APHID CONTROL SCREENING STUDIES IN SAN JOAQUIN VALLEY

S.D. Wright, L.D. Godfrey M.R. Jimenez Jr., P. Weinholds and J. P. Wood
University of California Cooperative Extension
Visalia, Davis, Visalia and Shafter

Abstract

Several insecticides were evaluated over a two year period for control of the cotton aphid (Aphis gossypii, Glover). The studies were conducted in the county of Tulare of the San Joaquin Valley. This site was chosen for its consistent infestation of cotton aphid. Results from our screening studies have shown that some insecticides are more efficacious at different times of the season. Prior to insecticide application, there were 100 aphids per leaf in the 1995 mid-season aphid control trial, 340 aphids per leaf in the 1995 late-season aphid control trial, and 80 aphids per leaf in the 1996 mid-season aphid control trial. Provado and Furadan provided excellent control of early to mid-season cotton aphid populations. Provado tank mixes provided the greatest control of mid-season aphid populations, and Temik sidedress with a broadcast application of Provado provided effective control of mid to late season aphid populations. Tank mixes of Lorsban provided the most effective control of late-season aphid populations. The "organic" treatments were not effective.

Introduction

The cotton aphid has developed resistance to several insecticides registered for use in California cotton. The cotton aphid has become increasingly difficult to control. Moderate to high aphid infestations can have a devastating impact on yield and lint quality. For this reason we have been investigating the efficacy of a great number of insecticides, soaps and "organic" compounds for control of the cotton aphid. By answering the question of which insecticides work well, we can make educated decisions for a cost effective resistance management program.

Material and Methods

Three insecticide trials were established over a two year period. In 1995, a mid-season aphid trial was established on June 7; and a late-season aphid trial was established on August 3. In 1996, a mid-season aphid trial was established on June 8. Experimental design for the three trials was a randomized complete block. Plot size was 4-30" rows by 50 feet, with three replications. Insecticide applications were made using a Hagie high cycle sprayer with multi-booms. A total volume of 20 gallons per acre was applied through TXVS-6 nozzles using 55 pounds per square inch. Application speed was three miles per hour. Air temperature at the time of application ranged from 95 to 105ºF, and wind speed ranged from 0 to 3 miles per hour. Each row was treated with three nozzles, two on the sides spraying upward and one over the top. Plant height in the two mid-season aphid control trials was approximately 14 to 20" with 10 to 12 nodes. Plant height of the late-season aphid control trial was 34" with 22 nodes. Samples were taken from the 3rd mainstem node leaf (from the terminal). Ten leaves were sampled from each plot. Aphid counts were taken on 1 or 3 or 5, 7, 14, and 21 days after treatment (DAT).

Results and Discussion

In the mid-season aphid control trial of 1995, most treatments gave some level of control for 7 days. At 14 DAT Furadan and Metasystox-R + Endosulfan treatments provided 84 and 74 percent control respectively. All other insecticide treatments provided less than 60 percent aphid control. The soaps, and Neemix gave poor aphid control.

In the late-season aphid control trial of 1995, all insecticides (Lorsban alone or tank mixed with Dibrom or Metasystox or Lannate or Thiodan or Provado or Curacron or Ovasyn / Provado + Ovasyn) provided excellent control for 21 days, with only minor differences between treatments. High population of lacewing were present at the time of application and thereafter, which also influenced the aphid control and evened out the population of the untreated control by the 21 day evaluation.

In the mid-season aphid control trial of 1996, most treatments gave some level of control for 7 days, with the exception of Naturalis and Monitor. Ovasyn (.25 lb) + Provado(3.75 oz); Provado (3.75 oz); Dibrom (1 p) + Provado (2.5 oz); Dibrom (1 p) + Lorsban (.5 lb); Lorsban (2p); Provado (2.5 oz) + Temik sidedress (14 lb); Vidate (34 oz); Lannate (26.7 oz); and an Experimental gave excellent control for 14 days. Ovasyn (.25 lb) + Provado(3.75 oz); Provado (3.75 oz); Dibrom (1 p) + Provado (2.5 oz);Provado (2.5 oz) + Temik sidedress (14 lb); Lorsban (2 p) and an Experimental gave excellent control for 21 days. Garlic oil and Naturallis gave poor aphid control.

Summary

Provado or tank mixes (with Ovasyn or Dibrom or Lannate or Lorsban) provided excellent control of early to mid-season aphid populations. Provado tank mixes provided excellent control of mid-season aphid populations. Temik SD + Provado provided effective control of mid to late-season aphid populations. Lorsban tank mixes provided the most effective control of late-season aphid populations.

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 2:1053-1054 (1997)
National Cotton Council, Memphis TN