

Confronting Climate Change: Understanding and addressing your hotspots.

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Background on Confronting Climate Change

To effectively realise and respond to the opportunities and challenges posed by climate change the Confronting Climate Change (CCC) Project was started in 2009 as a strategic cross-industry initiative aimed at supporting the South African fruit and wine sectors' efforts. Besides provision of a freely available on-line carbon emissions calculator the CCC promotes technical training supporting its adoption and use and has actively engaged with the retailers and importers to secure their support for the project. The results are accepted and feed in to existing retailer sustainability requirements. This helps to avoid duplication of carbon footprinting systems. Farms, packhouses, wineries and other entities across the supply-chain are enabled to undertake accurate measurement of the energy-use and carbon-emissions intensity of their respective business activities. Such measurement is generally accepted as a prerequisite for the effective management towards greater resource-use efficiency, reduced emissions and the long-term sustainability of business activities and operations. The management principle of "you can't manage what you don't measure" applies.

Farm hotspots

The electricity consumption for the **pumping of water** is the largest source of farm-level carbon emissions since South African grid supplied electricity is predominantly coal based, and therefore carbon emissions intensive both in production and use. The most significant factors determining the energy requirements being the irrigation intensity of the crop and the pumping "head" of the farm.

The second biggest emitter at farm level is the **usage of synthetic nitrogen-based fertilizers**. As the production of all synthetic fertilisers is energy intensive and in South Africa, the energy is predominately fossil-fuel based, making these inputs carbon emissions intensive. On the use side, the inefficient or over application of synthetic nitrogen fertilizers results in large amounts of nitrous oxide emission, a very powerful greenhouse gas: Once emitted to the atmosphere, one ton of nitrous oxide is equivalent to 300 tons of Carbon Dioxide. In addition, the prices of these inputs will continue to rise as the fuel prices go up, increasing the risk of increased input costs at the farm level. The more natural products are often multi-beneficial in that they increase soil health which does not only lessen the requirement of synthetic additions, but also improve water retention and productivity. Commodity groups that require more intensive fertilizer programmes will have higher carbon emissions than those that utilize more conservative and natural soil enhancement practices.

Diesel usage is the third largest emissions-source and relates to the usage of a variety of vehicles and equipment for spraying, harvesting, soil preparation, transportation and other farming activities.

Packhouse hotspots

Most of emissions at packhouse level are related to packaging material. The pome fruit and citrus (hard) packhouse emissions are the lowest of all fruit types, pointing to the less intense packaging requirements of these "harder" fruit types.

Winery hotspots

Winery hotspots relate to the use of virgin packaging material, particularly glass and corrugated cardboard boxes. The use of wooden barrels also plays a significant role in the winery emissions as these barrels are often imported and have a relatively short life span. These activities form most of the carbon emissions throughout the supply-chain and should therefore be targeted as a priority area for improved efficiencies and alternative product usage.

How can I reduce or manage my carbon emissions?

1. Start to measure your carbon related inputs.
2. Enter your data in the CCC carbon footprint calculator.
3. Read and analyse the detailed carbon emissions report provided once you have entered all your data correctly.
 - Look at your carbon emissions figure and compare it with the benchmark given in the report for your commodity and your region.
 - Look at the individual inputs to your business and learn from the report what percentage they attribute to your total carbon emissions. Start to manage those that cause the highest emissions in your business.
 - Look at the consumption figures (e.g. electricity used per kg of fruit produced or per ha) and compare your business with the benchmark for your region and commodity.
4. Communicate the results of your carbon footprint analysis within your organisation and incorporate the results in your management tools.
5. Address the hotspots within your organisation by implementing improved efficiency measures and targets through improved management and operational control and/or new technology where applicable and where the budget allows.
6. Don't forget to think out of the box! Change the paradigm and aim to be innovative in your approach to adapt to climate change.