

**ANALYSIS OF THE BOLLGARD®  
COTTON IN CHIHUAHUA MEXICO**

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**Conclusions**

1. Surface harvested of cotton in Chihuahua decreased from 1998 to 2000.
2. Surface harvested of Bt cotton in Chihuahua increased from 1998 to 2000.
3. Cotton growers obtained higher benefits when they used Bt technology.

**Abstract**

Bt cotton varieties have expanded their demand in Chihuahua, México since 1998. This was due to the presence of insect pests such as the complex tobacco bud/bollworm and pink bollworm. Cotton growers planted 57,185 ha total (1,000 ha of Bt cotton) in 1998, 33,013 ha total (6,000 ha of Bt cotton) in 1999, and 33,084 ha total (9,000 ha of Bt cotton) in 2000.

**Introduction**

Mexican government allows to plant only 40% of transgenic cotton of the total surface. We do not why for that decision. The incidence of insect pests such as the complex tobacco bud/bollworm, pink bollworm, and others, favored that chihuahuan cotton growers decided to use Bollgard® varieties. Thus, the surface of transgenic varieties planted in 1998 represented 1.75% of the total surface, while in 2000 this value became 27.20% (Table 1). Besides of the tolerance of Bt cotton varieties to some insect pests mentioned above, the superior yield of those compared to their recurrent parents and conventional varieties (González et al., 1999a, 1999b) were the main reasons to increase the surface planted with Bollgard® cotton. The purpose of this research was to review the evolution and some aspects related to the use of Bt cotton varieties in Chihuahua, México since 1998.

**Material and Methods**

Data were collected by region in Chihuahua, México from 1998 to 2000. we started in 1998 because of this year marked the beginning of the Bt cotton in Chihuahua. The main aspects considered here were yield (ton/ha), surface harvested (ha), average rural price (\$/ha, Mexican pesos), and benefits (\$/ha, Mexican pesos) (Tables 1 and 2). Benefits were calculated as the difference between the harvest value and costs of production. Costs were estimated considering the Bollgard® technology cost, seed cost, and the cost of the insect pest control. Harvest value was estimated based on fiber and seed profits. Transgenic varieties used were NuCOTN 35B, NuCOTN 33B, DP 90B, DP 5415B, DP 20B, Sure grow 125B, and Agrevo 989. Non Bt varieties used were DP 5690, DP 90, DP 20, and Acala 1517. Most growers used refuges 80:20.

**Results and Discussion**

General information about surface harvested of cotton from 1998 to 2000 in Chihuahua, México appears in Table 1. total surface harvested went down from 1998 to 2000 because of the low rural price and marketing problems. However, the surface planted and harvested of Bt cotton increased, being this 1.74% in 1998, 18.17% in 1999, and 27.20% in 2000. the main reason for this change was the incidence of tobacco bud/bollworm and pink bollworm in Chihuahua, México. According to the economic analysis (in Mexican pesos), when Bt cotton and non Bt cotton were compared, the benefits of using the Bollgard® technology were higher than the use of non Bt cotton in all regions considered in this study (Table 2). It is important to mention that the production costs were higher with Bt technology when lepidopteran pests were not present in a specific region. In spite of that consideration, benefits were superior by using Bollgard® cotton because of the higher yields obtained with that technology compared to non Bt varieties.

**References**

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Table 1. Cotton surface harvested (ha) in Chihuahua. México.

<b>Year</b>	<b>Cotton</b>	<b>Surface (ha)</b>	<b>%</b>
1998	Bt	1,000	1.74
	Non Bt	56,186	18.17
1999	Bt	6,000	18.17
	Non Bt	27,186	
2000	Bt	9,000	27.20
	Non Bt	24,084	

Source: Department of Agriculture of Chihuahua.2000

Table 2. Average benefits of using Bt cotton compared to non Bt cotton.

<b>Region</b>	<b>Thousands \$/ha</b>		
	<b>Bt cotton</b>	<b>Non Bt cotton</b>	<b>Diff</b>
Jiménez (98-00)	21.592	19.189	2.403
Delicias (99-00)	16.427	11.427	4.679
Ojinaga (98-00)	16.100	14.111	1.989
Juárez (98-00)	19.087	16.161	2.928
Ascensión (99-00)	14.325	10.132	4.143

Source: Department of Agriculture of Chihuahua. 2000.