

SUMMARY

Weed competition is one of the most important limiting factors in tea crop cultivation in Sri Lanka. Nearly 80% of the total tea area is under seedling tea with poor crop-canopies, creating an ideal environment for weed growth as weeds can compete with tea crop for applied and soil borne nutrients soil moisture and sunlight, and can adapt to extreme climatic conditions.

There is a scarcity of available information on the nutrient removal by weeds in tea fields. The main objective of this thesis was therefore to study the removal of applied fertiliser nutrients and soil-borne nutrients by weeds grown in both vegetatively propagated and seedling tea fields, following NPK fertiliser application, at different growth stages.

In this study, a good canopy VP tea field trial and a poor canopy seedling tea trial, were used, to study the growth of all the available weeds, their N-, P-, K-, Ca-, Mg and Al-concentrations and uptake of these nutrients, 3-, 6-, 9- and 12 weeks after NPK fertiliser application. These results were rationalised with respective tea-crop parameters obtained from these 2-field trials. In addition, a glass house experiment was carried out with *Commellina diffusa*, *Crassocephalus crepidioides*, *Panicum repens* and *Conyza floribunda* with 2xdifferent levels of N and K fertiliser, to study the above parameters at similar time intervals.

All the available weed shoots have removed upto about 6% of N, 13% of P, 10% of K and 25% of Mg of the total N,P,K and Mg removal of both VP tea + weeds in the mature VP tea field, and have removed upto about 12% of N, 12% of P & 22% of K of the total N,P and K removal of both seedling tea+weeds in the seedling tea field.

II

This greatest removal of applied fertiliser nutrients was observed about 3-6 weeks after NPK fertiliser application.

This study showed the need for controlling weeds in both VP and seedling tea fields after about 3-6 weeks period from the NPK and Mg fertiliser application, in addition to the weed control measures presently being adopted, generally before fertiliser application, due to the removal of considerable amounts of these nutrients by growing weeds, in order to improve the availability of soil nutrients for tea crop which inturn would improve the tea crop yield.

