



Cotton Harvest Considerations

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- Delaying harvest until the last few bolls open can compromise the quality and potential yield of a cotton crop.
- Implementing practices to keep moisture away from harvested cotton can help maintain fiber quality until it is delivered to the gin.
- Safety during harvest is most important as there are many moving parts in the field.

Harvest Aid Application

Harvest aids are used to help open bolls, defoliate, and suppress regrowth. Timely harvest aid applications help growers with harvest timing and maintaining fiber quality. Harvest delays can negatively impact yield and lint quality.

Cotton leaves naturally defoliate at physiological maturity, but leaf abscission does not occur uniformly or prior to mechanical harvest. Harvest aids are used to help accomplish the following:

- Remove mature and juvenile foliage.
- Improve lint quality by minimizing lint staining and trash.
- Open bolls.
- Suppress regrowth.

Type of defoliant. There are two types of defoliants available to use as harvest aids. The first type has **herbicidal activity**, which increases ethylene production by injuring plant tissue. Ethylene production triggers leaves to drop. Heavy application rates can lead to accelerated leaf death, which can bypass ethylene production, resulting in leaf stick. This is especially true for juvenile leaves. The second type of defoliant has **hormonal activity**, which increases ethylene production in the plant without causing injury. Hormonal defoliants can be less prone to causing leaf stick than herbicidal defoliants.¹

Application timing. It is important to carefully time defoliant applications because little to no boll maturation occurs after defoliation. There are several methods available to help determine application timing. Traditionally, the firmness of the bolls (when the uppermost harvestable boll is difficult to cut with a knife), the seed coats (thin and brown), and the percent of open bolls (50 to 60%) in the field can help determine when to apply a defoliant. Using plant growth can provide a more accurate determination of maturity, which can in turn lead to more accurate defoliant application timings. Harvest aid applications are recommended after the accumulation of 850 heat units (DD60s) or after 4 to 5 nodes above white flower (NAWF), as the crop is unable to effectively load more bolls after this point. Regardless of the method or combination of methods used to determine when to apply a defoliant, fields should be visually inspected prior to harvest aid application.^{2,3}

Apply defoliants 10 to 14 days before desired harvest date. Application should occur either early in the morning or late in the afternoon when humidity is the highest and when there is little to no wind. It is best to stagger defoliation to help manage harvest timing and reduce potential yield and quality loss from defoliated cotton weathering in the field. Four days after application, leaves should begin to drop and complete defoliation should occur around 10 days post application.²

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Crop condition. Thick leaf cuticles in drought-stressed cotton can reduce the effectiveness of harvest aids, which may make it necessary to include a surfactant. Additionally, two applications may be required if rank growth prevents complete coverage. Increasing the application rate is not effective against rank growth, because a higher rate is just as unable to penetrate the canopy as a normal rate.² Select flat-fan or hollow-cone nozzles coupled with a minimum carrier volume of 15 gallons per acre to help maximize canopy coverage.³

Weather during harvest. Harvest aids are most effective when average temperatures remain above 60 °F. Lower temperatures can slow leaf drop and boll opening. Late applications made in cooler temperatures can increase the potential for quality losses from cool and wet late-season weather.

Delays in defoliation can push back harvest dates and result in substantial yield and quality reductions. Fiber length, strength, and color can be affected, resulting in lower lint loan values and lower net returns per acre. Timely harvest also allows more time for cotton plant residue and stalk decomposition, an essential part of insect and disease management. For more information refer to the Agronomic Spotlight - [Cotton Harvest Aid Application and Timing](#).

Post Harvest Storage

Seed cotton must be protected from weather until it is ginned. To help protect cotton during storage, cover rectangular modules with a high-quality tarp. Tarps should be checked for any tears or pin holes before use. Round bales should be wrapped with plastic (Figure 1).



Figure 1. Round cotton bales wrapped in plastic.

Modules and bales should be checked regularly for excess moisture. High moisture content can increase temperatures within the module or bale, potentially reducing lint grade. Extreme cases may result in spontaneous combustion. Cotton harvested at ideal moisture content levels should only increase by 10 to 15 °F in the first 5 to 7 days of module storage, then level off or decrease in temperature. A 15 to 20 °F temperature increase during the first 5 to 7 days indicates a high moisture content problem and the module should be ginned as soon as possible.³ After the initial daily temperature check, modules should continue to be checked every 3 to 4 days. If at any time during storage a module reaches a temperature of 120 °F, the cotton should be ginned immediately.

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Cotton Harvester Fire Safety Tips

Cotton pickers and strippers are very large, complex, and expensive pieces of equipment. Heat from the unit combined with dry debris and lint can easily cause fire within the unit and in the field. These simple tips can prevent or help in the event of a fire:⁴

- Do not park an idling picker with the exhaust facing a module or bale.
- Be sure the area behind the cab near the transmission is kept free of debris. High temperatures can easily cause a fire to ignite.
- If a fire is suspected, try to move the picker to a nearby area free of combustible material that would allow the fire to spread. Unload all seed cotton immediately.
- Keep two functional ABC fire extinguishers available, one in the cotton picker cab and one within reach from the ground.
- Never enter a basket or chamber if a fire is suspected.
- Always keep a cell phone or farm radio nearby to alert others if a fire occurs.

Sources:

¹ Hand, C., Culpepper, S., Vance, J., Harris, G., Kemeraite, B., Liu, Y., Perry, C., Hall, D., Mallard, J., Porter, W., Roberts, P., Smith, A., Virk, S., Bag, S., and Sintim, H. 2023. Defoliation. In, Hand, C. (Ed.), 2023 Georgia Cotton Production Guide. The University of Georgia Cooperative Extension Service. <https://extension.uga.edu/publications/detail.html?number=AP124-3&title=2023-georgia-cotton-production-guide/>.

² Main, C.L. and Hayes, R.M. 2009. Cotton harvest aids. The University of Tennessee Extension. W225. https://trace.tennessee.edu/cgi/viewcontent.cgi?article=1002&context=utk_agexcrop

³ Raper, T.B., Pierralisi, B., Miller, D.K., Sandlin, T., Robertson, B., and Wilson, B. 2022 Mid-South cotton defoliation guide. MidSouth Cotton Specialists' Working Group. W 376.

⁴ Basic safety precautions. Cotton Incorporated. <https://www.cottoninc.com/cotton-production/ag-resources/harvest-systems/the-spindle-type-cotton-harvester/basic-safety-precautions>.

Legal Statements

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and environmental conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on their growing environment.

The recommendations in this material are based upon trial observations and feedback received from a limited number of growers and growing environments. These recommendations should be considered as one reference point and should not be substituted for the professional opinion of agronomists, entomologists or other relevant experts evaluating specific conditions.

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