FCRD Increases Orange Yield Over Three Seasons in Riverland

- **Increased orange yield over three growing seasons by at least 10%**
- **Increased relative value of oranges per tonne by up to 28%**
- **Grape growers could expect a return of investment of up to 364%**
- **Results showed a significant increase in average orange weight in the second and third growing seasons, without further FCRD application**
- **FCRD is a BFA certified fertilizer and soil conditioner**

Aim: FCRD aimed to analyse the effects of Fishers Creek Rock Dust fertilizer on the size and yield of navel oranges grown in the Riverland citrus growing region. FCRD hypothesized that by providing extra nutrients to the soil through the application of FCRD fertilizer, more nutrients will be available to the fruit, and therefore increasing the size and weight of oranges. FCRD also proposed that by increasing both size and weight of oranges the benefit to growers would be substantial given that the price point in the citrus industry is determined by size and earnings measured by weight.

Method: This trial was conducted over three years on an orange orchard in Cadell, which is located in the Riverland citrus growing region. FCRD fertilizer was applied to four rows of oranges in 2005. FCRD fertilizer was applied to two plots in each row at varying application rates, ranging from 0 t/ha (control), 2.5 t/ha, 5 t/ha and 25 t/ha.

A total of 3650 oranges were picked from the second plot in the 2007 growing season, and, with the use of an average method, a total of 22 samples were collected. Statistical analysis was then performed on these 22 samples to determine the effect of varying FCRD application rates on average orange weight.

In order to determine if FCRD had an effect on orange size and therefore price point categorisation, FCRD analysed data from 20 tonnes of oranges that were categorised according to size at River Fresh Intl. Ltd. From this data the relative dollar value per tonne was calculated for the control group. Using this calculation, we were able to calculate an estimated relative dollar value per tonne for each FCRD application rate, and therefore, through extrapolation to the whole orchard, calculate an estimated cost / benefit ratio to assess the financial benefits for applying FCRD fertilizer to a 10 Ha 'standard' plot.

Results: When applied with 2.5 t/ha of FCRD fertilizer there was a 6.7% increase in average orange weight compared to the control group. Similarly, average orange weight increased by 7.1% when applied with 5 t/ha of FCRD fertilizer as compared to the control group. Finally, when applied with 25 t/ha of FCRD fertilizer, average orange weight increase by 10.9% compared to the control group. These results are shown in figure 1 below.

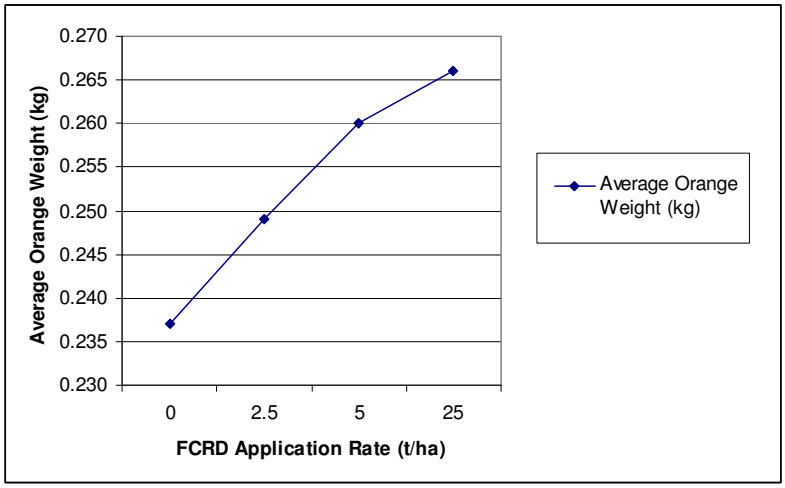

Figure 1. *The effect of varying FCRD fertilizer application rate on average orange weight in the second growing season*

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Using the data from the 20 tonnes of oranges that were categorised according to size by River Fresh Intl. Ltd, we were able to calculate the relative dollar value per tonne of oranges for the control group (no FCRD application). It was found that in this control group the relative dollar value per tonne equated to $226. We then added the significant increases in average orange weights for each of the FCRD application rates, assuming that any increase in average orange weight correlates to the same increase in average orange size, and therefore an upward shift in the price bracket categorisations. These increases in relative dollar value per tonne are shown in Table 1 below.

Relative Value per Tonne of Oranges

FCRD Application Rate (t/ha)	Relative Value per Tonne	Price Benefit per Tonne
0	$226	-
2.5	$256	$30
5	$265	$39
25	$291	$65

Table 1. *Calculated relative dollar value per tonne and price benefit per tonne of oranges.*

Cost / Benefit Analysis: Using data obtained in this trial, a cost benefit analysis was performed to determine the financial benefits of applying FCRD fertilizer to 10 Ha of orange trees at the varying application rates of 2.5 t/ha, 5 t /ha, and 25 t/ha. Based on the results at the application rate of 2.5 t/ha, FCRD collaterally suggests that the grower would have made a 364% gain on his investment of $11,825 over 10 Ha of oranges over three consecutive growing seasons.

This significant financial gain is brought about by the fact that FCRD application caused the average orange weight to increase, as well as an upward shift in price point categorisation, therefore increasing both the orange yield and the relative dollar value of oranges per tonne. This cost / benefit ratio is summarised in Table 2 below.

Cost / Benefit Analysis Over 10 Ha of Oranges

Cost of FCRD per 10 Ha	$11,825
First year profit (benefit – cost)	$5,295
Second year profit (no FCRD cost)	$17,120
Third tear profit (no FCRD cost)	$20,642
Three year profit	$43,057
Percentage gain on investment over three seasons	**364.11%**

Table 2. *Three year cost / benefit of applying 2.5 t/ha of FCRD fertilizer to 10 Ha of oranges.*

Discussion: The results obtained by FCRD in this trial show that FCRD fertilizer significantly increases the average weight of oranges in the second and third growing seasons after application. These results, in conjunction with causing an upward shift in price categorisation, show promising cost / benefit ratios for orange growers.

The significant increase in average orange weight as a result of FCRD fertilizer application supports previous grape trials conducted by FCRD in the Clare Valley and Riverland regions. This is all significant evidence supporting the notion that FCRD enhances plant health and yield through better soil composition.

A detailed 5-page report on this trial is available from your FCRD representative or from the FCRD website (www.fcrd.com.au).

April 2008

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