

“BRONZE WILT” IN THE 1998 MISSISSIPPI COTTON VARIETY TRIALS

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Abstract

In 1995, some cotton varieties showed symptoms of a sudden wilt complex on a wide scale across the Midsouth. This complex was termed “bronze wilt” or “copper top”. Some varieties were found to be more susceptible than other cultivars and it appeared that the short-season cultivars, that fruit early, were more susceptible to the complex. In 1998, the “bronze wilt complex” (BWC) was again observed throughout the Midsouth and was observed in varieties that were not thought to be susceptible. The 1998 Mississippi Cotton Variety Trials were rated for susceptibility. Ratings of the susceptibility were taken at the Delta Research and Extension Center, Stoneville, MS and at the Tribbett, MS locations. The results indicated that varieties from several seed companies were susceptible.

Introduction

In 1995, some commercial cotton varieties showed symptoms of a sudden wilt complex on a wide scale across the Midsouth. The symptoms have included wilting, reddening of stems and leaves, leaf and fruit shed, and a higher temperature of the leaf tissues. This complex was termed “bronze wilt” or “copper top” in the farm press. Some varieties were more susceptible than others, and it appeared that the short-season cultivars that fruit early were more susceptible. Susceptibility has been linked by some researchers to the presence of ‘TAMCOT SP-37’ in the genetic background. Differences in susceptibility have been associated with the soil type, fertility, and temperature (Bell, 1998; Tupper et. al., 1996). The symptoms appeared earlier and more severe on lighter textured soils. The exact cause of this complex has yet to be determined.

In 1998, the “bronze wilt complex” was again observed on a wide scale in the Midsouth and it was seen in varieties that were not thought to be susceptible. The objective of this study was to determine the severity and susceptibility of the cotton varieties in the Mississippi Cotton Variety Trials.

Materials and Methods

Ratings of the susceptibility were taken at the Stoneville and Tribbett locations. Each plot was rated between “0” and “5” with 0 indicating no symptoms, 3 indicating at least one wilted plant, and 5 indicating wide spread wilted plants within the plot. At both locations, the plot size was two 40-

foot rows on 40-inch row spacing. The soil type at the Stoneville location is a Bosket very fine sandy loam and this site was irrigated. The Tribbett soil type is a Forrestdale-like silty clay loam and was dryland. The first wilting plant was observed on 10 July 1998 in a ‘Paymaster 1220 RR’ plot at Stoneville, MS. In the weeks following, the symptoms appeared in other varieties with differing severities. Ratings were taken the second week of August at both locations.

Results and Discussion

Table 1 shows the mean ratings and lint yields of the twenty varieties with the highest bronze wilt ratings. The shaded varieties are those determined to have BWC. A total of 85 varieties were rated. Each variety determined to be susceptible did have TAMCOT SP-37 in its genetic background. Some of the susceptible varieties still yielded well in 1998. ‘Paymaster PM 1218 BG/RR’ led the variety trials in the Mississippi test even though it did show symptoms of the “bronze wilt complex”. Until a more definite cause is known and screening methods are developed, producers should be aware of the potential effects of “bronze wilt complex” in the varieties they choose to plant.

References

- Bell, A. A. 1998. Agrobacterium Bronzing and Wilt of Cotton: Epidemiology and Control. Abstracts World Cotton Research Conference-2. p. 268.
- Tupper, G. R., D. S. Calhoun, and M. W. Ebelhar. 1996. Sensitivity of Early-Maturing Varieties to Potassium Deficiency. Proc. Beltwide Cotton Conf. p. 625-628.

Table 1. Highest rated varieties for “Bronze wilt” complex in the Mississippi Cotton Variety Trials.

Variety	BWC rating (0-5)	Lint Yield (lb/A)
Texas 14	4.42	654
Paymaster (PM) 1215 BG	4.17	877
Stoneville 373	3.75	739
Dyna-Gro 205	3.67	649
PM 1210	3.58	906
PM 1220 BG/RR	3.17	746
PM 1220 RR	3.17	817
DPX 8C27	3.08	906
PM 1244 RR	3.00	849
PM H1215	3.00	834
PM 1218 BG/RR	2.75	1102
PM 1266	2.67	808
PM 1560 BG	2.58	1010
Fibermax 963	2.42	760
PM 1330BG	2.33	968
AgriPro AP 7114	2.17	833
Texas 300	1.92	668
SS 9802	1.83	821
SGX 890	1.58	1009
PSC 556	1.58	887
Shaded varieties determined susceptible		
C.V.	77.76	14.7
R-squared	0.67	0.70
LSD (.05)	0.77	89