

**MULTI-YEAR EVALUATION OF THIACTOPRID (CALYPSO®)
FOR APHID CONTROL IN THE CENTRAL
SAN JOAQUIN VALLEY**

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Abstract

Thiacloprid (Calypso) was tested for efficacy against the cotton aphid, *Aphis gossypii*, from 1995 through 2000. A total of eleven tests were conducted with comparisons to several standard treatments. Peak aphid densities ranged from moderate (100/leaf) to extremely high (400/leaf). In all cases, aphid densities were well over an economic threshold. Insecticide applications were made with a tractor-mounted boom in the months of July and August. When taking an average of percent control across all five years, the results are as follows. Calypso and thiamethoxam showed faster knockdown than Provado at 7 days after treatment (DAT). At 14DAT, Calypso 0.047 lb ai/A gave the best control followed by Calypso 0.025 lb ai/A and Provado 0.047 lb ai/A and thiamethoxam 0.047 lb ai/A. At 21DAT, Calypso 0.025 and 0.047 lb ai/A maintained a high level of aphid control. Provado and thiamethoxam treatments began to decline.

Evaluations at 28DAT and 35DAT are based on two and one experiment respectively. At 28DAT, Calypso 0.025 and 0.047 lb ai/A continued to show a high level of aphid control whereas thiamethoxam and Provado treatments provided marginal control. At 35DAT, Calypso 0.047 lb ai/A provided far better aphid control than Provado or thiamethoxam treatments. In summary, Calypso provided the fastest and longest lasting aphid control of all the products tested.

Introduction

Thiacloprid (Calypso) is a neo-nicotinoid (chloronicotinyl) insecticide that is being developed by BAYER CORPORATION. Calypso is active on a broad spectrum of sucking and biting insect pests. It has excellent systemic activity and crop safety. It is effective at low rates through contact and stomach activities. There is no cross-resistance to any other chemical class. Further, Calypso is harmless to bees and has low impact on beneficial insects. Calypso poses minimal risk to humans and the environment.

The experiments reported here were conducted to evaluate the effectiveness of Calypso for controlling aphid infestations in California cotton.

The cotton aphid, *Aphis gossypii* Glover, is a common pest of cotton grown in the San Joaquin Valley of California. Infestations can occur early in the season; however, mid to late-season infestations are more common and have greater potential for causing a reduction in yield and sticky lint. In recent years aphid populations have shown resistance to several insecticides registered for use in California cotton. To stay ahead of aphid insecticide resistance, new insecticides are in high demand from California cotton producers.

Materials and Methods

Insecticides were applied using a tractor mounted spray boom. Most tests had 4 row plots at varying lengths. Cone type nozzles were arranged in patterns varying from two to six nozzles per row. Spray pressure ranged from 30 to 60 psi and delivery volumes were 25 to 30 gallons per acre.

Efficacy was determined on a 7 day interval by counting total number of aphids per leaf. Sample size was 10 to 25 leaves per plot and all tests had a minimum of 4 replicates. The 4F formulation of Calypso was used in all tests reported.

Results

1995 Results

Three tests were conducted in 1995. Calypso at 0.025, and 0.047 lb ai/A were compared to Provado at 0.047 lb ai/A. Average aphid densities were moderate ranging from 77 to 100 aphids per leaf in the untreated plots. Provado gave excellent control for 7 days and control dropped considerably thereafter. Calypso treatments gave very good aphid control for 14 days. Calypso 0.047 lb ai/A maintained a high level of aphid control out to 21 days (Figure 1). In summary, Calypso provided better and longer lasting control than Provado.

1997 Results

Two tests were conducted in 1997. Calypso at 0.025, and 0.047 lb ai/A were compared to Provado at 0.047 lb ai/A and Furadan at 0.25 lb ai/A. Average aphid densities were high ranging from 88 to 348 aphids per leaf in the untreated plots. Provado and Calypso treatments gave far better aphid control than Furadan at 7 days. Performance of Furadan at 7DAT was lower than expected. At 14DAT, Calypso treatments gave better aphid control than Furadan or Provado. Calypso 0.025 lb ai/A maintained a very high level of aphid control out to 21 days (Figure 2). Under the conditions of these two tests, Calypso provided superior aphid control to Provado or Furadan at all evaluation dates.

1998 Results

Three tests were conducted in 1998. Calypso at 0.025, and 0.047 lb ai/A were compared to Provado at 0.047 lb ai/A and thiamethoxam at 0.047 lb ai/A. Average aphid densities were moderate ranging from 47 to 80 aphids per leaf in the untreated plots. All treatments provided excellent control at 7DAT. At 14DAT Provado, Calypso 0.047 lb ai/A and thiamethoxam 0.047 lb ai/A gave very high aphid control. Calypso 0.025 lb ai/A gave approximately 10 percent less control. At 21DAT, Calypso 0.047 lb ai/A had sustained excellent aphid control. Provado gave good control. Thiamethoxam showed a considerable drop in aphid control. At 35DAT, only Calypso 0.047 lb ai/A was still showing aphid control (Figure 3). In summary, Calypso 0.047 lb ai/A provided superb aphid control for 35 days. Calypso 0.025 lb ai/A gave good control for 28 days. Provado and thiamethoxam provided 21 days control.

1999 Results

Two tests were conducted in 1999. Calypso at 0.025, and 0.047 lb ai/A were compared to Provado at 0.047 lb ai/A, and thiamethoxam at 0.047 lb ai/A. Aphid densities were very high ranging from 130 to 370 aphids per leaf in the untreated plots. Calypso 0.025, 0.047 lb ai/A, and thiamethoxam 0.047 lb ai/A provided better control than Provado at 7 days. At 14DAT only the Calypso treatments showed acceptable control (Figure 4). In summary, both Calypso treatments gave very good control out to 28 days. Provado provided 21 days of control. In the single trial in which it was used, thiamethoxam did not perform well.

2000 Results

One test was conducted in 2000. Calypso at 0.025, and 0.047 lb ai/A were compared to Provado at 0.047 lb ai/A, thiamethoxam 0.047 lb ai/A, Fulfill 0.084 lb ai/A, Furadan 0.25 lb ai/A and Lorsban 0.751 lb ai/A. Aphid densities were high ranging from 183 to 212 aphids per leaf in the untreated plots. Furadan provided almost complete control at 7 days; however aphid number began to rebound by 14DAT. Calypso and thiamethoxam provided good control at 7DAT. At 14DAT Provado, Calypso 0.025, 0.047 lb ai/A, Fulfill, and Furadan provided the best aphid control (Figure 5). In summary, all treatments provided similar aphid control for 14 days.

