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## COMPARISON OF A HELICOPTER WITH A CONVENTIONAL AIR-BLAST SPRAYER IN THE APPLICATION OF A CITRUS SPRAY PROGRAM

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### ABSTRACT

A helicopter was compared with a conventional air-blast sprayer in applying a citrus spray program during the growing seasons of 1963 and 1964. Each sprayer applied the same amount of pesticide per acre in each application, varying only in the amount of water required.

With but 1 exception, there was no significant difference in citrus rust mite control over the 2-year period. The only exception occurred in August 1963 when 3 pints of Guthion per acre applied by helicopter failed to control citrus rust mite. However, the corresponding application by the air-blast sprayer controlled rust mite until November.

There was significantly better control of armored scale, whitefly, black scale, and mealybugs over the 2 years with the air-blast sprayer. There also was significantly better control of greasy spot disease and melanose with the air-blast sprayer.

### INTRODUCTION

In recent years, much interest has been given to the possibility of spraying Florida citrus groves by helicopter because of reduced application costs. Sutton (3) reported savings of \$12.00 to \$24.00 per acre in application costs and a slight increase in pack-out where a helicopter spray program was used. Brooks *et al.* (1) found helicopters provided poor coverage and unsatisfactory control of Glover's scale but satisfactory control of citrus rust mite.

The experiment reported here was designed to compare the effectiveness of a helicopter and a conventional air-blast sprayer in application of a citrus pest control program. The experiment was initiated in the spring of 1963 and conducted through the citrus growing seasons of 1963 and 1964.

### EXPERIMENTAL METHODS

Four widely separated 10-acre groves of mature grapefruit trees were each divided into 2 plots. Each plot was sprayed with a helicopter or a conventional air-blast sprayer throughout the citrus growing seasons of 1963 and 1964. Thus, a randomized blocks design was used with each location serving as a replicate. The 4 groves were located near Auburndale, Dundee, Davenport, and Howey-in-the-Hills, Florida. Ten sample trees were selected from the center of each plot in such a manner that each was buffered by at least 2 rows of trees on all sides.

The helicopter was a Bell Model G-2A equipped with a standard Simplex spray pump and boom. The air-blast or air-carrier sprayer was a Speed Sprayer Model 705 CP equipped with a double oscillating volute. Only materials listed in the 1963 and 1964 editions of the "Better Fruit Program" were used in this experiment.<sup>2</sup>

The post-bloom spray was applied at 2/3 petal fall and the summer oil spray between June 15 and July 15. Other applications were applied as needed for citrus mite or spider mite control. Each sprayer applied the same amount of spray material per acre, but the volume of water varied. The helicopter applied the spray material at the rate of 10 gallons per acre, whereas

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