

PERFORMANCE OF FINISH™ (ETHEPHON AND CYCLANILIDE) AS A BOLL OPENER AND DEFOLIANT IN AUSTRALIAN COTTON

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Abstract

Finish™ (ethephon 480 g + cyclanilide 60 g a.i./l) has been tested in Australia since 1992/93. Finish has provided faster defoliation than commercial standards and equivalent boll opening when compared to Prep® (ethephon 720 g a.i./l). Split applications of Finish have improved defoliation when applied to vigorous or heavily lodged crops.

Introduction

Australia produces a cotton crop of 200 - 370,000 ha with a large proportion, (70 - 85 %) grown with irrigation. The high yielding crops produced, require rapid defoliation and boll opening once the crop is physiologically mature. No currently registered product can effectively perform both operations. Finish has been evaluated and compared to the commercial standards in fourteen small plot and thirteen aerial trials across all major cotton growing regions. Application conditions have ranged from ideal (mean daily temperatures > 25 °C) to adverse (mean temperatures < 18 °C).

The current harvest aid approach for irrigated cotton generally involves two spray applications. The first of a defoliant or a defoliant plus a low rate of ethephon, followed 7 - 10 days later by ethephon alone at a boll opening rate or ethephon plus additional defoliant. Dropp[#] (thiadiazuron), Dropp Ultra[#] (thiadiazuron + diuron) and Harvade[#] (dimethipin) are the major defoliants currently used.

Discussion

Defoliation

Finish has been compared with both Prep and commercial defoliant standards over four years (Figure 1). The mean of all trials conducted has shown Finish to be consistently superior to equivalent rates of ethephon in Prep and also superior to the standard defoliants. Although the absolute level of defoliation in many cases is not increased, Finish applications are characterised by reaching this level in a shorter time. Individual trials have often demonstrated picking could commence 3 - 7 days earlier.

In vigorously growing crops, where limited natural defoliation occurred during the trial, Finish displayed a

larger advantage over both Prep and the standards (Figure 2). In mature crops this advantage over Prep was reduced but Finish was still superior to the standards.

Comparison under different temperature regimes demonstrated greater advantage to Finish under cool temperature conditions compared to both Dropp or Harvade (Figure 3). It should be noted that although Finish outperformed the standard cool weather options, it is not temperature insensitive.

Boll Opening

Finish was compared to equivalent rates of ethephon in Prep in all trials. Although ethephon rate trends were often present, the addition of cyclanilide had negligible effect on boll opening (Figure 4).

Large scale aerial comparisons of Finish and standard defoliant / boll opening mixtures in 1995/6 showed Finish to be at least equal in speed and completeness of boll opening.

Split Applications

Although the majority of mature crops treated with Finish have been rated as pickable after a single application, instances of rank or lodged crops have shown some advantage to the use of Finish at 2.0 l/ha followed by a further 1.0 l/ha after 4 - 7 days. This use pattern has helped in the removal of the lower leaf ' skirt ' often associated with lodged crops. Finish still confers an advantage in this situation due to an increased initial speed of defoliation allowing the second application to occur more rapidly and subsequently earlier picking.

Summary

Finish was developed to enable one pass defoliation and boll opening. The results obtained in Australia indicate an improvement in defoliation compared to commercial standards across a wide range of crop and climatic conditions. Finish still performs well under adverse temperatures and appears less sensitive than current options. Finish has maintained the established boll opening properties of Prep whilst providing more consistent and thorough defoliation.

The commercial release of Finish in Australia will allow growers' to further improve their harvest aid management and achieve their primary objective of an earlier pick.

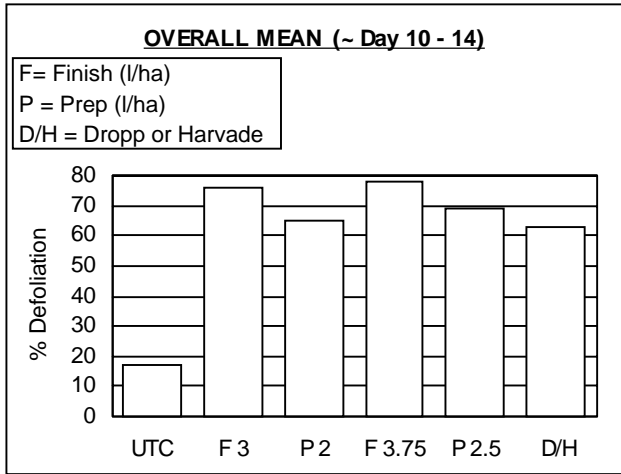


Figure 1. Mean defoliation 14 Trials 1992/3 - 1995/6.

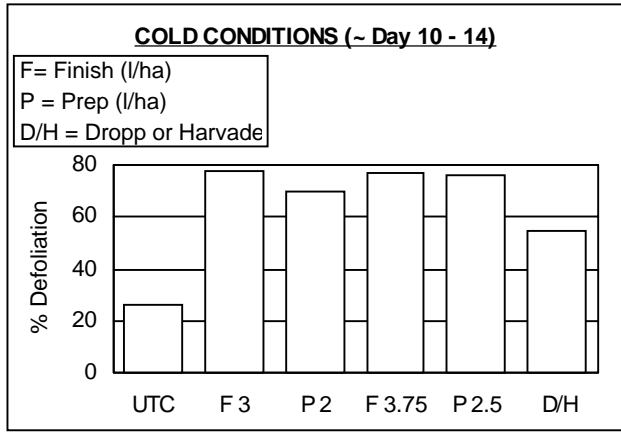


Figure 3. Mean defoliation ' cold ' 6 Trials 1992/3 - 1995/6.

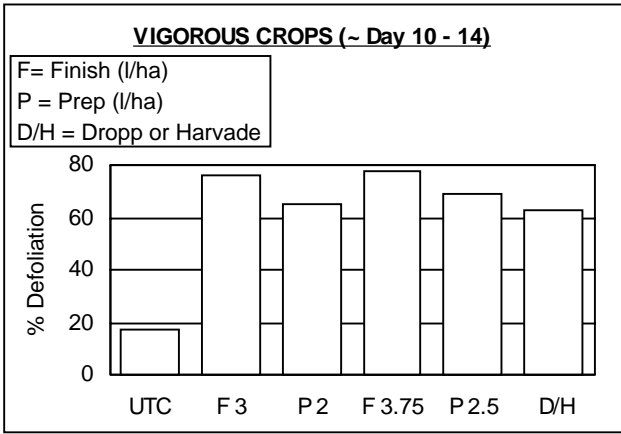


Figure 2. Mean defoliation ' vigorous ' 9 Trials 1992/3 - 1995/6.

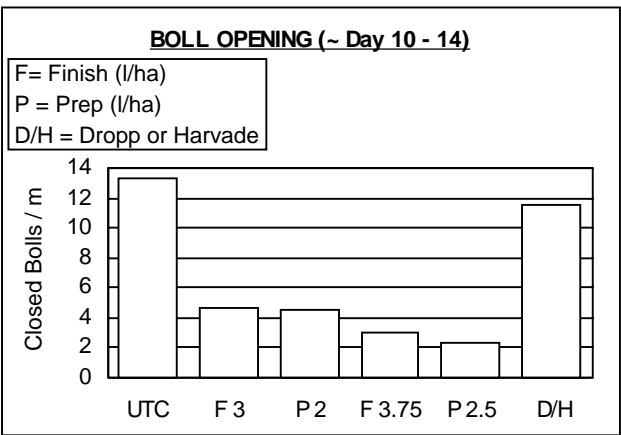


Figure 4. Boll opening 10 Trials 1992/3 - 1995/6.

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