

COTTON HARVEST AIDS

Why do we defoliate cotton?

The ultimate goal of a harvest-aid program is to:

- Protect the quality of the lint and seed
- Enable an earlier harvest

When is it safe to apply Harvest Aids?

When the last boll you expect to harvest is physiologically mature, cotton is generally safe for harvest aid treatment.

- Bolls difficult to mash and cut in cross section
- Fiber strings out when bolls cut
- Seeds solid, cotyledons easily seen
- Seedcoats tan to brown
- Uppermost first position harvestable boll 4 nodes above cracked boll

What can happen if I defoliate prematurely?

- Reduced yield
- Reduced micronaire
- Poor harvest aid performance
- Delayed harvest

When should harvest aids be applied?

We usually have to compromise somewhat when deciding on application timing. Generally, treat when two or more of the following have occurred:

- Traditional**
- 50 - 60% open bolls
 - Last harvestable boll mature
 - NACB \leq 4
 - Cutout + 850 heat units

Our traditional approach will sometimes result in high micronaire values on our early maturing varieties. This timing is generally closer to cutout + 1000 HU

- New**
- 45 – 55% open bolls
 - NACB = 5
 - Cutout + 850 heat units

Research in Arkansas indicates this approach will help optimize lint yield and loan values to achieve greater returns on early maturing varieties in situations where discounts associated with high micronaire values may occur.

Factors that influence later or earlier timings include:

- Harvest equipment capability
- Condition of the crop
- Impending weather
- Time of the year

Potential yield and quality losses must be weighed against losses from weather. One way to estimate yield loss is using 35-50 lb lint/A for each boll lost per row foot. Micronaire losses are harder to predict. Remember, not all quality losses are the result of harvest aids (i.e. insects, excess nitrogen.)

What factors influence the efficacy of harvest aids?

Interactions with plant activity, temperature, soil moisture, and the ability to achieve proper coverage are critical.

- Harvest aids in general do not translocate. Poor coverage will result in poor performance.
- If the soil surface is not visible through the leaf canopy when standing in the row middle, two applications will likely be required.
- To increase the likelihood of achieving acceptable performance from a once over harvest-aid program, increase spray volumes. By ground, 10 GPA or less spray volumes will limit performance as a result of poor coverage. Using 13 to 15 GPA spray volumes will greatly improve coverage and performance of products. The same principle holds true with aerial applications. Use no less than 5 GPA spray volumes with aerial applications of harvest aids.
- While most insecticides are applied with the use of air induction or hollow cone spray tips which generally produce small droplets, research shows these tips are inferior to flat fans or Turbo-TeeJet tips which produce larger droplets for defoliation and boll opening in ground application equipment.

Once over Applications

My products of choice for an once-over harvest aid approach are Finish or CottonQuik tankmixed with DEF, Dropp, or Aim. When temperatures and regrowth potentials are high, Dropp makes an excellent mix partner. As regrowth pressures subside, DEF provides an additional defoliation enhancement for either Finish or CottonQuik. Aim has proven to be an effective product for morningglory desiccation as well as being a good mix partner with Finish or CottonQuik. Remember to adjust rates to match conditions as the season progresses. Once over application programs may not be picture perfect, but will result in commercially acceptable defoliation and boll opening with proper application in many situations.

Sequential Applications

My standard for comparing new products or combinations with this approach is DEF plus Dropp in the initial application with a defoliation enhancement rate of Finish. The second application containing Ethephon and DEF may be applied 5 to 7 days after the initial applications removes enough leaf tissue to insure adequate coverage of the boll opener on remaining unopened bolls. Rates of these products will naturally be adjusted to reflect current weather and plant conditions and the urgency to achieve the level of boll opening needed to keep the pickers rolling.

Harvade may be substitute for DEF in the above program to achieve similar defoliation and enhance the weed desiccation. Aim may also be substituted for DEF for morningglory desiccation. Leafless, a combination of Harvade and Dropp is also effective for weed desiccation with warm temperatures. If weed pressure, especially morningglory, is high sequential applications will be needed to provide necessary coverage. As temperatures decline impacting regrowth potentials and plant activity products and rates should be modified to insure success.