

**DEFOLIATION EFFECTS ON
HARVESTING AND GINNING**
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Abstract

Defoliation has an enormous impact on the value of a cotton crop. Good defoliation is necessary for a good harvest job, and good harvesting is required for the gin to be able to produce the highest turnout, quality, and value. Once trash gets mixed into seed cotton, part of it will be in the bale when it gets to the textile mill. Gins can remove significant amounts of trash, but the final leaf grade of the bale is also affected by defoliation and harvesting.

Introduction

Defoliation has an enormous impact on harvesting, ginning, and the value of a cotton crop. A good defoliation job is necessary to maximize quality.

We hand harvested cotton without defoliation, and pickers will do a decent job without defoliation, so why do we automatically defoliate? The answer is because they add more value than they cost. Harvesting can begin earlier in the morning and continue later at night because the dew dries faster and accumulates slower in defoliated fields. When seed cotton was put on a trailer and ginned within a day or two, a little extra moisture did not cause as much damage as it does when the cotton stays in a module for weeks before the gin gets to it. In some production areas, significant acreages are harvested without defoliation. Often these are low yielding fields that may have dropped a high percentage of their leaves naturally, and the producer simply cannot justify investing the cost of defoliation.

Harvesting is difficult in undefoliated cotton. Spindle twist is hard to avoid, but it can be done with higher volumes of concentrated spindle cleaner and excellent machine condition and exact management. Green stains would be a significant problem in undefoliated cotton which is moduled.

Seed Cotton Trash Content

The trash content of seed cotton is directly related to the defoliation job. If leaves are stuck on the plant, the harvester will put most of them in the basket with the seed

cotton. Once trash is mixed with the seed cotton, part of it will be in the bale when it arrives at the textile mill.

One of the negatives of once-over harvesting is the necessity of setting the picker to be aggressive in order to get all the cotton off the stalk. With the traditional twice-over management scheme, the tension on the compression plates is adjusted so minimum leaves and burrs are removed from the plant with the first harvest when most of the high quality bolls are harvested. Then when all the crop is open, the compression plate tension is increased and scrapper plates are added to clean the plants. Thus, second picking is usually higher in trash content and expected to be lower quality. With once-over harvesting, the headers must be operated aggressively to get maximum yield. If leaves are stuck or if green leaves remain on the stalk, aggressive picker operation can produce extra high trash contents.

Ginning

A ginning system takes out a percentage of the trash in the seed cotton. In other words, when two lots of cotton are ginned on the same system of machinery, one with 4 percent seed cotton trash content and one with 8 percent, the lint trash content of the trashier lot will be about twice that of the cleaner cotton. If the ginner detects the high trash lots, he can do three things as follows: (1) increase the temperature of his driers, (2) add cleaning machinery to the processing system, if available, and (3) slow down his processing rate to allow the driers and cleaners to be more effective. Each of these steps requires close observation, an experienced, trained eye, and some incentive for the gin because they increase the gin's per bale operating cost.

Hairy leaf varieties usually need more aggressive cleaning at the gin to yield satisfactory leaf grades. Two factors are involved. Hairy cottons normally yield slightly higher trash contents in the seed cotton, and the gin cleaners are less effective at removing the trash. In general, one less lint cleaner will usually produce about the same leaf grade with smooth leaf cottons. However, if the gin processes all the cotton through the same system and makes no changes in drying or processing rate, this potential advantage for smooth leaf cottons is not realized.

Summary

Good defoliation is necessary to produce the most value from a cotton crop. Good defoliation makes a good harvesting job possible and good harvesting is necessary for the gin to be able to produce high quality fiber. Gins can only remove a percentage of the trash from the seed cotton, so the only way to maximize yields, quality, and value is to do a good job throughout the season.