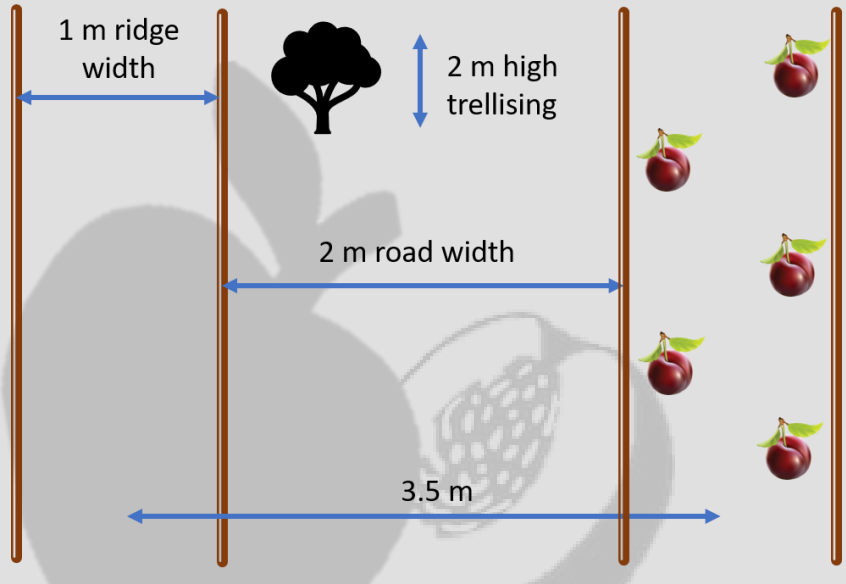
How does your choice of trellising system affect your carbon footprint?

A Boschendal case-study

By Anel Blignaut

Boschendal's commitment to farming sustainably is evident the minute you enter the farm gates. The innovative and sustainable practices used throughout and the commitment to environmental and social sustainability is impressive. The passion and enthusiasm of the staff is tangible and the buy-in of staff is a key factor to the success of any sustainability initiative.

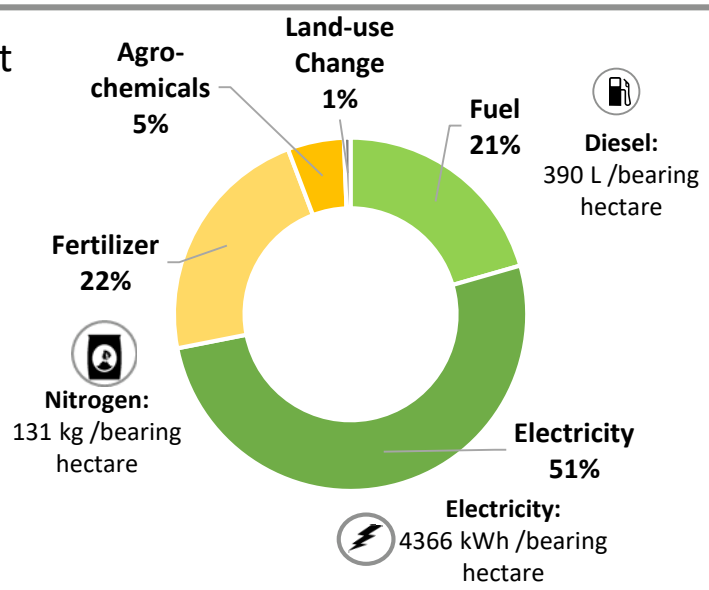
One of the innovative practices that was employed by Jacques du Toit, Managing Director Farm & Estate at Boschendal was to develop a trellising system for plums with a double row of trees on a ridge and to trellis up to a height of only 2 m. The trees are planted 1.5 m from each other and 1m is allowed between the rows. The shorter trees allows enough sunlight to penetrate the orchard.



What does the CCC benchmark tell us?

Reduce your carbon emissions at farm level by measuring and managing your hotspots!

- Electricity
- Synthetic Nitrogen
- Diesel



How does this trellising system and other sustainable farming practices reduce Boschendal's carbon footprint?

It is clear from the figures presented in the CCC stone fruit benchmark that electricity, fertilizer and diesel are the greatest contributors to the carbon emissions at farm level. The trellising system used by Boschendal allowed for approximately 3810 trees per hectare and an increased yield of 20-40%. The young trees has a yield of approximately 9t/ha by the second leaf crop.

Fuel usage was reduced as a result of the trellising system as the number of sprays were less and the sprays is concentrated on a smaller area and less is blown away. On average a saving of 120-150litre diesel/ha was achieved because spray pumps did not have to be filled that often. The effectiveness of the sprays resulted in a reduction of approximately 500-700liter/hectare of plant protection products. Not only does the reduced fuel usage lower the carbon footprint but also the reduced amount of plant protection products used.

When it comes to fertilizer usage, the focus at Boschendal is improved soil health. They apply fertilizer in small amounts eight times a year to ensure improved uptake and use by the plant. Furthermore they apply humates and use a combination of cover crops. Jacques confirms that their soil health and high humus content played a large role in their water saving. They measure the soil moisture content every hour in every hectare planted. This allows to apply precision irrigation and resulted in using 30% less electricity and water. The increased root density in the soil also allows the trees to use the water and fertilizer more effectively. They also make use of perennial nitrogen-binding cover crops that improves the soil texture, reduces compaction and increases soil organisms. The sustainable farming practices implemented at Boschendal contributed to reduced electricity usage for the pumping of water as less irrigation was required. **This reduces the kgCO_2e/kg fruit.**

In addition to the production and environmental benefits of the trellising system there was an important social benefit. The lower tree height allowed for higher worker productivity and also safety as workers do not have to climb on ladders to harvest the fruit. No time is wasted with the moving of the ladders and men and women can do the work at the same speed.

Carbon emissions and input costs savings goes hand in hand for both fruit and wine farms.

Optimising your irrigation needs through precision irrigation reduces your electricity bill for the pumping of irrigation water and reduces your carbon emissions.

Optimising the amount of plant protection products used, and synthetic fertilizer will reduce your impact on the environment, reduce your carbon emissions and reduce your input costs.

A saving of 120-150 litre diesel per hectare will lead to a saving of R1800-R2250/hectare at a price of R15/litre. In terms of carbon emissions the diesel saving will result in a saving of 337.20-421.5kgCO_2e/ha.

Contact Confronting Climate Change to start measuring and managing your carbon emissions.

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