

**CHEMICAL CONTROL OF SILVERLEAF  
WHITEFLY IN COTTON, WITH KARATE IN  
MIXTURE WITH CONVENTIONAL  
INSECTICIDES, IN MEXICO.**

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**Abstract**

The silverleaf whitefly (SLWF) *Bemisia argentifolii* is a serious cotton pest in the cotton growing area of Mexico. Control measures are difficult, because the population increases quickly and the immatures develop on the undersides of the leaves. Our studies during 1992-1995 indicate that only mixtures of insecticides control these insects.

In order to confirm these findings at the commercial level with growers, we performed a trial in the Mexicali Valley, Mexico. Two pyrethroids were validated; Karate (lambda cyhalothrin) and Herald or Danitol (fenpropathrin) + the organophosphates Orthene (acephate) and Hostathion (triazophos). All treatments had good control of SLWF during 15 days, when applied at an economic threshold of 10 to 13 adults/leaf. These insecticide mixtures are good choices for controlling SLWF, but if another pest is present, it is better to choose the appropriate mixture and apply it accurately.

**Introduction**

The silverleaf whitefly (SLWF) *Bemisia argentifolii* has become a serious pest problem in Mexico, especially in the Mexicali Valley in 1992 as well as other parts of Mexico's cotton belt. Control measures are difficult for several reasons. One is that populations build up quickly and the immatures develop on the undersides of the cotton leaves. During 4 years of studies on controlling SLWF, we found that mixtures of insecticides like Applaud + endosulfan, Karate + Orthene, Karate + Hostathion were the best way to control these problems. The growers in this region use Herald + Orthene for control of SLWF, but in Arizona, resistance was reported to Danitol and Orthene (Akey et al 1995), therefore chemical rotations are very important for control of SLWF. Endosulfan, Applaud, Karate, have a good place in these rotations. Akey et al. (1995) recommended registration of novel insecticides like Applaud and Nylar (pyriproxyfen) in order to increase the diversity of insecticides to control SLWF and avoid resistance of this insect. In Mexico, Applaud was registered in cotton 3 years ago.

**Objectives**

- Give the growers another alternative in order to control SLWF, avoid resistance and help to control the pest complexes present in cotton.
- Determine effect of Karate mixed with Orthene and Hostathion on SLWF and the pest complexes present in commercial cotton in Mexicali Valley, Mexico.
- Control duration and effect in cotton plant.

**Material and Methods**

In order to confirm these findings at the commercial level with growers, we performed a trial in the Mexicali Valley, Mexico (Table 1). The treatments were: Karate 7 EC + Orthene 75 WP: 35 + 563 g ai/ha.; Karate 7 EC + Hostathion 40 EC: 35 + 600 g ai/ha.; Herald 375 EC (Danitol) + Orthene 75 WP: 188 + 563 g ai/ha.; Herald 375 EC (Danitol) + Hostathion 40 EC: 188 + 600 g ai/ha. The data were nymphs/leaf, number of adults/leaf every 3 days, duration of SLWF control and effect on the cotton plant.

**Results**

All treatments had good control of SLWF during 15 days, when applied at an economic threshold of 10 to 13 adults/leaf (Table 2, Figs. 1 and 2). The Karate mixture with Orthene gave good control of pest complexes such as budworms/bollworms, boll weevils and lygus bugs. Karate plus Hostathion gave good control of budworms/bollworms, pink bollworms, boll weevils and lygus bugs. Danitol plus Orthene gave control of lygus bugs and regular control of budworms/bollworms. Danitol plus Hostathion gave good control of pink bollworms and lygus bugs. These treatments are good choices for controlling SLWF, but if another pest is present, it is better to choose the appropriate mixture and apply it accurately. Karate mixtures with Orthene and Hostathion are cheaper treatments (Figs. 3 and 4) and have better pest complex control in cotton than Herald (Danitol) plus Orthene and Hostathion.

**References**

- Akey, D.H., C.C. Chu and D.N. Byrne. 1991. Field trials in cotton of buprofezin, Fenpropathrin, acephate and Natur'l Oil against sweet potato whitefly *Bemisia tabaci*. p 804 In D.J. Herber and D.A. Richter (eds) Proc. Beltwide Cotton Conf. National Cotton Council of America, Memphis, TN.  
Obando, A., J. Perez and N. Darby. 1992. Efficacy of Buprofezin and conventional insecticides under different levels of SPWF populations. Proc. Beltwide Cotton Conf. National Cotton Council of America, New Orleans.

Table 1. Materials and Methods for SLWF trial in Mexicali Valley, Mexico. 1995.

|                                     |                         |
|-------------------------------------|-------------------------|
| Plot Size:                          | 8 ha                    |
| Volume Water:                       | 30 liters               |
| Application Date:                   | July 1995               |
| Number of Applications:             | 1                       |
| Total Applications vs. SLWF/Grower: | 4                       |
| Crop Stage:                         | Boll Formation          |
| Economic Threshold:                 | 10 Adult/Leaf/30 Plants |

Table 2. Karate and Danitol mixed with Orthene and Hostathion, against silverleaf whitefly and pest complexes present in cotton. Mexico. 1995.

| Product            | Rate /ha | Bud-worm             |          |                |             |             |            |
|--------------------|----------|----------------------|----------|----------------|-------------|-------------|------------|
|                    |          | Silver-leaf Whitefly | and worm | Pink Boll-worm | Boll-weevil | Boll Weevil | Lugus Bugs |
| Karate+Orthene     | 35+563   | ****                 | ****     | ***            | ***         | ***         | ****       |
| Karate+Hostathion  | 35+600   | ****                 | ****     | ****           | ***         | ***         | ****       |
| Danitol+Orthene    | 188+56   | ****                 | **       | ***            | *           | *           | ***        |
|                    | 3        |                      |          |                |             |             |            |
| Danitol+Hostathion | 188+60   | ****                 | *        | ****           | *           | *           | ***        |
|                    | 0        |                      |          |                |             |             |            |

\*\*\*\* Excellent Control

\*\*\* Good Control

\*\* Regular Control

\* No Control

**KARATE MIXED WITH ORTHENE AND HOSTATHION  
AGAINST B. argentifolii, MEXICALI, B.C.N.  
MEXICO. 1995**

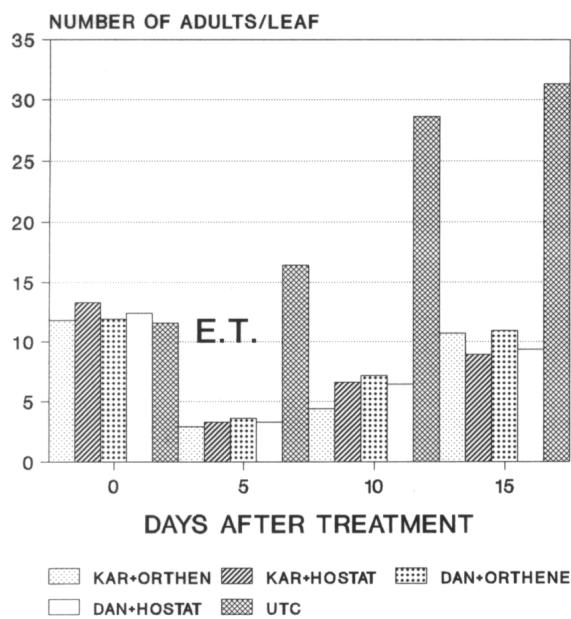


Fig. 1. ZENECA MEXICANA SA DE CV, TECHN

**KARATE MIXED WITH ORTHENE AND HOSTATHION  
AGAINST B. argentifolii IN COTTON  
MEXICALI, B.C.N., MEXICO. 1995**

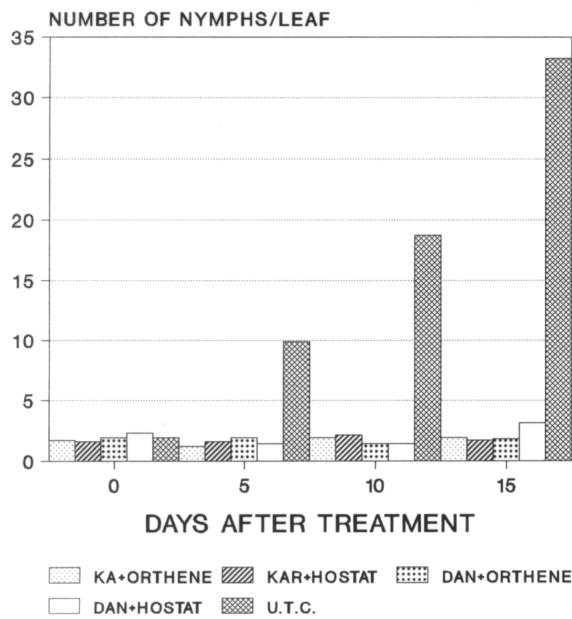


Fig. 2. ZENECA MEXICANA SA DE CV, TECHN

**KARATE MIXED WITH ORTHENE AND HOSTATHION  
AGAINST B. argentifolii, MEXICALI, B.C.  
MEXICO. 1995**

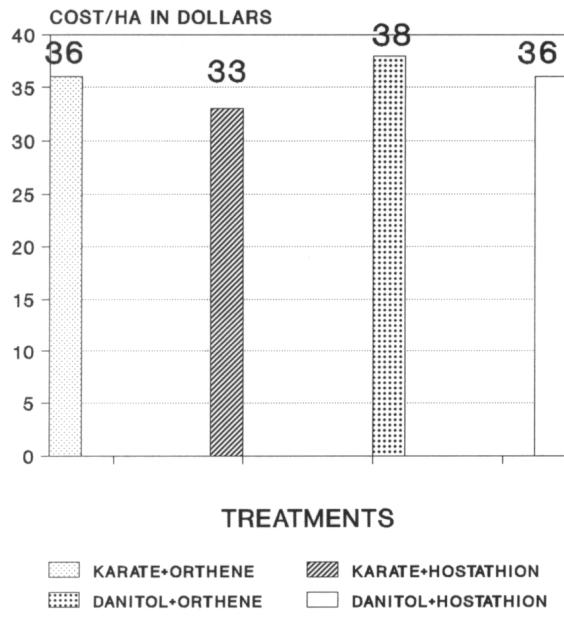


Fig. 3. ZENECA MEXICANA SA DE CV, TECHN

KARATE MIXED WITH ORTHENE AND HOSTATHION  
AGAINST SILVERLEAF WHITEFLY, IN MEXICALI  
BAJA CALIFORNIA NORTE, MEXICO. 1995

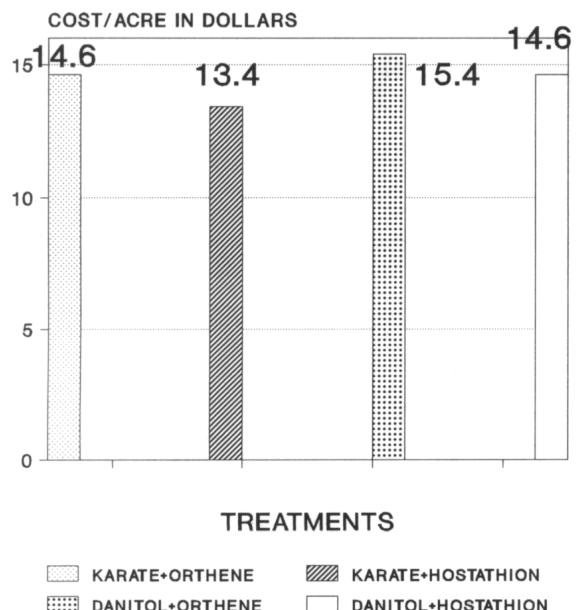


Fig. 4. ZENECA MEXICANA SA DE CV, TECHN