

## ABSTRACT

As the literature review shows in Chapter One, forage selection by *Acromyrmex octospinosus* (Reich) is known to be determined by both physical and chemical factors of the target plant material.

The leaf material of eight *Citrus* varieties was presented in the laboratory to the leaf-cutting ants and the results of the bioassay are presented in Chapter Two. Portugal, *Citrus reticulata* (Blanco) was found to be the least attractive and Pineapple Orange, *Citrus sinensis* (L.) (Osbeck), the most attractive. Subsequent bioassays tested leaf extracts of only these two varieties.

The isolation and investigation of chemical factors involved in the reduced attractiveness of Portugal leaves are described in Chapter Three. The method used was sequential fractionation of the whole leaf extract with bioassays at each stage to indicate the least attractive extract and direct further fractioning. The two most active fractions were in the non-polar lipids. Separation of the major components of these fractions was achieved using preparative layer chromatography.

Comparison with available standards showed these components to be long-chain hydrocarbons, long-chain fatty acids and their esters and long-chain aldehydes. Of these only one occurred in both active fractions and it was also absent from Pineapple orange leaf lipid. The deterrence of the active extracts was demonstrated by the reduction in pick-up of an otherwise attractive substrate on addition of them.

The active extracts were found to slow considerably the growth of the food fungus, *Attamyces bromatificus* (Kreisel). This lends some credence to the theory of unsuitability as a fungal growth substrate for some non-selected plants. This work is described in Chapter Four which also outlines techniques of artificial culture used for the fungus.

Chapter Five states overall conclusions drawn from the work. The lower attractiveness of portugal leaves to leaf-cutting ants is due to chemical factors in their non-polar lipid. These factors also have an inhibitory effect on the growth of the food fungus.