

**ANALYSIS OF A SECOND-YEAR EVALUATION  
OF TRANSGENIC COTTON VARIETIES IN  
DELICIAS, CHIHUAHUA, MEXICO**

**Juvencio González-García,  
Arturo J. Obando-Rodríguez,  
Sóstenes Delgado-García,  
José Alvaro Anchondo-Nájera,  
José Eduardo Magaña-Magaña  
and Rogelio Torres-Ginez**  
Faculty of Agricultural and Forestry Sciences  
University of Chihuahua

**Abstract**

Transgenic cotton varieties have expanded their demand in Delicias, Chih., México. Cotton growers planted 18 ha of Bt cotton varieties in 1998. In 1999, they planted 841.50 ha of Bt cotton varieties from a total of 2121.50 ha. This was due to both the presence of insect pests as tobacco budworm and pink bollworm and the improvement of conventional cotton varieties.

**Introduction**

The Mexican government allows farmers to plant only 40% of transgenic cotton on the total cotton surface. We do not know the reasons for that decision. Today, the most important problem in cotton crop production is the incidence of insect pests such as the bud/bollworm complex, the pink bollworm, the boll weevil, and others that seriously affect the yields. However, results obtained in Delicias, Chih., México the two last years have demonstrated that transgenic crops could be the solution in an IPM program. In addition, it has been observed that Bt cotton varieties tend to yield more than their recurrent parents (González et al., 1999a, 1999b) (Table 1). The objective of this research was to evaluate the yield of two transgenic cotton varieties and five non-transgenic cotton varieties in the Region of Delicias, Chihuahua, México.

**Materials and Methods**

Seven cotton varieties were planted at the Experimental Station of the Faculty of Agricultural and Forestry Sciences, University of Chihuahua in Delicias, Chih., México in 1999. These varieties were categorized into transgenic Bt cotton (DP-33B and DP-90B), and non-transgenic Bt cotton (Stoneville 239, Stoneville 474, Sure Grow 125, DP-5415, and Fiber Max 963). Cotton yields (ton/ha and bales/ha) were considered at the time of harvesting. The experiment was analyzed as a randomized complete block design with four replicates and used Tukey's Multiple Range Test at the 0.05 level of probability. The useful plot consisted of two rows, 6

m in length, spaced 0.90 m apart with five plants m<sup>-2</sup>. Weeds and insect control, fertilizer management, and furrow irrigation were given as needed according to Delicias Region cotton production recommendations.

**Results and Discussion**

Table 1 shows that transgenic varieties yield more than the conventional variety (DP-5690). This result agrees with the information in Table 2. In general, it is possible to observe how the transgenic varieties are the best in both years. Additionally, Bt cotton (DP-35B) overcomes the yield of their recurrent parent (DP-5690) (Table 1). It probably is due to the double selection practiced during the backcrossing process to incorporate the Bt gene and to recover the entire genotype of the recurrent parent. As a consequence we could think that transgenic cotton varieties are a very good alternative in cotton production. It also could be true under low and high pink bollworm and bud/bollworm infestation.

**Conclusions**

1. For a two-year evaluation, DP-90B and DP-33B demonstrate to be a very good alternative for cotton production in Delicias, Chihuahua, México.
2. Bt cotton varieties are useful in cotton production with low or high pink bollworm and bud/bollworm infestation.

**References**

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Table 1. Cotton yield. Delicias, Chihuahua, México. 1998.

Variety	Ton/ha	Bales/ha
DP-33B	6.084 a	10.139 a
DP-90B	5.842 ab	9.737 ab
DP-32B	5.540 ab	9.234 ab
DP-35B	5.334 b	8.889 b
DP-5690	4.699 c	7.831 c

Means within a column followed by the same letter are not significantly different.

Table 2. Cotton yield. Delicias, Chihuahua, México. 1999.

<b>Variety</b>	<b>Ton/ha</b>	<b>Bales/ha</b>
Stoneville 239	4.0749 a	6.7916 a
DP-90B	4.0570 a	6.7617 a
DP-33B	3.9852 a	6.6420 a
Sure Grow 125	3.7766 a	6.2944 a
Stoneville 474	3.4554 ab	5.7591 ab
DP-5415	3.1828 ab	5.3046 ab
Fiber Max 963	2.6288 b	4.3814 b

Means within a column followed by the same letter are not significantly different.