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7 March, 1995

Ms. Lynne A. Dory
Administrative Assistant
California Cut Flower Commission
2339 Gold Meadow Way, Suite 101
Gold River, California 95670-4467

Dear Ms. Dory:

Enclosed is a hard copy and a diskette (MS DOS) with a copy in Word for Windows format of our final report, "Biological Control Implementation for the Blue Gum Psyllid, *Ctenarytaina eucalypti* (Maskell), a New Pest for the California Foliage Industry."

Sincerely,

Donald L. Dahlsten
Professor

California Cut Flower Commission
Research Final Report
21 Feb. 1995

Title: **BIOLOGICAL CONTROL IMPLEMENTATION FOR THE BLUE GUM PSYLLID, *CTENARYTAINA EUCALYPTI* (MASKELL), A NEW PEST FOR THE CALIFORNIA FOLIAGE INDUSTRY.**

Principle Investigator: Donald L. Dahlsten, Chair
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Investigators and Cooperators:

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Robert F. Luck, Professor of Entomology, University of California at Riverside, CA
Karen L. Robb, U.C. Cooperative Extension, San Diego County, San Diego, CA

Objectives:

- (1) Verify that sampling methods currently being tested can be used by growers and PCA's to predict damaging levels of the blue gum psyllid.
- (2) Rear, release and determine establishment of natural enemies of the blue gum psyllid. Evaluate effectiveness of these insects in controlling damage from the psyllid.

SUMMARY OF ACCOMPLISHMENTS:

The blue gum psyllid (*Ctenarytaina eucalypti*) is native to Australia where it feeds on blue gum and other Eucalyptus species that have waxy-blue juvenile foliage. Since the original find in Monterey County in 1991 the psyllid has spread in a very short time throughout the California coastal area. One eucalyptus species, *E. pulverulenta*, or baby blue eucalyptus, a suitable host for the psyllid, has been planted in plantations along the coastal counties of California. Foliage from this eucalyptus is used by the floral industry in flower arrangements. Large amounts of pesticides were used to control the psyllid in these plantations, but spraying has been reduced or eliminated in most areas in the past 18 months.

Two sampling methods were evaluated for the psyllid and its parasite: foliage sampling (4 - 5 inch tips each from 10 trees in each plot) for all insect stages, and sticky traps (10 per plot adjacent to the foliage sample trees) for insect adults. Sticky traps are plastic lids coated with high viscosity motor oil additive on the upper surface. The lid is then placed over and attached by clips to a second yellow backing lid which is attached to a stake driven into the ground. Sampling and monitoring sites were established in northern, central and southern California. We found that the numbers of psyllids of all stages and parasites on foliage can be predicted from sticky trap counts of adults from up to three weeks previous to the foliage count. The sticky trap method may be used by growers to monitor psyllid and parasite populations.

A search for natural enemies of the blue gum psyllid was made in Australia and New Zealand in late 1991 - early 1992. One species of primary parasitoid, *Psyllaephagus pilosus*, a small encyrtid wasp, was found, shipped to our quarantine facility, and reared; over 6000 parasites were released in 1993 at eight sites in four counties (Alameda, San Diego, San Luis Obispo, Monterey, and Sonoma). By the end of 1993 the parasite was established at all release sites; at several sites parasitization rates of 50% or more were recorded. Parasites survived over the winter at all sites, and in 1994 the parasites were abundant. Psyllid total accumulation levels in 1994 were down from 25 to 2000 times below the pre-release levels of 1992. Psyllid levels were much lower than those achieved by spraying, and no spraying was needed in the release plots or adjacent plots in 1994. Parasites are spreading rapidly to counties adjacent to the release counties. Based on the 1994 results, the biological control program has successfully controlled psyllid numbers to below economic thresholds in all areas where releases were made the previous year. We have confirmed that the parasites have now spread to the counties of Santa Clara, Santa Cruz, San Mateo, Contra Costa, and Ventura.

We plan to undertake one more season of monitoring in 1995 to confirm the effectiveness of the biological control agent and refine monitoring methods for use by growers. We

will compare commercially available traps to our experimental traps to assist growers in monitoring for the psyllid.