Case study – Achtertuin Farm's sustainability story unveiled through the CCC carbon calculator

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CONFRONTING CLIMATE CHANGE
A SOUTH AFRICAN FRUIT & WINE INITIATIVE

About the CCC Initiative

The Confronting Climate Change (CCC) Initiative is a carbon footprinting project developed to support SA's fruit and wine sectors by identifying and responding to the risks and opportunities associated with carbon emissions.
CCC approached Steven Versfeld, a pome fruit grower, dedicated CCC user, and the current owner of Achtertuin Farm, to share his sustainability story and some of his experiences with the online carbon calculator.

Achtertuin Farm

Achtertuin Farm is a testament to the potential of measuring your carbon footprint and implementing practical interventions to reduce emissions. Achtertuin has used a range of sustainability initiatives, including installing solar panels, implementing integrated pest management (IPM) principles, less synthetic fertiliser, and promoting soil health and biodiversity. Each of these implementations has a ripple effect on the actions taken on the farm and, therefore, the carbon footprint. For example, Achtertuin's IPM principles mean less spraying, less pesticide use, and, as a result, less diesel use, which influences the farm's overall carbon footprint. In Achtertuin's words, the CCC carbon calculator tool has made it possible to quantify their carbon footprint and highlight where the most effort needs to be put in to make significant changes. Achtertuin specialises in the fruit industry. However, their sustainability implementations can be applied to the fruit and wine industries and the different commodities that fall within them.

Calculating one's carbon footprint is especially relevant in the fruit and wine industry. JDK, a prestigious table grape farm, is another prime example. JDK's philosophy is one of 'knowledge is power', which is precisely what calculating your carbon footprint provides. In JDK's words; "carbon footprint enables us to accurately measure our contribution and benchmark ourselves against other farms. It also highlights potential areas of concern or areas where we can improve, thus stimulating an attitude of continuous improvement towards our carbon footprint." The CCC calculator provides exactly that – potential for continuous improvement, future-thinking, and growth within a sustainability-orientated framework.

Achtertuin Farm's engagement with CCC

How did it come about, and why is the work CCC does with the carbon calculator of interest to you?

Having been among the pioneers to adopt the CCC carbon calculator when it was introduced in 2011, Achtertuin Farm has maintained an intermittent utilisation of the calculator over the years. However, since 2016, we have consistently used the calculator annually, contributing to our ongoing commitment to sustainability. The CCC Initiative has allowed Achtertuin Farm to quantify our carbon footprint and help highlight where we need to focus our time and money to achieve the most significant improvements.

What emission reduction and other sustainability initiatives have you implemented at Achtertuin Farm?

We have implemented several initiatives at Achtertuin Farm, some of which include:

Biological farming

When I started farming almost 30 years ago, my father and I embarked on a journey towards biological farming, gradually moving away from conventional methods in the mid-nineties. Today, this approach is an integral part of our farming practices, with a strong emphasis on soil health and minimising chemical inputs. While we still utilise synthetic fertilisers, herbicides, and pesticides, when necessary, our goal is to keep their usage to a minimum.

Recently, we have begun experimenting with cover crops as a potential alternative to herbicides. This method involves cultivating a dense layer of organic matter during winter, providing a sustainable weed control solution, which naturally decomposes during summer, providing additional organic matter to enrich the soil naturally.

Achtertuin Farm

Chipping old orchards for mulch.

To create a favourable environment for soil life, we allow weeds to grow on the "bankie" (the banks of the orchard) and chip all prunings onto it as mulch. Additionally, we are gradually reducing our synthetic nitrogen (N) usage while closely monitoring the impact of this reduction. We rely on K2SO4 (potassium sulphate) and soft rock phosphate as soil-friendly sources for K (potassium) and P (phosphorus).

In pest control, we employ natural predators to manage mites and mealybugs, and we utilise mating disruption techniques to control codling moths. This approach not only reduces pesticide use but also minimises the need for spraying, leading to a decrease in diesel consumption.

Energy efficiency

In 2012, we took the initiative to install our first variable speed drive (VSD) to reduce the power consumption of our irrigation pumps. By 2020, we had successfully equipped all pumps on the farm with VSDs. Additionally, in the same year, we installed a grid-tied solar system. Unfortunately, our ability to expand our solar installation has been limited due to regulatory constraints.

The recent occurrences of high levels of load shedding have compelled us to invest in backup generators to ensure uninterrupted production of a high-quality product. Recognising the cost and carbon footprint implications of running generators, we have made significant investments in integrating the generators with solar and battery backup systems. This integration allows us to minimise the use of generators and optimise the utilisation of renewable energy sources.

Furthermore, every house on the farm is equipped with wood-burning fireplaces and solar geysers. Additionally, each house has a "donkey" mounted above the fireplace, which harnesses the fire's heat to warm the water in the solar geysers. This setup enhances energy efficiency and utilises renewable resources for domestic purposes.

Achtertuin Farm

Mechanisation.

Fuel efficiency

Reducing diesel consumption is a key focus for us, as spraying accounts for a significant portion of our fuel usage. To address this, we prioritise the purchase of new spray tractors and pumps based on their fuel and power efficiency. In particular, we have found that tower sprayers offer greater efficiency compared to traditional round blowers, optimising our diesel consumption during spraying operations.

Furthermore, our commitment to biological farming practices plays a crucial role in minimising the need for spraying. By allowing beneficial insects to thrive and establish a natural balance, we can reduce reliance on chemical interventions and thereby decrease diesel usage. Achtertuin Farm's integrated pest management practices result in fewer spraying instances, reduced pesticide application, and, consequently, a lower overall diesel footprint.

Recycling

All on-farm household waste is collected at a central point, and we encourage recycling by providing every household with multiple drums. The central point has a skip for general waste and containers for recyclable waste.

Removal of invasive alien vegetation

We have removed all invasive alien vegetation from the farm and follow a yearly programme to remain alien-free. We are trying to establish a riverine forest of natural trees and make annual trips into the adjacent mountain to remove pines and hakea from the mountain slopes above the farm.

What benefits does the CCC carbon calculator provide to Achtertuin Farm?

The carbon calculator is a requirement that enables us to access a premium market. It has allowed Achtertuin Farm to quantify our carbon footprint, and it also helps to highlight where we need to prioritise our time and money for significant improvements.

What would you consider the most valuable feature of the CCC carbon calculator?

I find the benchmarks particularly valuable as they allow for direct comparisons. For instance, by benchmarking diesel usage, I discovered that I am operating at just 50% of my region's average diesel consumption per hectare. This indicates to me that I'm going in the right direction. In essence, the calculator serves as a gauge, enabling us to identify areas of improvement and ensure we are on the right path.

What is your experience with the CCC carbon calculator results/report? Does it have value for you?

I love getting the result, comparing it to the benchmark, and seeing where our focus should go. One aspect that stands out in the report is the electricity used for irrigation. I aspire to eventually have around 50% of my irrigation powered by solar panels as a renewable energy source. Ideally, I would love to transition to run entirely on solar power. However, the main obstacles are the significant costs involved and the regulatory constraints that prevent further expansion of solar installations in South Africa.

What are your thoughts on the Carbon Heroes initiative?

I like the initiative as it allows progressive farmers to tell their stories. I really like the Carbon Heroes QR code as it provides a means to tell our story to the end consumer. The person buying the pear can now scan the code with their cellphone and access the story behind it. ▮