



## **Balancing Budgets-Matching nutrient removal to tree nutrition**

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### **Introduction**

This paper came out of the results of a soil nutrition workshop given at Alstonville on 7<sup>th</sup> March 2006. Low chill stone fruit growers were invited via the industry newsletter to take soil and leaf samples after the 2005 harvest in early December using standard sampling protocols. The two varieties that were chosen to sample were industry standards; Tropic Beauty peach and SunWright nectarine. All soil and leaf samples were processed through a standard laboratory that was NATA accredited. The workshop was held after samples were processed and the results were presented to the participants. The process was aimed at seeing how well annual grower fertiliser applications matched 'crop nutrient replacement methods'.

### **Method**

Low chill stone fruit growers were invited to benchmark their annual tree nutrition program in relation to crop yield in the 2005 season. Two varieties of stone fruit Tropic Beauty peach and SunWright nectarine were two industry standards that were chosen.

Growers were given a standard soil and leaf sampling protocol to get a 'snapshot' view of the immediate nutrient status of their orchard. They were asked to take samples in the first week in December 2005 and send the samples to me to be processed as one batch through an accredited soil laboratory. Growers were also asked for their standard fertiliser program and the pack-out results for that variety from the 2005 season.

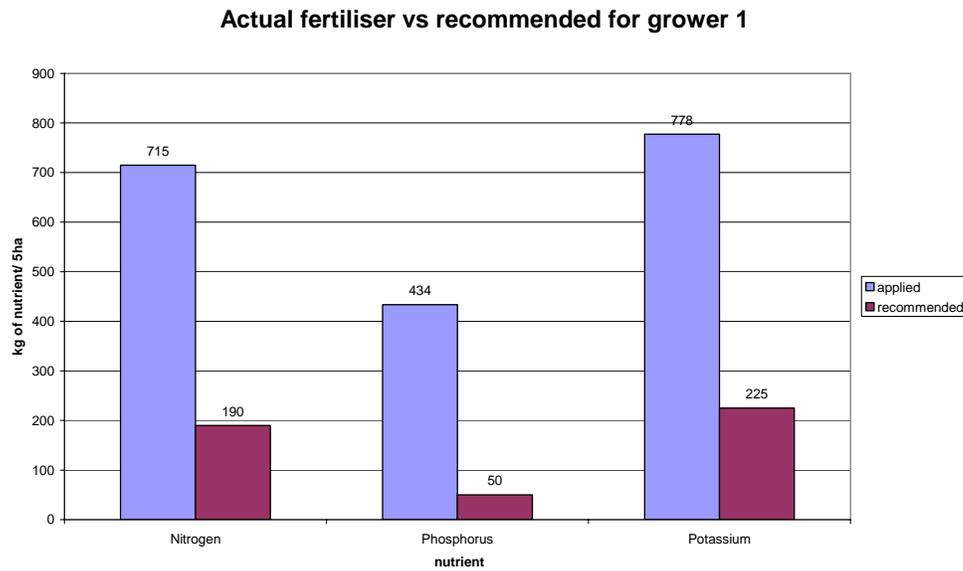
The soil and leaf results of each element were collated as a series of graphs. The yield per hectare, number of trees and spacing per hectare from the 2005 season were entered into a Crop Nutrient Replacement software program. The program calculated the quantities of the major elements needed to replace nutrients that were taken off the orchard as fruit and prunings.

Growers were asked to submit their annual fertiliser program and a comparison was made with the results from the nutrient replacement software.

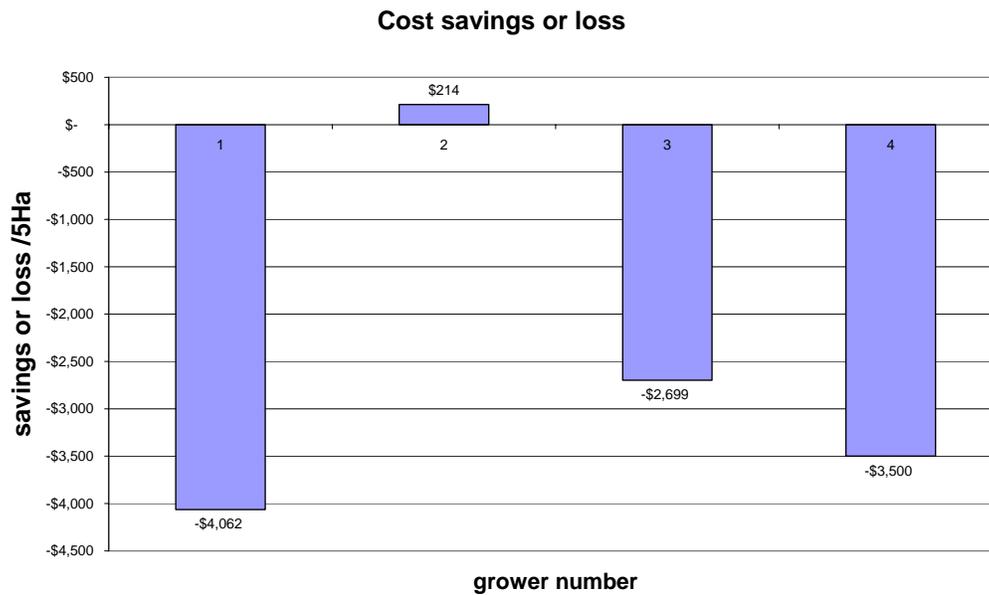
### **Results**

Results for 3 out of four growers indicated they were using substantially more fertiliser (mainly N, P, K) than that recommended by the crop nutrient replacement software for the crop yield in the 2005 season. Fig1 shows the difference between applied and calculated for one grower only. Grower 1 showed the largest discrepancy.

Fig 2 shows the cost savings or loss for the 4 growers by applying fertiliser at the calculated rate using crop nutrient replacement software and by estimating or by growers using 'gut feeling'.



**Fig1.** Actual fertiliser applied compared to software recommendations for grower 1



**Fig 2.** Cost savings or loss for the 4 growers in 2005 by using crop nutrient replacement software

### **Conclusions**

The sample size was very small as we received only four samples from interested growers. However, three out of four growers were over fertilising their orchards and could save money by better matching tree nutrition to crop yields.

Low chill stone fruit growers paid little attention in the past to matching the size of the previous season's crop and nutrient replacement due to the relatively small percentage cost of fertiliser in their overall total annual production costs. Actual fertiliser costs contribute less than 1% of total production costs. Growers tend to underestimate the actual value that over fertilising contributes to other major operational costs such as controlling over vigorous trees, pruning and thinning. These can account for as much as 30%-40% of actual production costs.

In the long term, by using soil and leaf tests coupled with crop nutrient replacement software we will be better able to match tree nutrient requirements, crop yields and fertiliser applications whilst managing off- site effects on the environment.

### **Acknowledgements**

Thanks to all growers who submitted samples and a special mention to Dr David Huett who ran the Stone fruit nutrition workshop at Alstonville on 7<sup>th</sup> March 2006.