# THE STRATEGY OF DELAYED PLANTING WITH RAPID FRUITING COTTON FOR THE LOWER RIO GRANDE VALLEY OF TEXAS

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## Abstract

Unusual spring weather patterns in 1997 delayed cotton planting in most of the Lower Rio Grande Valley of Texas. However, 22 fields of early- to medium early-maturing varieties located in several irrigated production areas produced yields higher than the historical averages for these areas. Also, field observations indicated that delayed planting resulted in avoidance of a significant proportion of the spring colonizing boll weevil population. Based on yields obtained during the abbreviated season, and observations of spring boll weevil populations, the authors suggest that further investigation of a true short-season production system incorporating uniform delayed planting with newly developed rapid fruiting varieties may facilitate cotton production and boll weevil population management in the subtropical Lower Rio Grande Valley.

## Introduction

The typical cotton planting season in the Lower Rio Grande Valley of Texas of mid-February to mid-March has been established based primarily on agronomic factors. Although State of Texas regulations allow planting as early as 1 February, most producers delay planting to avoid the potential for frost injury. Likewise, planting dates after mid-March have historically resulted in reduced yields. However, the availability of new early maturing varieties may facilitate an agronomically acceptable delayed planting production strategy. This paper reports yield and boll weevil population observations made to document the effects of widespread delayed planting in response to unusual weather patterns during the spring of 1997.

## Materials and Methods

Cotton planting in the Lower Rio Grande Valley in 1997 was delayed by a period of unusually cool, wet weather through the month of March. This weather-delayed planting facilitated study of the effects of delayed planting on modern rapid fruiting cotton varieties. A total of 22 fields were planted to cv. >Texas 121' (very early maturing, rapid fruiting, glabrous), cv. >Texas 224' (medium early maturity, segregating for pubescent and glabrous leaves and stems), or cv. >DPL 5409' (medium maturity, smooth leaf). With the exception of two fields planted 30 April and 5 May, all fields were planted between 25 March and 25 April. These fields were located in irrigated production areas near Mercedes, Hargill and Alamo in Hidalgo County, and Santa Rosa and San Benito in Cameron County. The slightly more than 550 total acres were irrigated 1 to 3 times, and averaged 2 irrigations per field. An average of 8 insecticide applications (5 in-season for boll weevil, 1 for plant bugs, 1 for aphids, and 1 for bollworm/budworm complex) were applied, Table 1.

Trapping data and observations on colonizing boll weevil population levels were also obtained from commercial cotton plantings near Russelltown, south of San Benito. Fields were sampled weekly using a mechanical sampler (Raulston *et al*. 1997).

## Results

The 22 fields were defoliated an average of 115 days after planting, and harvested an average of 126 days after planting. All fields were harvested by 24 August, with all but one field harvested before 22 August. The earliest field was harvested on 3 August. Thus, the delayed planting did not conflict with the traditional 1 September stalk destruction deadline. Yields ranged from 750 to 1,385 lbs. of lint per acre. The 15 fields of cv. >Texas 121' averaged 999 lbs., 2 fields of cv. >Texas 224' averaged 895 lbs., and 5 fields of cv. >DPL 5409' averaged 833 lbs. of lint per acre, Table 2. The overall average yield was 952 lbs. of lint per acre, which is higher than the historical average cotton yield for the region, Table 1.

Trapping data for 1997 indicated that weevil response to traps in the spring peaked in mid- to late-March. After late April weevils were seldom captured even though fruiting cotton was not yet available. Concurrent sampling activities confirmed that population levels of colonizing boll weevils were extremely low (10 to 20 per acre), and weevil population levels remained low until emergence of the second generation (Spurgeon and Raulston, unpublished data). These observations are consistent with data obtained from survival studies that indicate a prolongation of the host-free period and the relatively high temperatures typical of spring act to severely curtail boll weevil overwintering survival (Spurgeon and Raulston, unpublished data).

## Discussion

A boll weevil population management strategy of uniform delayed planting and short-season production has long been advocated, and this strategy has been successfully implemented in some production regions of Texas (Slosser

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1993, 1995; Slosser *et al*. 1994). A previous investigation of an integrated short-season production system in the Lower Rio Grande Valley of Texas (Heilman *et al*. 1979) reported benefits of reduced irrigation, pesticide, and fertilizer inputs without corresponding reductions in yield. Still, many producers in this region have not adopted this practice because historical yield records have indicated higher yields were associated with earlier planting dates of traditional varieties. Our observations suggest that a cotton production system incorporating a delayed uniform planting strategy is agronomically acceptable for subtropical Texas, and may complement other boll weevil management tactics. Development of this and other new strategies for subtropical Texas are needed because participation of this region in eradication and other organized areawide suppression programs are not anticipated in the foreseeable future (Scott and Lukefahr 1997).

Adoption of a uniform delayed planting strategy cannot however be advocated without further research. Successful adoption of this strategy will likely require changes in production practices; particularly in fertilization, irrigation, and insect control practices. Maintenance of yield averages with reduced irrigation inputs could supply additional benefits because of the dwindling water resources of the geographical region. There are also no data to indicate the scale of adoption necessary for successful implementation of a delayed planting strategy. The issue of scale may be an important consideration because adoption of similar strategies in other production regions have been variable (Bevers and Slosser 1992). This information will be necessary for evaluation as well as implementation, and would be useful in designing and evaluating other areawide management strategies. In conclusion, further research to define required management adjustments and procedures for evaluation of this strategy are warranted.

## Disclaimer

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Table 1. Average yield, days from planting to defoliation and harvest, average number of sprays for boll weevil, plant bugs, aphids, bollworm/budworm on 22 selected cotton fields.

| Yield lbs lint/A | Days After Planting | | Average No. Sprays* | | | | |
|---|---|---|---|---|---|---|---|
| | | | Boll W. | PB | A | BW/BW | Total |
| 952 | 115 | 126 | 5 | 1 | 1 | 1 | 8 |

*Boll W= Boll weevil, PB= Plant bugs, A= Aphid BW/BW= Boll worm/budworm

Table 2. Yield of three cotton varieties when planted from March 25 to May 5, 1997 in the LRGV.

| Variety | Number of Fields | Yield - lbs lint/A |
|---|---|---|
| Texas 121 | 15 | 999 |
| Texas 224 | 2 | 985 |
| DP5409 | 5 | 833 |