FRUIT MAPPING OF TRANSGENIC AND NON-TRANSGENIC COTTON CULTIVARS IN DELICIAS, CHIH., MEXICO

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Abstract

Final boll distribution by fruiting position was determined on DP 90B, DP 33B, ST 239, SG 125, ST 474 and FM 963 cotton varieties. All varieties had a low boll-retention on first fruiting position (FP-1), with the exception of ST 239, and a large 95 % of FP-1 zone (except SG 125).

Introduction

Transgenic cotton cultivars have been used during 1998 and 1999 in Central Chihuahua, Mexico. Environmental and pest pressures were high during 1999, lowering the yield of most cotton varieties. Physical and biological pressures affect the boll distribution of transgenic and conventional cotton cultivars in the area.

Objective

Evaluate the boll distribution by node and position of main cotton cultivars in Delicias, Chihuahua, México.

Materials and Methods

Final fruit mapping of two transgenic (DP 90B and DP33B) and four conventional (ST 239, SG 125, ST 474 and FM 963) cotton varieties was done at the agricultural experimental station of the Facultad de Ciencias Agrícolas de la Universidad Autónoma de Chihuahua. The crop was produced under irrigation, at 5-6 plants m^{-2}. Each cultivar was sampled after defoliation on three different sites. From each site, five consecutive plants (Guthrie and Kerby, 1993) were harvested and their mature-boll load recorded by node and fruiting position.

Results and Discussion

Average percent boll retention by fruiting position is presented on Table 1. DP 90B and DP 33B as well as two conventional cultivars (SG 125 and ST 474) had a high proportion of bolls from vegetative branches. It is undesirable to have more than 10 percent bolls from vegetative branches (Plant et al., 1994). With the exception of ST 239, there was a low percent boll retention at FP-1 for all cultivars. Table 2 shows that the number of mainstem nodes that accounted for 95 percent of FP-1 bolls was high to very-high for all varieties, except SG 125. In San Joaquín Valley, a good FP-1 95% length is 11.5 nodes, with less than 10 nodes possibly meaning insufficient plant vigor and more than 13 probably insufficient early boll retention (Plant et al., 1994). Correct interpretation of the length of this zone, however, depends also on stand density (Guthrie and Kerby, 1993).

Conclusions

Conventional cotton ST 239 was the only coton cultivar that showed near to satisfactory ball retention in the first fruiting position. All varieties, with the exception of SG125, showed a long FP-1 95% zone.

References

Guthrie, D, and T. Kerby. 1993. The cotton diary. Cotton Physiology Today 4 (8), September 1993.

Plant, D., T. Kerby and M. Keeley. 1994. Final plant mapping: Improving next year´s productivity. California-Arizona Cotton, Nov/Dec 1994. p 16-18.

Table 1. Boll distribution by fruiting position of transgenic and non-transgenic cotton cultivars.

	Percent Total Bolls			
Cultivar	**VB**	**FP-1**	**FP-2**	**FP-3**
DP 90B	22	47	22	9
DP 33B	37	48	14	1
ST 239	7	60	25	8
SG 125	22	40	29	9
ST 474	26	46	23	15
FM 96	7	45	34	14

VB = Vegetative branches
FP = Fruit position on sympodial branches

Table 2. Size of the 95 percent zone for FP-1

Cultivar	95% of FP-1 (Number of Nodes)
DP 90B	14
DP 33B	15
ST 239	13
SG 125	10
ST 474	14
FM 963	15

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