

**RESPONSE OF COTTON CULTIVARS
TO SILVERLEAF WHITEFLY AND ITS
RELATION TO YIELD,
IN YAQUI VALLEY SONORA, MÉXICO**

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Abstract

Eight cultivars were tested in 1998 to assess Silverleaf Whitefly incidence and its effect on lint and seed cotton yield. Paymaster 1277 and CIANO CÓCORIM-92 were the least attractive varieties for the Silverleaf Whitefly, at the same time DELTAPINE 5432 and SURE-GROW 125 were the most susceptible. The cultivars with the greatest production potential are DELTAPINE 9775 and DELTAPINE 5432; meanwhile the regional check was 5th, and however no significant differences in yield were detected when comparing varieties. No correlation was detected between production potential and preference by Silverleaf Whitefly.

Introduction

Private cotton companies periodically release new varieties with a AMore Productive@ label than current cultivars. In regions like Sonora, where Silverleaf Whitefly (SW) problem exists, it is necessary to count with susceptibility information to that plague, to make more assertive recommendations of new varieties. The current test has as objective to evaluate the variety performance of new Upland cotton varieties, under natural SW infestation conditions in the Yaqui Valley, Sonora, México.

Materials and Methods

This project was carried out in Yaqui Valley, Sonora, in the 1998 season. DELTAPINE 5690 (D5690), DELTAPINE 5432 (D5432), DELTAPINE 9775 (D9775), DELTAPINE 5409 (D5409), SURE-GROW 125 (S125) and PAYMASTER 1277 (P1277) were evaluated in comparison with the commercial checks: DELTAPINE 5415 (D5415) and CIANO CÓCORIM-92 (C92), chosen for their higher yield, adaptability and contrast in their fruiting cycle. An experimental design of randomized blocks with four replications was used. The experimental parcel size was of 4 rows of 10m length with 1m separation between rows.

Silverleaf Whitefly was monitored weekly from the beginning of flowering and until the first open bolls,

samples were taken from the fifth leaf of 7 plants by plot to determine incidence and accumulation of adults throughout the flowering period.

Insect management involved three aerial applications: the first (June 12) 2 lt./ha of Endosulfan + 0.5 kg/ha of Applaud against Boll weevil and Silverleaf Whitefly; the second (June 20), 250 lt./ha of Rescate + 0.5 kg/ha of Applaud against Boll weevil and Silverleaf Whitefly; the last (July 7), 2.5 kg/ha of Endosulfan + 250 lt./ha of Rescate, against Boll weevil and Silverleaf Whitefly.

Yield estimation was obtained in 10 m² plots (two central 5m rows). In addition to lint and seed cotton yield, the following variables were estimated: boll size, lint percent, seed index, as well as fiber length and strength and micronaire index. The hypothesis of no significant difference among genotypes was tested at the 0.05 probability level. Afterwards least significant differences were obtained (LSD, 0.05 level) when the analysis so indicated.

Results and Discussion

Silverleaf Whitefly

High incidence characterized the 1998 cycle, with levels superior to those observed in 1996 and 1997; this high infestation implied the necessity to apply pesticides for its control in most commercial fields planted in February and March. The highest levels were recorded in late June, when the plant was in boll peak, the critical damage period. Genotypical differences were detected in adult incidence of SW (Table 1), at the sixth week of blooming, was the highest incidence. DELTAPINE 5415 and DELTAPINE 9775 were the cultivars that presented the greatest incidence, meanwhile PAYMASTER 1277 and DELTAPINE 5690 presented the lower level of infestation, and in the case of PAYMASTER 1277, the infestation began later and its slope was lower than the other varieties.

In reference to SW adult accumulation, significant differences were detected in the different periods (Table 2); SURE-GROW 125 presented the highest values in six out of seven evaluated periods, four of them presented the most significant differences. PAYMASTER 1277 and CIANO CÓCORIM-92 showed the lowest accumulation of SW, as Hernández and Pacheco reported it, in 1996 and 1997.

Yield

DELTAPINE 9775 y DELTAPINE 5432, of intermediate cycle, presented the highest yields (Table 3), almost 1,600 kg/ha of cotton lint (more than 7.4 bales/ha). On the other hand, the regional check DELTAPINE 5415 took the 5th place; CIANO CÓCORIM-92 and PAYMASTER 1277, got the 4th and 6th places, respectively, however the analysis of variance did not detected significant differences for lint and seed cotton yield. It is convenient to address the fact that in the last two cycles, Hernández and Pacheco reported the

least attractive varieties for SW, were CIANO CÓCORIM-92 and PAYMASTER 1277, and they were not also the ones with the highest yield. SURE-GROW 125 and DELTAPINE 9775 can stand a higher level of adults of SW without this making a significant influence in their yield potential.

Summary

DELTAPINE 5432 and SURE-GROW 125 were the most preferred varieties for Silverleaf Whitefly, and the least attractive cultivars for that pest were PAYMASTER 1277 and CIANO CÓCORIM-92. There were no significant differences in yield when the varieties were compared. No association between preference by Silverleaf Whitefly and yield was observed.

References

Hernandez Jasso, Arturo y Juan J. Pacheco Covarrubias. 1997. RESPUESTA DE NUEVAS VARIEDADES DE ALGODONERO A LA MOSQUITA BLANCA DE LA HOJA PLATEADA (*Bemisia argentifolii* BELLOWS & PERRING), EN EL VALLE DEL YAQUI, SON. 1997. In MOSQUITA BLANCA EN EL NOROESTE DE MÉXICO 1997. Memoria Científica Núm. 5. CIRNO-INIFAP.

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Table 1. Incidence of adults of Silverleaf Whitefly in cotton cultivars. Yaqui Valley, Sonora, México 1998.

Variety	Blooming Week							
	1	2	3	4	5	6	7	8
D5432	2.0	2.3	6.5	9.8	13.8	19.5	94.5	47.3
S125	2.0	2.8	6.0	14.0	31.5	26.3	89.3	46.0
D5690	1.0	3.3	3.5	11.5	14.8	16.5	85.3	37.8
D9775	0.5	2.8	2.8	10.5	19.5	32.0	80.0	36.8
D5409	1.0	3.5	3.8	8.0	9.5	20.5	74.8	35.0
D5415	2.0	3.0	5.3	8.3	17.3	36.8	74.3	35.0
C92	2.5	3.5	4.5	9.3	17.3	28.5	70.8	32.0
P1277	1.0	1.5	3.5	9.0	10.8	16.8	50.8	26.8
Average	1.5	2.8	4.5	10.0	16.8	24.6	77.4	37.0
L. S. D. (0.05)	NS	NS	NS	NS	NS	8.8	NS	NS

NS= Non significant to 0.05 probability level

Table 2. Accumulation of adults of Silverleaf Whitefly in cotton cultivars. Yaqui Valley, Sonora, México. 1998.

Variety	Blooming Week						
	1-2	1-3	1-4	1-5	1-6	1-7	1-8
S125	4.8	10.8	24.8	56.3	82.5	171.8	217.8
D5432	4.3	10.8	20.5	34.3	53.8	148.3	195.5
D9775	3.3	6.0	16.5	36.0	68.0	148.0	184.8
D5415	5.0	10.3	18.5	35.8	72.5	146.8	181.8
D5690	4.3	7.8	19.3	34.0	50.5	135.8	173.5
C92	6.0	10.5	19.8	37.0	65.5	136.3	168.3
D5409	4.5	8.3	16.3	25.8	46.3	121.0	156.0
P1277	2.5	6.0	15.0	25.8	42.5	93.3	120.0
Average	4.3	8.8	18.8	35.6	60.2	137.6	174.7
L. S. D. (0.05)	1.9	NS ⁽¹⁾	NS	NS	22.9	39.1	47.5

⁽¹⁾NS = Non significant to 0.05 probability level

Table 3. Incidence of adults of Silverleaf Whitefly and cotton yield. Yaqui Valley, Sonora, México. 1998.

	Variety	Weeks		Yield, kg/ha	
		AAF ¹	AAA ²	Lint	Seedcotton
1	D9775	5	4	1759	4325
2	D5432	5	5	1645	4143
3	S125	8	7	1631	3848
4	C92	4	5	1578	3835
5	D5415	3	6	1564	3785
6	P1277	0	0	1515	3665
7	D5409	1	0	1453	3463
8	D5690	4	3	1356	3380
	Average			1563	3805
	L. S. D. (0.05)			NS	NS
	C. V.(%)			14.8	14.0

¹ with above average fluctuations

² with above average accumulations