



FCCT – Carbon Calculator Case Studies

Tolhurst Organic Produce, Berkshire

Sustainable Organic Growing

Location: Near Reading, Berkshire

Farm size: 8 hectares

Farming: Field scale vegetables, veg box business

Carbon balance: Positive impact as a result of sequestration activities

Sustainable practices: Wildlife habitat creation, recycling, green manures

Business benefits: Improved soils for increased productivity

Tolhurst Organic Produce



Tolhurst Organic Produce is one of the UK's longest established organic vegetable growing business. Based on the Hardwick Estate west of Reading in the Thames Valley, they have 7ha of field scale veg and a 1ha walled garden, growing more of the labour-intensive crops. The main income source is a veg box scheme supplying families in Reading and Oxford.

Environmental awareness is at the core of the business and Iain 'Tolly' Tolhurst is widely regarded amongst peers as being a grower who pushes the boundaries and sets high standards. Tolly has long been interested in supplying vegetables to his customers with a low carbon footprint, and in 2001 commissioned the University of Surrey to examine his business operations from an environmental perspective.

Completing the Farm Carbon Calculator in 2012 has been a natural step for the business.

Carbon emissions

Farm operations are quite simple, with most diesel used in tractors for cultivations and carting (two thirds) and pumping water for irrigation (one third). This accounts for just under 19% of total emissions.

Distribution to customers is done by van to drop-off points in nearby Oxford and Reading, every week of the year. Total emissions, from using the farm's own van and a local courier, account for 33% of emissions. Box scheme businesses are disadvantaged from other businesses in terms of carbon emissions because they deliver to the customers' door, whereas for many farms point of sale occurs at the farm gate.

Electricity is a significant contributor to emissions at just under 17% of total emissions; about half of this is used in propagation for heat-loving crops like tomatoes, cucumbers, peppers, etc.

Materials use and emissions (2.5%) is very low, due to a policy of re-use and tight financial controls on consumables. Even packaging for deliveries is re-used many times, much reducing resource use. For instance paper delivery bags are re-used 5 or 6 times, reducing use from 1 tonne to 200kg of new bags per year! There has been a conscious decision to decrease the amount of plastic used.

Embodied energy in the business' van, being less than 10 years old, contributes 6.3% of total emissions.

The farm has no livestock, using green manures to build fertility in the soil. These green manures, including red, white and crimson clover, vetch and lucerne, account for 11% of total emissions through N₂O they release as part of the Nitrogen-fixing process. However this pays handsome dividends in both Nitrogen and Soil Organic Matter (see later). Tolly also uses woodchip derived, locally sourced organic compost, which improves Soil Organic Matter.

Waste management is taken very seriously and all waste is recycled. This gives an emissions offset equivalent to 10% of total emissions.

Sequestration

A policy of creating habitat for wildlife in the fields also has given opportunities for a lot of carbon sequestration. Hedgerows are allowed to grow tall and wide, accounting for 17% of total sequestration. A small area of woodland, along with an area of willow coppice in a damp corner of one of the fields, account for over 24% of all sequestration.

One of the most surprising figures perhaps was for the amount sequestered in the field margins. This permanent pasture around fields and beetle banks within fields is actually quite a large area, nearly 1 hectare in total, and accounts for nearly 9% of total sequestration.



The biggest challenge for growers is how to build Soil Organic Matter, because cultivating soil is the best way to lose it! Over the course of the last 25 years, Tolly has managed to continually build organic matter levels *without* the use of external inputs. This has been achieved through extensive use of green manures and a tillage policy of shallow and timely cultivations. This is a remarkable feat, and the positive contribution of rising organic matter levels across cropped areas accounts for an impressive 49% of all sequestration.

The overall balance

Total emissions come to 16.6 tonnes of CO₂e (a measure of all greenhouse gases expressed as the equivalent in CO₂) per year, a remarkably low figure for a business producing veg for 150 families. But most excitingly, total sequestration comes to around 21t of CO₂e per year, meaning the whole farm is 'carbon positive' by over 4t CO₂e per year.

This shows that there are methods of growing vegetables with minimal inputs, producing good yields and still sequestering far more carbon than is emitted.

Summary

All Tolhurst Organic Produce customers receive vegetables every week that technically lowers their carbon footprint.

This is an exciting concept and demonstrates the power of farm land to turn agriculture and horticulture into a carbon positive activity that can help to bring down atmospheric CO₂ levels and reduce the impacts of climate change.

More information on Tolhurst Organic Produce:

www.tolhurstorganicproduce.co.uk

Use the **Farm Carbon Calculator** to measure your farm's emissions and identify where to focus efforts: <http://www.cffcboncalculator.org.uk/>

Read the **FCCT Toolkit** for more information on how to implement these techniques: <http://www.farmcarbontoolkit.org.uk/toolkit>