

## OVERVIEW OF SOUTHEAST COTTON DEFOLIATION PRACTICES

**M. G. Patterson**  
**Agronomy & Soils Department**  
**Auburn University**  
**Auburn, Alabama**

### Abstract

States in the Southeast region are Georgia, Florida, North Carolina, South Carolina, and Alabama. Current members of the work group from this region are Ford Eastin, Barry Brecke, Keith Edmisten, Ken Lege, Charles Burmester, and Mike Patterson. Former members who have moved on to other duties and/or states include Mitchell Roof and John Wilcut. We represent a geographic region which is somewhat similar in climate, land and cultural practices. Virtually all cotton grown in the Southeast is upland cotton which is spindle picked. Cotton is planted from April 1 to June 15 using mostly conventional tillage (chisel or moldboard plow, disk, cultivation) methods, although about five percent of the acreage falls under conservation tillage culture, and harvested from early September to mid November. Cotton acreage has increased over 100 percent in the Southeast over the past five years, with Georgia and North Carolina acreage increasing over 200 percent.

Changes in production practices over the last few years which impact defoliation include new varieties which set fruit earlier, the use of agri-chemicals which encourage earliness, improved planting and harvesting equipment (including vacuum planters and 5 row pickers), a large increase in the percent of cotton moduled prior to ginning (35 to 74% depending on state), and the attempt to make a once-over harvest using boll openers. To accommodate the increased acreage we have seen the construction of new gins which have good lint cleaning equipment (some which can electronically detect trashy cotton for re-cleaning).

Currently, the phosphate defoliant (Def/Foalex), Dropp, and ethephon are used extensively by cotton growers in the Southeast. Other products like Harvade, sodium chlorate, and Quick Pick are used on fewer acres. Dessicants are not used in the Southeast except in unusual situations. Our core defoliation treatments are of course the same as those used by the other cotton-growing areas of the country; but we have used some regional treatments composed of two and three-way mixtures. Defoliant mixtures are commonly used by cotton growers in our region and we will talk about some reasons for tank mixtures a little later. First, let's set the stage for what cotton producers in the Southeast may expect each year as far as growing conditions are concerned.

Weather conditions play a large part in determining how successfully cotton can be defoliated in the Southeast. Temperatures and rainfall (or lack of rainfall) can have a tremendous influence on how well defoliants perform. The Southeastern United States is an area where relatively high (45 to 50 inches/year) rainfall occurs on average and less than one third of the cotton acreage is irrigated. In Alabama, less than 10 percent of the cotton is irrigated. Low humidity in the Southeast is considered to be anything lower than 50% by many people. The growing season can vary from 230 days on average in the northern growing areas of the Southeast to 300 plus days in the Florida panhandle. Soil types vary from clay loam to beach sand and several cotton varieties are grown across the five state area. Although Southeastern cotton growers all grow cotton, they generally do it a little differently than their neighbors.

We tend to remember the good and bad years in the cotton growing business and forget the average. 1994 was one of the best years on record with average lint yields across the Southeast of 800 lbs per acre and more. Drought, resistant worms, and hurricanes have combined to make 1995 one of the worst years in recent memory for some of us. The point I'm trying to make is this; there is no such thing as "business as usual" for cotton growing conditions in the Southeast.

The objective of any cotton defoliation program should be to knock the leaves off of the plant for the least cost possible, regardless of the yield potential of the crop and to do this under less than ideal conditions. But in reality, most growers are willing to spend more money on defoliation in order to protect a higher yield, especially when cotton prices are high. Likewise, they don't want to spend too much on defoliation when yields and lint prices are low. This is probably good economic sense.

Since only a handful of products are registered for cotton defoliation this may lead the inexperienced grower to believe that selecting a defoliation treatment would be simple. This would be true if plant, soil, weather, and general growing conditions were always constant. If these factors never changed from year to year, then once we determined the best defoliant treatment or treatment combination this recipe could be used until more effective and/or economical products were developed. The reality however is that each season is different in the Southeast and what may have been the best treatment in 1995 may not be the best in 1996. Defoliants are routinely applied in tank mixes across the Southeast. Based on conversations with some pesticide distributors in the region, I feel a high percentage of the acreage defoliated is treated with more than one product.

There are some reasons for mixing defoliants and/or boll opening products like ethephon. First, we can combine different activities in one application--obtaining defoliation,

regrowth control, and boll opening activity in one application. The effectiveness of a treatment is often greater for mixtures than for a single product. We can often decrease the rate of individual products in mixture below stand alone rates. Mixtures can often decrease trips across the field. They help safeguard against poor individual performance under adverse weather or poor plant conditions. Finally, mixtures may be used in special situations where defoliation, weed dessication, and boll opening are required in the same field. Before you begin to believe that mixtures are used exclusively in the Southeast, let me say that most research conducted in the region shows that a two shot approach is almost always better for defoliating cotton than a single application, regardless of the products used, and two applications are sometimes required to obtain adequate defoliation or boll opening. In cases were two applications will be made, individual harvest aids can be used to advantage in each application.

The Southeast is rapidly becoming an area where many non-farm people want to live. Some of these people want a house or mobile home on a few acres. Often they want the home site to be located in a big, flat field with well-drained soil so the septic tank field lines will work good and the horses will have good pasture to graze. This sounds like the same type field where cotton grows well! There are many areas in the Southeast where once productive cotton fields have become the battleground between farmers and non-farmers. Aerial application in these situations is virtually impossible without causing trouble with the neighbors. As a result ground equipment is and should be used in these cases. Educating the general population about the tools required for modern farming and using these tools wisely is becoming more and more important for cotton growers in the Southeast. Methods which minimize off-site movement of all agri-chemicals, not just defoliant, will only be more important from now on.

In summary, you can see that we have different defoliation situations within the region and seldom is the growing or defoliating season constant. One of the purposes of this Beltwide workgroup has been to bring some consistency to the defoliation business. I feel we have done this by collecting a large data base which will help provide recommendations for treatments that will generally work well over a wide range of conditions. But as soon as we feel we have all the answers, another defoliant will probably be developed or drilled cotton harvested by strippers will become a fad in the region. I would like to thank Cotton Incorporated for supporting this project and UniRoyal Chemical Company for their generosity in hosting the Beltwide Defoliation Workgroup meeting each year.