

**EXPERIENCE IN ARGENTINA WITH FINISH
(CYCLANILIDE + ETHEPHON)
BOLL OPENER AND DEFOLIANT**

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Abstracts

During the last 4 years, results obtained in Argentina with FINISH® (60 g Cyclanilide + 480 g Ethephon ai per liter) as boll opener and defoliant in different locations of the Argentinean cotton area, have clearly demonstrated that it performs better and defoliates faster compared with PREP® as boll opener plus DROP 25 defoliant (which is the most common combination used) or with DROP (thidiazuron) alone. FINISH® has also produced a longer regrowth inhibition period and is more independent of temperature.

Introduction

The function of ethylene plant hormone is very well-known in the dehiscence process, and was explained by Dr T. Szoeki from Rhone Poulenc Inc. last year (International Experience with FINISH® - 1996 Cotton Beltwide Conference - Cotton Physiology Conference).

FINISH® is a single formulation of two active ingredient compounds, ethephon, which maintains ethylene concentration in the plant at appropriate levels to promote the boll opening and maturation and cyclanilide which inhibits the synthesis and transport of auxin, thus increasing the leaf-abscission response to ethephon which is normally not significant at doses applied for boll opening.

In Argentina, the cotton area has grown more than 100% in the last 3 years. This phenomenon increases the existing problem of high costs and the lack of manpower to carry out manual harvesting (which five years ago represented more than 80%) This situation has produced a fast change to the mechanical harvesting which today represents 90% of the area grown. As a consequence, the need for a single product to promote earlier concentrated boll opening and defoliation was urgent.

Materials and Methods

In this paper we report results of 30 tests made during 1990 to 1994. Tests were carried out in most important local commercial cotton varieties. Soils in the Argentinean cotton area are loam to sandy loam with 2 to 4% of organic matter.

Plot sizes were 3 rows (1m between each row) by 30m (60 sq mt). There were 4 replicates per treatment. Dose rates of FINISH® ranged from 2.0 lt to 3.5 lt / ha of formulated product. Chemical standards were DROP(thidiazuron 50% wp) + PREP and DROP alone. Applications were made when roughly 40-50% of total bolls were opened. Spray volume was 200 lt/ha. Defoliation was visually estimated. Results were analyzed for statistical significance as appropriate.

Results and Discussion

Results presented are the average of 30 tests.

Defoliation at 2.5 to 3.0 l/ha of FINISH was more effective and faster.

At the dose rates of 2.5 to 3.0 l/ha of FINISH® the boll opening was very effective and faster. This is important for the Argentinean conditions because harvest is normally close to the rainy season.

The micronair is not affected by the use of bolls openers. In many trials regrowth inhibition was observed and regrowth started at the bottom of the plants 14 days after application..

Conclusions and Recommendations

Results obtained in four years of trials and two years in the market with good success indicate that FINISH® is an excellent cotton harvest-aid. The Argentinean results are consistent with those generated in other cotton areas of the world.

FINISH® was also observed to defoliate *Ipomoea spp*, *Bidens spp*, *Amaranthus spp*, *Tagetes minuta*, *Datura ferox*, and *Sida rhombifolia*. This is a very important advantage offered by FINISH® and by no other product in the market is that it defoliates weeds. It is now well recognized by growers in Argentina that areas with weed problems treated with FINISH® can now be harvested, without losing fiber quality.

Below 17° we recommend to wait for warmer weather.

Higher indicated rates are aimed at rank crops

Acknowledgments

Many thanks to Dr Tibor Szoeki who has assisted us during these 5 years to reach the success with FINISH in the Argentinean cotton market.

Table 1: Defoliation expressed in percentage at 7 and 14 days after application (DAA) with FINISH®

| TREATMENTS | RATES F. PROD/HA | % DEFOLIATION | |
|------------|------------------|---------------|--------|
| | | 7 DAA | 14 DAA |
| CHECK | - | 47.5 | 69.0 |
| FINISH® | 2.01 | 85.5 | 88.5 |
| FINISH® | 2.51 | 95.0 | 97.5 |
| FINISH® | 3.01 | 97.5 | 99.0 |
| FINISH® | 3.51 | 98.0 | 100.0 |
| DROPP+PREP | 0.15kg+2.01 | 82.5 | 96.0 |
| DROPP | 0.2kg/ha | 62.5 | 82.5 |

Table 2. Cotton boll opening with FINISH®

| TREATMENTS | RATE FORM PROD | 0 | 5 | 13 | 19 |
|------------|----------------|------|------|------|------|
| | | DAA | DAA | DAA | DAA |
| CHECK | - | 32.4 | 45.1 | 68.0 | 86.7 |
| FINISH® | 2.01 | 32.5 | 58.6 | 92.4 | 97.8 |
| FINISH® | 2.51 | 29.8 | 69.8 | 93.8 | 97.5 |
| FINISH® | 3.01 | 33.0 | 70.2 | 95.5 | 99.4 |
| FINISH® | 3.51 | 30.7 | 70.6 | 96.3 | 99.4 |
| DROPP | 0.2 kg | 31.0 | 51.5 | 64.6 | 88.7 |
| DROPP+PREP | 0.15kg/+21 | 30.9 | 58.6 | 83.4 | 97.7 |

Table 3 Gin turn out

| TREATMENTS | RATE FORM PROD | 0 | 7 | 19 |
|------------|----------------|------|------|------|
| | | DAA | DAA | DAA |
| CHECK | - | 41.2 | 43.0 | 44.4 |
| FINISH® | 2.01 | 41.2 | 45.0 | 42.6 |
| FINISH® | 2.51 | 41.1 | 45.0 | 44.1 |
| FINISH® | 3.01 | 41.6 | 43.8 | 41.9 |
| FINISH® | 3.51 | 41.3 | 45.5 | - |
| DROPP | 0.2kg/ha | 42.0 | 44.4 | 43.7 |
| DROPP+PREP | 0.15kg+2.01 | 41.6 | 44.0 | 45.1 |
| Average | | 41.4 | 44.4 | 43.6 |
| S.D. | | 0.32 | 0.86 | 1.19 |
| V.C. % | | 0.8 | 1.9 | 2.7 |

No statistical differences

Table 4 Micronair values at Harvesting

| TREATMENTS | RATE FORM PROD | 0 DAA |
|------------|----------------|-------|
| CHECK | - | 4.9 |
| FINISH® | 2.01 | 4.9 |
| FINISH® | 2.51 | 5.0 |
| FINISH® | 3.01 | 4.8 |
| FINISH® | 3.51 | 4.9 |
| DROPP | 0.2 kg | 5.0 |
| DROPP+PREP | 0.15kg +2.01 | 5.0 |
| Average | | 4.93 |
| S.D. | | 0.08 |
| V.C. % | | 0.02 |

Table 5 - FINISH recommended rates

| TEMPERATURE | FINISH RATE L /HA |
|-------------|-------------------|
| above 35° | 1.5-2.0 |
| 35° to 31° | 2.0-2.5 |
| 30° to 26° | 2.5-3.0 |
| 25° to 21° | 3.0-3.5 |
| 20° to 17° | 3.5-4.0 |