WHITEFLIES IN THE LOWER RIO GRANDE VALLEY OF TEXAS IN 1995

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Abstract

Silverleaf whiteflies were at the highest levels recorded in the LRGV in 1995. Despite the high levels of whiteflies, impacts on cotton yields were masked by damage to the crop by other pests and the impacts of rainfall late in the season.

Introduction

Silverleaf whiteflies have been a serious concern and in some years a very serious threat to cotton yields in the Lower Rio Grande Valley (LRGV) of Texas since 1991. In 1991,whitefly infestations caused up to a 500 pound lint loss per acre in the worst case situations. The whitefly infestations in 1995 were higher than those of 1991, but resulted in less loss of lint due to serious yield damage by aphid and beet armyworm infestations.

Field Observations of Whiteflies

Whitefly infestations were first noted in some cotton fields as early as late March in 1995. No reports of any significant numbers of whiteflies were reported until about mid May, however. Witefly infestations remained high until the end of the season (Figure 1.).

Many fields of cotton showed severe damage symptoms from whiteflies by the end of June and others showed similar symptoms until the fields were either defoliated or destroyed in late July or early August. Blackened plants and heavy sooty mold and honeydew deposits were observed in many fields, especially in the mid-Valley area of the LRGV. Actual yield reductions by whiteflies were probably experienced, but were very difficult to prove since other insects caused more yield losses than did whiteflies.

Yields were severely reduced in some fields by early season infestations of aphids which in some situations stunted the plants and prevented normal crop production. Aphid infestations were rated as heavy in many fields by late April.

A poor crop potential wasalready set in most dryland and many irrigated fields across the LRGV by early May, 1995, due to hot and a drier-than-normal period in early April to late May. However, beet armyworms probably caused more lint loss than all of the other factors in the LRGV in 1995. Damaged small to medium sized bolls, squares and blooms were heavy by the end of May when the first major infestation of beet armyworms invaded cotton. The extensive nature of the yield damage by beet armyworms precluded whiteflies from causing much more lint loss despite heavy whitefly infestations by early June. Losses from beet armyworms continued to mount until rainfall from tropical storm "Grabrielle" dumped rainfall in amounts ranging from 4 to 12 plus inches on August 12. Moth trap records of beet armyworms showed a dramatic drop in beet armyworms in the LRGV following the tropical storm (Figure 2.).

Large numbers of insecticide applications made for aphids, boll weevils and beet armyworms also impacted natural enemies of whiteflies. Large, natural infestations of whitefly parasites, particularly, Encarsia spp., were recorded from cotton fields in 1994. Infestations of whitefly nymphs observed by late May, 1995, showed no parasitism at all and remained in that condition throughout the production season. Other natural enemies like lacewing fly larvae, and lady beetles were not apparent by the early part of June in most fields when the heaviest amount of insecticide was applied for boll weevils and beet armyworms.

Heavy rainfall at the end of May and sporadically throughout the rest of the cotton production season in the LRGV also prevented whiteflies from maintaining fiber-quality-damaging levels in many fields. Rainfall washed the cotton fields clean of adults and honeydew periodically until late June when whitefly infestations peaked in the area. Just prior to the heavy rains in early August, large deposits of honeydew and sooty mold were observed on cotton, but the rains diminished the amounts such that no reports of sticky cotton were received from the bales which were finally harvested. The rains also reduced further harvestable lint in many area fields.

Boll sizes were observed to be smaller than normal in most areas of the LRGV in 1995. Some fields of cotton which had boll numbers indicating a 1 to 1.5 bale per acre yield potential only harvested 1/4 to 1/3 bale per acre. Many people speculated that whiteflies and weather were the culprits in the smaller boll sizes.

Silverleaf whiteflies which infested cotton fields with at least some yield potential , which growers felt they could afford to spend money, were treated with effective insecticides. Whitefly populations were kept at lower levels in treated fields than in untreated fields and probably caused less damage to the crop than in untreated fields.

In at least one tests in the LRGV in 1995, lint per boll was shown to be reduced by whitefly infestations when whiteflies were left uncontrolled. In whitefly insecticide

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efficacy test planted in mid April, 1995, whiteflies were shown to be able to cause direct yield reductions due to a reduction in lint produced per boll and other quality factors. Adult and nymph counts of whiteflies were reduced by the different treatments in the test compared to the untreated check plots. The analysis of the test showed that the untreated check plots had statistically larger whitefly adult and nymph populations and smaller amounts of lint per boll and reduced yield (Table 1). Whiteflies were not controlled in all commercial fields, especially where some of the heaviest infestations occurred in 1995 and were likely to have caused some of the boll size reductions noted in many area fields. Observations of yield data from the best treatments indicated that some top crop was produced

Conclusions

Whiteflies will continue to be a threat to cotton production in the LRGV. Potential for yield damage and sticky cotton remain concerns for cotton producers throughout the region. The potential of the infestation size recorded in 1995 could have been even worse than the damage caused by the infestation experienced in 1991. The intervention of other pests which caused more damage and the timing of field conditions prevented the 1995 whitefly infestations from meeting their potential. Thus, as long as whiteflies exist in the LRGV, the threat of another yield destroying infestation is real and growers and other agricultural interests must do everything in their power to prevent the potential from becoming reality.

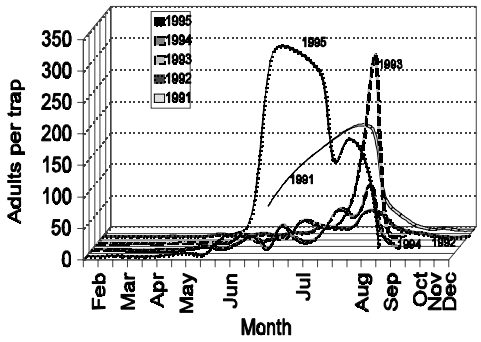

Figure 1, Silverleaf whitefly trap capture records from yellow sticky cards, LRGV, Texas 1991-1995.

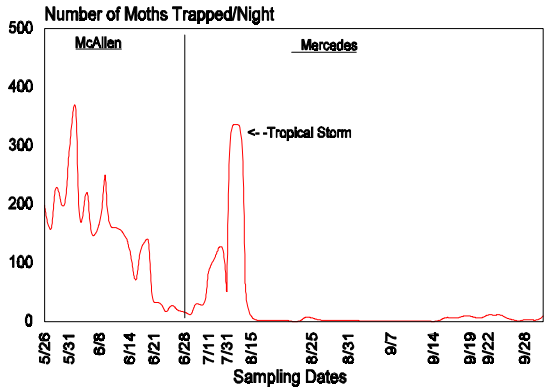

Figure 2. Beet armyworm moth capture records, McAllen and Weslaco, Texas, May 26-August 31, 1995.

Table 1. Results from silverleaf whitefly insecticide test on adults and nymphs and their impacts on number of bolls per pound of lint and final yield, LRGV, Texas 1995.

Treatment & Rate	Adults	Nymphs	Bolls/# Lint	Yield[1]
Dan+Ort[2] (7)[4]	8.3C	3.2A	324.7A	384A
Pyr 0.39[3] (7)	43.6B	2.6A	349.7A	315A
Pyr 0.26(7)	57.7A	5.2A	378.8AB	230B
Pyr 0.39 (14)[5]	54.2A	16.9B	413.2BC	138C
Pyr 0.26 (14)	41.9B	16.6B	454.6BC	147C
Dan+Ort/Pyr (14)	35.9B	7.3A	467.6CD	147C
Check	42.7B	21.2B	568.2D	62D

[1]Yield = Lint per acre
[2]Danitol + Orthene @ 0.15 # AI/Ac + 0.5 # AI/Ac.
[3]Pyriproxyfen @ either 0.39 or 0.26 # AI/Ac.
[4](7) = Seven day interval for treatments-Total of 7 treatments.
[5](14) = 14 day intervals for treatments-Total of 4 treatments.