Case-study
Increasing Bin-weight in Avocados by 11%- Nature's Way

Building Soil Carbon Nature's way is, amongst other things, about diversity in the soil biology <u>and</u> feeding it with what that needs. They need more elements than what artificial fertilisers provide. One source of the most complete range is the sea where anything that has been washed away finishes up.

Sea minerals are being harvested as a left-over product after winning table salt from seawater. It contains 32 minerals known to be needed, some in extremely small amounts but still vital for some soil organisms. The list of those elements can be found at [i].

Source: Public Domain Pictures

Soil biology is already established in existing orchards otherwise it would not produce much. But has this biome all it needs for optimum tree health and productivity? To find out, a test was carried out on an Avocado farm in Childers.

The treatment consisted of applying Humic Acid at the rate of 15L/ha and Sea Minerals at the rate of 5L/ha to three rows of the Sheppard variety. The application was by injecting the liquids into the under-tree irrigation. The first application was on 3 October 2018, a second on 29 November and a third on 26 February 2019. The treated rows were in the centre of a field and the rest of the field was the control. The results were excellent.

By 8 May, the soil in the treated area was softer and held more water. This was assessed by feel by two farmworkers and two trained ag-consultants who all agreed.

At harvest, the average bin weights in the control rows each side of the treated rows was 416 kg. The 10 bins from the 3 treated rows averaged 460 kg, an 11% increase in weight. This indicates more sugars and minerals in the fruit.

Sugars are produced in leaves through photosynthesis. This is the complex process in which plants combine sunlight with water from the soil and carbon from the air into sugars. It needs many minerals to work well.

Leaf sugars were measured with a refractometer[ii] on 2 April and 8 May 2019. On both occasions, the results, called Brix[iii] readings, were 10% higher in the treated rows compared with adjacent control rows. Higher Brix readings mean healthier plants and the healthier a plant is, the less attractive it is to insects and the more resistant to diseases.

An increase in sugars also indicates an increase in the minerals that gives fruit its distinctive taste. It means that plants have more sugar to feed the soil biology so it in turn can increase soil carbon levels and structure. And provide more minerals back to the plant in exchange for the sugars. This starts a virtuous upward cycle of improvements.

Source: The Fresh Fruit Portal

Avocados are sold in trays of 5.5 kg and bigger fruit means more trays. An important test is if these extra trays mean more dollars, as well as improving the soil and giving better taste.

Working that out in detail is beyond the scope of this article. But a rough calculation suggests that the per hectare extra income from more trays can be $600/ha or more.

This means that investing pretty small amount of dollars in biology will pay itself back in one harvest, as was also shown in a soybean trial.[iv] Farmers do NOT have to wait years before getting their money back as is commonly believed. The next harvest will pay for it handsomely.

Is it worth doing more tests of giving the soil-biology what it needs so it can perform better? That is up to the growers.

For further information and advice contact Trevor - 0417 196 315.

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[i] https://www.gladstoneconservationcouncil.com.au/wp-content/uploads/2021/08/Factsheet-Liquid-Sea-Minerals-vs1.pdf

[ii] A refractometer is a hand-held device that measures the sugar content of a solution and is expressed units called Brix.

[iii] One Brix is 1 gram of sucrose in 100 grams of a pure sucrose solution (Wikipedia). It is also an indicator of the minerals in the leaves required for optimal photosynthesis.

[iv] https://www.gladstoneconservationcouncil.com.au/wp-content/uploads/2021/07/Factsheet-Soybean-trial-using-high-fungal-tea.pdf