be soaked until seed swelling and buried 6 to 8 inches deep and marked with a flag for identification. A black trash bag should be placed over the top of the filled hole followed by clear plastic sheeting and anchored with soil at the corners to promote a greenhouse effect. Two to three weeks later, the bait stations should be dug up and examined for the presence of wireworms and/or wireworm damage.

Another sampling method entails removing a section of soil 2 feet long x 1 foot wide x 6 inches deep (1 cubic foot) either on top of or along a row. The soil should be placed on a sheet of black plastic and carefully examined for the presence of wireworms.

Corn/wheat mixture placed 6 to 8 inches in the soil.

The hole should be filled with soil and covered with black plastic.

Cover the black plastic with a sheet of clear plastic and anchor the two sheets with soil. Mark each trap with a flag for identification.

Research has demonstrated that 4 traps per field can be used to detect wireworms in corn and control may be necessary if an average of one live wireworm per bait station is found or one live wireworm per cubic foot soil section.

Management

Several insecticides are labeled for the control of wireworms in field crops. Insecticide seed treatments will typically provide adequate protection against wireworms; however, excessive moisture may cause the insecticide to move out of the root zone leaving seedlings susceptible. Of the three neonicotinoid insecticides available for use on agronomic seed, imidacloprid is the most water soluble at 0.61 g/l of water, followed by thiamethoxam and clothianidin at 0.41 and 0.33 g/l, respectively. These values represent the degree of leachability but are highly dependent on soil type. Many in-furrow granular and liquid insecticides are also options that producers can employ to help prevent wireworm damage and other injury from below ground insect pests. Check the product label to determine which are labeled for wireworm control.

CONTROL WEEDS PRIOR TO PLANTING CORN

Dr. Daniel Stephenson, LSU AgCenter Dean Lee Research and Extension Center
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As the snow and ice melt, fields begin to dry, and the extended forecast predicts better conditions for weed management strategies, burndown applications will be going out. Research has shown that burndown applications need to be applied four to six weeks prior to planting to prevent physical competition between weeds and crop as well as reduce the chance of damage from insects such as cutworms. Louisiana corn producers historically have desired to plant corn in late February through early March, so the time is now.

Research has shown that corn yield was 15 to 25% greater when weeds were removed 4 weeks prior to planting compared to 2 weeks. Unfortunately, the cold weather over the last two or three weeks has prevented producers from applying burndown herbicides; therefore, it is likely that many producers will be planting corn in fields that have not been burned-down or were sprayed only one to two weeks prior. In addition to weed competition and possible insect infestation, plant-back restrictions to corn for many herbicides are very important. The standard burndown treatment for many Louisiana corn producers is glyphosate plus 2,4-D or dicamba. There are no labeled plant-back restrictions for glyphosate, 2,4-D, or dicamba, but the LSU AgCenter suggest not more than 0.5 lb ai/acre of 2,4-D be applied within 2 weeks of planting. Products such as Leadoff (generic formulations included), which is often times added by producers to their burndown tank-mix of glyphosate plus 2,4-D for residual control of weeds, does not have a plant-back restriction either. However, a burndown application containing glyphosate, 2,4-D, dicamba, or Leadoff requires at least two to four weeks for maximum activity, which may not prevent physical competition between weeds and corn or control the vegetation in a timely fashion to prevent insect damage if corn is planted within the two to four week window. Products such as Valor and Goal, when tank-mixed with glyphosate, offer some foliar activity on weeds, but they're primarily utilized for residual control of winter annual weeds when applied as a burndown. However, Valor has a 30 day plant-back interval in conventional tillage corn and a 14 day plant-back interval in minimal tillage corn. If Goal is applied at least 30 days prior to corn planting and at least three rainfalls of 0.25-inches are received, then corn can be planted without worry. If applied within 30 days of planting, Goal needs to be incorporated into the soil to a depth of two or more inches prior to planting. Therefore, if a producer is within two to four weeks of corn planting, burndown applications containing glyphosate, 2,4-D, dicamba, Leadoff, Valor, or Goal are not optimal options based on the issues discussed earlier.

What does a Louisiana corn producer do for burndown if they desire to plant as soon as it dries up? Products that contain paraquat (Gramoxone SL and other generics) or Sharpen should be considered. Both products offer rapid desiccation of weed vegetation and no plant-back restrictions to corn. The positives and negatives of paraquat are well understood by producers and should be utilized properly. Sharpen at 1 oz/A plus 1% v/v methylated seed oil (MSO) is good for burning vegetation down, but increasing the rate to 2 to 3 oz/A will provide residual control of many broadleaf weeds in addition to controlling existing vegetation. Research has shown that tank-mixing Sharpen with glyphosate will control a broader spectrum of weeds and if Sharpen is mixed with a brand name glyphosate (i.e. Roundup PowerMax), then the addition of MSO is not needed for winter annual control. However, if Sharpen is applied alone, addition of MSO is critical to achieve expected weed management. It should be noted that activity of paraquat and Sharpen can be influenced by sunlight, temperature, and coverage; therefore, sunny days and warm temperatures at application with good sprayer output (higher the better) will increase the chances of good weed control. Another thing to consider is an application of a product that contains atrazine at planting following the first burndown application.

CONTROL WEEDS PRIOR TO PLANTING CORN

Atrazine at planting is not a substitute for a burndown application discussed earlier. However, if a producer is forced to apply a burndown application within two weeks of planting, applying atrazine (or a product containing atrazine) will provide good control of weeds that were not completely controlled by the first burndown application.

Ultimately, it is best to burn down winter vegetation four to six weeks before planting, but a producer may not have that option. Therefore, use good judgment when selecting herbicides for burndown. Don't just assume that glyphosate plus 2,4-D will work if applied within two weeks of planting. It is crucial that weeds be removed so they don't negatively influence yield. If you have specific questions, please call your local LSU AgCenter county agent or weed scientist.

The Importance of a Rapid and Uniform Plant Stand in Corn

Dan Fromme1, Beatrix Haggard2, Josh Lofton2, and Rick Mascagni3
LSU AgCenter
Alexandria1, Winnsboro2, and St. Joseph3, respectively

Planting the 2014 corn crop is just around the corner and everyone is asking when we should plant. The goals to a successful corn establishment are a rapid and uniform stand emergence. To achieve this goal, make sure that soil temperatures are adequate. Consequences of planting too early are a delayed and non-uniform stand of corn. The time from planting to emergence varies widely with environmental conditions and to a lesser degree, with planting depth. During this stage, development is affected directly by soil temperature and indirectly by air temperatures.

Importance of Uniform Seedling Emergence

Uneven seedling emergence can cause grain yield losses. When 25% or more of a stand is made up of plants that emerged 7-10 days late, yield losses will approach seven percent. When 25 to 50% of a stand is made up of plants that emerged 21 days late, yield losses will approach 10 percent. When more than 50% of stand is made up of plants that emerged 21 days late, yield losses will approach 20 percent. Yield losses from delayed emergences are related to several factors. First, delayed emerging plants are at a disadvantage for light, water, and nutrients when surrounded by older, larger plants. Plants that emerge early reach the grand growth phase (about V5 or V6) sooner than delayed emerging plants. By the time the delayed emerging plants begin their rapid growth phase, the early emerging plants have leaped ahead of them in terms of overall plant growth. The critical differences in growth stages between early and delayed emerging plants are about two leaves (e.g., V4 versus V2). When the differences in growth stages are more than two, the delayed emerging plants become barren plants (i.e., no ears). Therefore, when delayed emerging plants compose a large percentage of a stand, yield loss is simply equivalent to that associated with late planting. Secondly, delayed emerging plants often silk and pollinate significantly later than the rest of the field. A small number of late tasseling plants scattered throughout the field may not provide adequate amounts of pollen for successful fertilization of the silks.

Figure 1. Delayed emergence in corn plants can result in a disadvantaged corn plants as well as potential decreased yields.

Three Requirements for Uniform Germination and Emergence in Corn

There are three requirements for a rapid and uniform germination and emergence in corn. First, an adequate and uniform soil temperature is needed. An adequate soil temperature for corn is simply defined as being greater than 50oF at the 2-inch depth. Corn will not germinate or emerge quickly and uniformly when soil temperatures are less than 50oF. Uneven or non-uniform soil temperatures can be caused by different soil types in the field, uneven residue cover in reduced tillage systems and uneven seeding depth control.

Second, adequate and uniform soil moisture is needed at the seed zone. Adequate moisture is when the soil is not too wet or dry. Uneven soil moisture in the seed zone can be caused by different soil types, tillage patterns, and uneven seeding depth control.

Third, an adequate and uniform seed to soil contact is critical. Soil must be firmed around the seed in order for it to imbibe water. When planting conditions are not optimum is when have seed to air contact, seed to clod contact, or seed to trash contact. Seed to air contact occurs when planting into wet soils which results into an open planter furrow. Kernels lying in this open environment are dependent on rainfall for germination and emergence to occur. Seed to clod contact results from planting into cloddy fields created by working the soil too wet. Seed to trash contact results from surface trash falling into the seed furrow during no till planting when soil and or trash are too wet for adequate coulter cutting action.

Influence of Soil Types and Tillage Systems

One management aspect that is often overlooked for planting date determination is tillage systems. It has been well documented in the literature that high residue tillage systems typically warm slower in the spring than those with the soil surface exposed. In addition to these production practices, soil color will also affect the speed at which the soil warms. Darker soils will typically warm faster if they have similar amount of moisture as a lighter colored soil.

Determining When to Plant for a Rapid and Uniform Plant Stand

Rapid and uniform corn emergence helps ensure a strong and vigorous stand establishment. Adequate soil temperature is most simply defined as being greater than 50F at the 2-inch depth. However, when soil temperatures warm to the mid-50's or greater, emergence will occur in 7-10 days which will give you a better chance of having a rapid and uniform stand. Keep in mind, when average daily soil temperatures are less than or fluctuating about 50^{o}F, corn emergence will occur much more slowly and less uniformly making the seedlings more susceptible to soil borne insects, pathogens, and herbicide injury.

Summary

Remember, we have had a cooler than normal winter, make sure soil temperatures are adequate for achieving a rapid and uniform stand. Consequences of planting too early are a delayed and non-uniform stand of corn.

Figure 2. Frost injured corn from 2013. Corn was planted too early and later season frost kill above ground tissue.

For further questions or comments, please contact:

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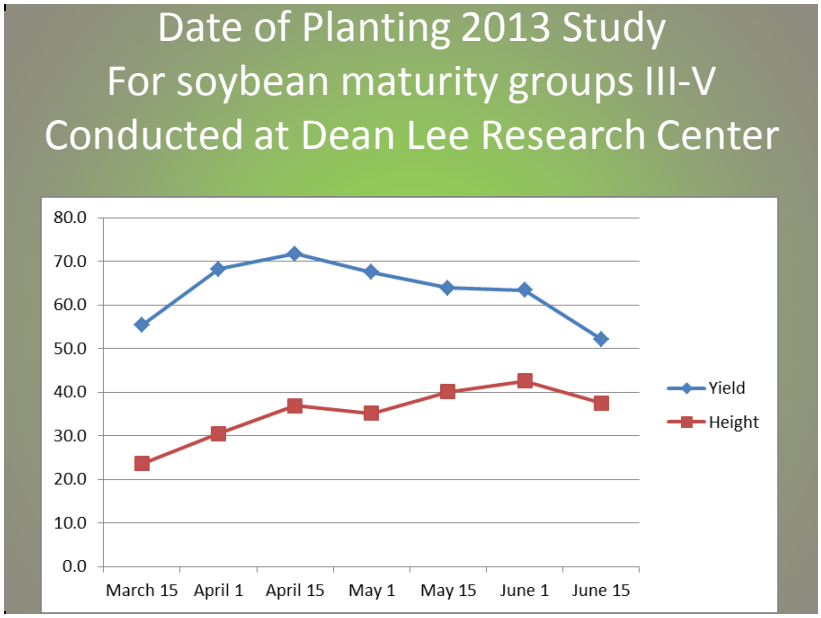
Soybean Planting Dates

Dates of Seeding

Because weather conditions are different from year to year, seeding dates can be affected by environmental conditions. Early or late planting can cause reduction in plant height in many varieties. Generally late plantings have less chance of success unless irrigation is available or optimal weather and timely rains occur throughout the growing season. Soybeans can be planted in Louisiana as early as March 15 and as late as July 4 if weather conditions are favorable. If planting is delayed beyond June 15, soybeans become more of a risk. Yields of soybeans have been shown to decline approximately 1/2 bushel per day for each day planting is delayed past June 15. Soybeans planted later than this should use a variety geared toward a tall, spreading type that will give maximum branching and node formation to allow as much room for vegetative and pod development as possible.



Optimal seeding dates for each maturity group planted in Louisiana are:

- Group III – April 15 – May 10
- Group IV – April 15 – May 10
- Group V – March 25 – May 5
- Group VI – March 25 – April 30

Plant only deep enough to get the seed in moist soil. On sandy or silt loam soils, plant only 1 inch deep if moisture is available. On clay soils, plant 1 to 2 inches deep, depending on moisture conditions. Rolling the soil, especially clays, after planting will help obtain a stand by conserving moisture.

For further questions or comments, please contact:

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Upcoming Calendar of Events

March 8, Spring Acadiana Beef Cattle Field Day at the Iberia Research Station, Jeanerette.

April 16, Wheat and Oat Field Day at the Macon Ridge Research Station, Winnsboro.

April 29, Northwest Beef and Forage Field Day at the Hill Farm Research Station, Homer.

May 3, Habitat Management for White-tailed Deer at the Bob R. Jones-Idlewild Research Station, Clinton.

May 21, Fruit and Vegetable Growers Field Day at the Botanic Gardens at Burden, Baton Rouge.

June 5, Nursery Industry Open House at the Hammond Research Station, Hammond.

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

June 21, Garden Fest at the Botanic Gardens at Burden, Baton Rouge.

June 25, 105th Rice Research Station Field Day, Crowley.

July 10, Northeast Region Field Crop Tour at the Macon Ridge Research Station, Winnsboro.

July 16, Sugarcane Field Day at the Sugar Research Station, St. Gabriel.

July 17, Dean Lee Research and Extension Center Field Day, Alexandria.

Aug. 7, Sweet Potato Field Day at the Sweet Potato Research Station, Chase.

Oct. 9, Landscape Horticulture Field Day at the Hammond Research Station, Hammond.

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

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