

# CROP EXCELLENCE

**Cotton Defoliation – Serious?**  
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Couple of interesting questions: Why? How?

I had the privilege of traveling in central America last week and a fellow agronomist and university professor asked me “what was my favorite crop?” I told him I cut my teeth on small grains, potatoes, grass and sugar beets but when I arrived in the US over 30 years ago, a magical, physiological plant beast captured my heart – none other than cotton! Not bad for a kid growing up in the north of England but as a plant physiologist, cotton is awe inspiring!

It is a desert crop than is ancient for its domestication alongside corn and beans in the Americas, wheat in the Old World. A deep tap root suited to low water regimes, photosynthetic efficiency in high temperatures and a perennial growth habit as a native plant makes for entertaining analysis and input recommendations. In a nutshell, best practices hinge around a starter and then adequate nitrogen, phosphorous, zinc and water at squaring and the modern crop is made – it takes a grower with a lot of bolls to get high yield cotton!! That said, modern cultivars will run out of potassium and nitrogen, and usually boron to the point of symptom expression – a death throw for boll production and survival (yield) and just as importantly quality – micronaire, fiber length, avoidance of boll lock and so forth – so critical are these late season physiological disorders, lazy folks used to ascribe the problems to as yet unidentified disease issues....

Here’s the deal – no end of soliloquizing on the various growth stage timing of inputs will ever emphasize the concept that for most crops, a “good start leads to a good finish” for most annual crops, for a genetic perennial base like cotton means for sure a good start helps but knowing when to induce the finish and do it with quality and knowledge are paramount..

There are great tools, both cultural and chemical to get the desired finish in cotton. Some considerations and defoliation benefits as follows:

- Improved speed and efficiency of cotton picker machines
- Reduce boll rot
- Can often stimulate opening of bolls (yield and early picking)

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The trick is to balance leaf life / duration to allow for maximal residual yield promotion yet permit natural hormone production (abscisic acid) that permits timely leaf drop. Defoliate too early and yield and fiber quality will be adversely affected – too late and defoliation activity could be reduced due to lower temperatures. Ball park, (or should I say boll park) is to shoot for 60-65 percent open bolls as timing for defoliant according to most experts – certainly local growing conditions and genetics will influence this.. side notes include:

- Coordinate with picker availability
- Shoot for sprays in warmer, sunnier conditions

Spray type and chemical – basically hormones (or hormone generators such as ethephon and mepiquat) and true herbicides, and mixes thereof...some herbicides are basically souped up hormones! Essentially, promote leaf death with ethylene generation (abscission promoter) in balance and the rest is easy (ish). Great ways to manage a complex botany!

Next question – what good is a letter mailed without a stamp? Even if you had the postage attached, it is going nowhere without the US Postal Service or private enterprise. The analogy I am trying to draw here is that you put a lot of thought in to that letter but without a delivery system, the letter and sentiments therein are going nowhere.

So, we have the defoliant / growth regulator – how to mail it?

- Adjuvant – a major postage stamp, for most mailings but an average term at best. Adjuvants, generally speaking, improve herbicidal or other a.i. ingredient performance by activation of the a.i. and / or improving spray water conditions to facilitate buffering (pH control for example), anti-foam and compatibility with other tank-mix components, such as foliar fertilizer sprays – all are essential after considering the letter and packaging to be delivered!
- Surfactants and oil concentrates continue to improve the leaf / a.i. surface activity to enhance leaf penetration and leaf surface spread and / or wettability.

If you are serious about the delivery, therefore, you need to consider a compatibility agent such as MixMaster from CE Crop Excellence – a broad based ethoxylate phosphate ester, MixMaster covers a wide range of cotton defoliant scenarios for nutrients, herbicides and ethylene regulators. Similarly, a good utility multi-purpose adjuvant such as KingTide, also from CE Crop Excellence can greatly enhance cotton defoliation options. KingTide is unique as it combines modified vegetable oil technology with superior wetter, spreader and penetrant chemistries – all essential to mailing your defoliant chemistries!

Good luck for a great cotton picking season!!

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