HARVEST AID WORKSHOP: ACCOMPLISHMENTS AND CONCERNS Robert M. Hayes and C. Owen Gwathmey University of Tennessee West Tennessee Experiment Station Jackson, TN

Abstract

The Cotton Defoliation Working Group (CDWG) is a group of crop scientists investigating the relationship of biotic and environmental factors to performance, quality effects, and cost/benefits of harvest aids from the 'field to the fabric'(2). While harvest aids are not considered to boost production *per se*, they are considered important tools in improving harvest efficiency and preserving fiber quality. Harvest aids, while varying in performance across the belt, do not adversely affect fiber quality or increase white specks. The CDWG has assembled an infrastructure to keep abreast of developments in harvest aid technology.

Introduction

In 1990, the cotton industry was abuzz about HVI classification, discount schedules, loss of arsenic acid, and even harvest-aid effects on fiber and yarn quality. Harvest aids were often implicated in discussions on low micronaire, short fibers, and even sticky cotton. It was also the eve of the `moduling' explosion in the eastern cotton belt. For example, Tennessee has gone from less than 5% to more than 50% of the crop being placed in modules in the last ten years(1). Concurrently, gin numbers have declined, yet volume has increased. Worldwide market demands for high quality fiber continues to strengthen. While quality problems are sometimes attributed to harvest aids, available data suggest that they are generally beneficial in improving harvest efficiency and preserving fiber quality.

Accomplishment

One great accomplishment of the CDWG has been the organization of professionals from across the belt with a common objective. The group developed standardized procedures to evaluate harvest aids. These procedures have been uniformly applied by group members across the belt to test a standard set of harvest-aid chemicals since 1992. This has produced a massive data set on field performance, environmental effects, and fiber and yarn quality effects of these chemicals. Also this structure provides for the addition of new participants, expanded treatments, additional experiments and locations, and the inclusion of related disciplines to bring expertise that reaches from the `field to the mill'.

Perhaps the most important accomplishment has been providing an annual forum where all participants convene to discuss harvest aid research and related issues. Already, the results have provided valuable information on field performance, especially the influence of environment. Determining relationships of harvest-aid activity to differing environmental/growth conditions were virtually unattainable for individual states. Yet more information will be available as all the data are analyzed and correlations and interactions are identified.

This is the first attempt to track harvest aid effects through fiber, yarn and fabric analysis. So far, no significant adverse effects on yield, fiber or yarn quality (neps, white specks) have been detected.

Concerns

Still needed, however, are detailed cost/benefit economic analyses. Several agricultural economists are joining the CDWG and will conduct these analyses. Any economic analysis must also address issues of harvest efficiency and timeliness, issues extremely important to producers.A further concern is that all of this research was conducted with air-dried, loose cotton. Are harvest aids more beneficial when seed cotton is placed in modules? We hypothesize that it is, but this must be tested. Corollary projects will be addressing this question.

Most harvest aids labels refer to percent open bolls rather than maturity for proper application timing. This is sometimes troublesome and remains a concern. The CDWG has collected detailed data on percent open, nodes above cracked boll (NACB), and heat units after treatment (DD 60's). Complete analysis of these data should provide a reliable database for prediciting responses to harvest aids in these varieties and regions. These data will also be helpful in timing harvest aid applications.

These studies were conducted at full-labeled or recommended rates. Would reduced rates provide greater economic and environmental benefits? This will be determined in future research by the CDWG. New harvest aids products (Finish[™], CGA 248757, Roundup[™], Dropp Ultra[™], etc) are being developed and their utility in cotton production must be determined. These experiments were conducted with a limited number of varieties. New varieties (BXN[™], Roundup Ready[™], Bollgard[™], etc.) could present new challenges. Obviously, Roundup will not control regrowth of Roundup Ready[™] cotton.

Other issues such as spray adjuvants, synergist, application technology, GPS/GIS technology, and aerial application will need to be addressed. This core group of scientists is keeping abreast of these issues and can react quickly to insure that producers and industry needs for effective harvest aids are met.

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One goal of the CDWG is to compile available research data into a reference volume on the subject of harvest aids. Our profession has long lacked a handy reference about harvest-aid chemical effects, so this effort of the group will hopefully address the needs of scientists, consultants, and others.

Finally, the concern about harvest aids five years ago has evolved into this workshop to keep us "in tune with the latest in harvest-aid technology." This is indeed a major accomplishment!

Acknowledgements

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References

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