

**THRIPS TOLERANCE ON SELECTED
COTTON CULTIVARS**
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Abstract

Cotton cultivars were evaluated for tolerance to thrips feeding. The cultivar BG 4740 had the highest mean number of total thrips per 5 plants with 106.1 and the lowest yield at 558.7 lbs/a. However, ST 373, which had the lowest mean number of total thrips at 38.9, had a moderately high lint yield of 740.5 lbs/a. The highest yielding cultivar was DPL 33B with 868.7 lbs/a and a mean number of total thrips of 64.4.

Introduction

Thrips (Thysanoptera) have been recognized as cotton pests for many years and are usually the first insect to attack newly emerged cotton (Burris et al. 1990). Watts (1937) found that 13 species of thrips in 10 genera attack cotton in South Carolina. The four species that most likely caused damage to cotton were the flower thrips, *Frankliniella tritici* (Fitch); tobacco thrips, *F. fusca* (Hinds); onion thrips, *Thrips tabaci* Lindeman; and the soybean thrips, *Sericothrips variabilis* (Beach). Burris et al. (1990), also found that these were the most common thrips species found on cotton in Louisiana.

Thrips feed by piercing the plant tissues and sucking the exuding sap. This can cause leaf mutilation, terminal bud damage and death (Hawkins et al. 1966). Therefore, thrips have the potential to reduce yield and delay maturity of cotton. However, Sadras and Wilson (1988) compared untreated cotton to aldicarb treated cotton and found that the untreated cotton recovered well from thrips damage. They discovered that leaf area and dry weights of the untreated cotton closely matched that of the treated cotton 60d to 80d after sowing. Morphological features of cotton, such as pubescence (Terry and Barstow 1988) and genotypic background that includes Empire (Hawkins et al. 1966) have been attributed to thrips resistance.

The objective of this study was to evaluate select cultivars for resistance to thrips injury and assess thrips damage by the use of current plant mapping techniques.

Materials and Methods

The study was conducted in Lonoke Co., Ar. in the summer of 1998. Sixteen cotton cultivars were compared in a

randomized complete block with 4 replicates. Plots consisted of 4 rows with each being 38 in x 50 ft. There were 25 ft fallow areas between blocks. Each cultivar in each block had an imidacloprid treated plot and a non-treated plot. Seeds were planted on 15 May and plants emerged about a week later. Adult and nymphal thrips were collected and counted on 27 May, 2 June, 8 June and 16 June using methods described by Burris et al. (1990). Visual damage assessment, plant height and number of nodes were measured on each sample date. Plant mapping was conducted throughout the summer to calculate percent square shed and cutout dates for each cultivar. All data were analyzed using analysis of variance (ANOVA), and means were separated with Duncan's multiple range test.

Results and Discussion

Temperatures in Arkansas were generally above average while summer precipitation was below normal in 1998. The resulting thrips populations in cotton were moderate when compared to previous years and may not have had a tremendous impact on cotton. The reduction of summer rainfall more than likely had a deleterious effect on yield. The lowest yielding cultivar in this study at 558.7 lbs/a, BG 4740, also had the highest mean number of total thrips/5 plants with 106.1 (Table 1). However, DPL 33B which exhibited the highest lint yield at 868.7 lbs/a, had a moderately high mean number of thrips of 64.4. Also, PM 1560BG (841.7 lbs/a) and PM 1330BG (826.3 lbs/a) both had a slightly higher mean number of total thrips than did DPL 33B at 71.1 and 69.0, respectively. This indicates that these cultivars may have the ability to recover from early season thrips damage. Recovery from thrips injury should be expected because the amount of growth reduction and tissue damage is rarely proportionally related to a reduction in yield (McNaughton 1983). However, BG 4740 may be an exception to this given its low yield. The cultivar's ability to recover is especially important in northern growing locations where there is a shorter growing season that may not allow time for adequate recovery, thereby reducing yields.

References Cited

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Table 1. Mean number of total thrips collected and mean yield for each cultivar at Lonoke Co., Ar.

| Cultivar | Mean no. of total thrips (5 plants) | Yield (lbs/a) |
|-----------------|--|----------------------|
| BG 4740 | 106.1 a | 558.7 d |
| PM1220 BGR | 77.1 ab | 717.7 abcd |
| BXN 47 | 77.1 ab | 657.8 abcd |
| DPL 20 B | 74.9 a | 696.2 abcd |
| DPL 20 | 74.3 ab | 696.2 abcd |
| PM 1560 BG | 71.1 ab | 841.7 a |
| PM 1330 BG | 69.0 ab | 826.3 a |
| ST 453 | 66.4 ab | 695.3 abcd |
| DPL 33 B | 64.4 ab | 868.7 a |
| PM 1215 | 58.4 ab | 812.7 abc |
| PM 1560 | 56.6 ab | 558.7 d |
| ST 474 | 55.4 ab | 673.0 abcd |
| SG 501 | 48.5 b | 666.3 abcd |
| SG 125 | 48.1 b | 582.8 cd |
| PM 1215 B | 43.3 b | 819.0 ab |
| ST 373 | 38.9 b | 740.5 abcd |

Means in a column with different letters differ significantly (Duncan's multiple range test p=0.05.)