



Blacklands IPM Update



GENERAL:

Cotton across the areas is progressing nicely with most fields starting to have cracked bolls, and few fields ready to be defoliated or have already received their first harvest aid application. Cotton defoliation can be both a science and an art but timing the defoliation shot is critical not maximize yield and minimize yield and profit loss from weather conditions.

Timing Harvest Aid Applications:

The application timing of cotton harvest aids can be tricky because you are trying to balance between further boll development and adverse weather events. To determine when to apply harvest aids there are three methods that can be used, including the mature boll technique, percent open bolls, and Nodes Above Cracked Boll (NACB). The mature boll technique requires you to cut bolls in half to determine if a boll is mature, which is when you can see the cotyledons folded within the seed coat with no jelly. Do not base your determination of boll maturity on the color of the seed coat, as the traditional black seed coat color does not always form until the boll has cracked. When using the mature boll technique, it is typically safe to apply harvest aids when 98% of the bolls are mature. Defoliating the crop when 98% of the bolls are mature will allow the rest of the crop to fully mature before harvest.

The second method of determining when to apply defoliants to cotton is by using the percent open boll technique, and requires the producer or consultant to calculate a percent open bolls by counting the number of bolls open and dividing by the total number of bolls. When using this method, it is best to do your boll estimates on at least 5 linear row feet across the field. The general rule of thumb for this method is to apply your defoliants once the field has reached 60% open bolls. There is an exception to this rule that requires knowledge of how the crop was set. If the boll load on the plants are set over a long period of time say 6 or more weeks with minimal fruit shed defoliating at 60% open bolls could be too soon and lead to issues with immature bolls being opened and harvested. If the boll load is set quick, during a period of about 4 weeks the crop could safely be defoliated when the field is closer to 50% open because of how the fruit is set and how the crop matures. If using this percent open method, it is best to also check boll maturity to avoid prematurely defoliating the crop.

The Node Above Cracked Boll method is the third method of timing cotton defoliation applications and is based on the number of nodes between the uppermost first position cracked boll and the uppermost first position harvestable boll. This method can be completed quickly in the field by counting the number of nodes between the uppermost first position cracked boll and the uppermost first position harvestable boll across the field. The rule of thumb for this method is to apply cotton defoliants once the field has reached at least 4 Nodes Above Cracked Boll. Over the years research and personal experience has show that using the NACB method for timing cotton defoliation is more accurate.

Cotton Harvest Aid Chemicals:

Cotton harvest aid products can be grouped in to three categories including boll openers, defoliant and desiccants. Each of these different categories play a role in the cotton harvest preparation process. Boll openers are used to as the name says open boll that have not opened yet, this includes both mature and immature bolls. This category of harvest aids uses the chemical ethephon which when absorbed by the plant leads to the production of the plant hormone ethylene. This increase in ethylene production causes the plant to create abscission layers between burrs of the cotton boll, and between the petiole and the boll. Once the abscission layer is formed the burrs begin to dry out leading to the boll popping open. For the application of ethephon to work the plant needs to be alive, once a crop has received a killing freeze/frost the plant is no longer going to respond to the ethephon application. Use rates for boll openers are weather dependent, much like the use rates for cotton defoliant. Under cool conditions (75°F or less) rate will need to be increased to achieve the same performance as if applied under warm weather (85°F or higher). Additionally, ethephon can be used to condition the crop prior to the application of the typical cotton defoliant like thidiazuron, diuron, and cyclanilide.

The second category of cotton harvest aids are defoliant which can further be broken down into two groups hormonal defoliant, and herbicidal defoliant. Each group will defoliate the crop but does so if different ways. Hormonal defoliant include the active ingredients thidiazuron, diuron, and cyclanilide. This group of defoliant work by causing the plant to produce ethylene and lead to the plant shedding the leaves. Herbicidal defoliant include products like or PPO herbicides such as Aim, ETX, Display and Sharpen. This group of defoliant work by injuring the leaf, and this injury will then cause the plant to produce ethylene in the leaf that leads to the plant shedding its leaves. The downside of using herbicidal defoliant is if application rates are too high the chemical can kill the leaf tissue before it can produce the ethylene and naturally shed, this leads to stuck leaves that can lead to an increased leaf grade which can reduce the crops loan value. This herbicidal defoliant group is often used as the second application to dry the crop down or help control regrowth issues if they arise.

The last category of harvest aids for cotton are the desiccants. This category includes active ingredients like paraquat and sodium chlorate. This category of harvest aids quickly dries down the crop to allow the field to be stripped. The downside of using a desiccant is that it kills the foliage so quickly that the leaves are not able to be naturally defoliated from the plants and can lead to leafy cotton.

USE OF PARAQUAT PRODUCTS:

I was made aware late last week that some of you were unaware of a new training being required by the EPA, this training is for the use of any paraquat product. This training is strictly online and the training module can be accessed at: <https://campus.extension.org/enrol/index.php?id=1660>. This training applies to all paraquat applications, and to use you must be a licensed applicator. The word “use “ in this rule applies to all activities occurring before applications (mixing & loading), applying the pesticide, and other related activities including, but not limited to storage of open containers, transporting open containers, cleaning equipment, disposing of excess pesticides, spray mix, wash water, pesticide containers, and any other materials containing paraquat.

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