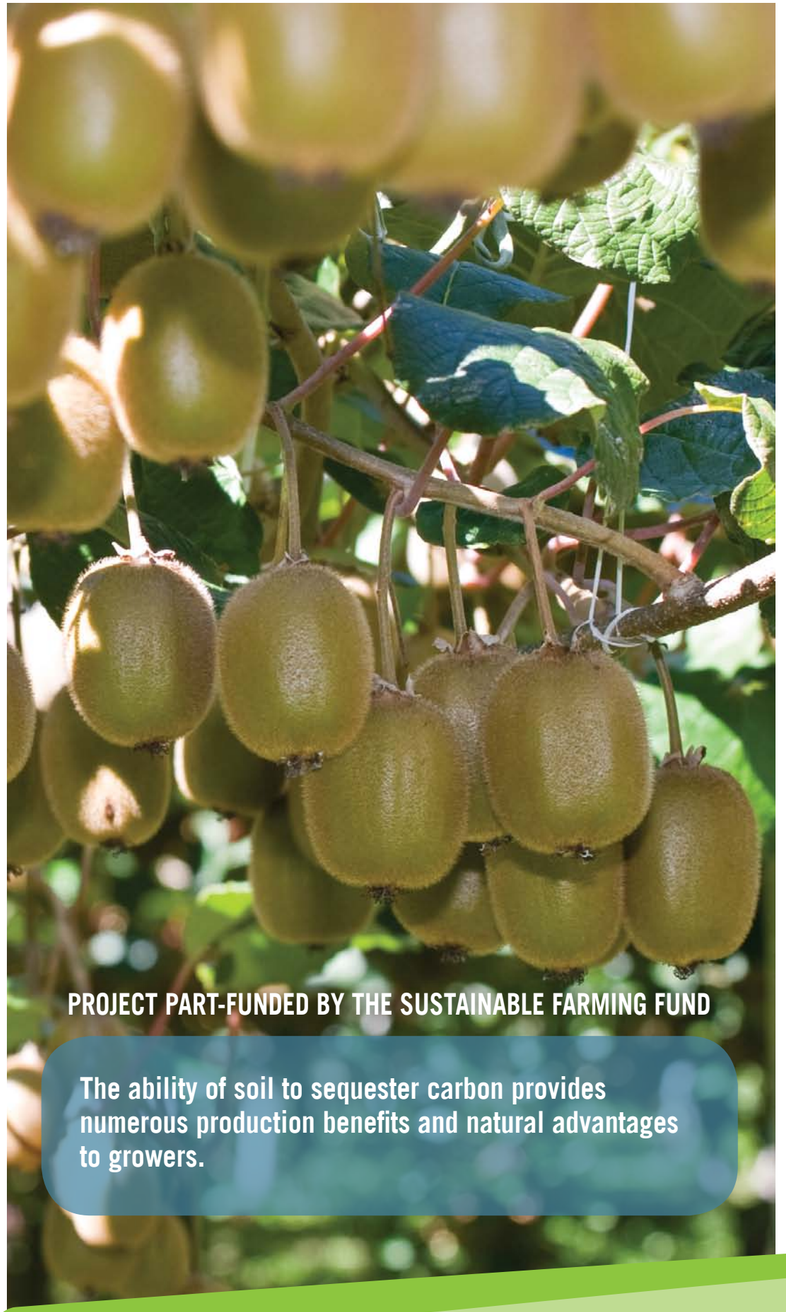

PROJECT PART-FUNDED BY THE SUSTAINABLE FARMING FUND

**The ability of soil to sequester carbon provides numerous production benefits and natural advantages to growers.**

# KIWIFRUIT ORCHARD CARBON STORAGE

Ministry for Primary Industries
Manatū Ahu Matua

## THE ISSUE OR OPPORTUNITY

The ability of soil to sequester carbon provides numerous production benefits and natural advantages to growers. By adapting orchard management practices to maximise and enhance soil organic carbon (SOC), kiwifruit growers can contribute to the long-term sustainability of the New Zealand kiwifruit industry.

Soils with high levels of SOC:

» have a greater capacity for water and nutrient storage

» promote high levels of healthy microbial activity

» may contribute to the natural control of potential agricultural pests

» may impart resilience to the effects of climatic extremes such as drought or high-rainfall events.

SOC stock is the biggest terrestrial carbon reservoir in the world, and maintenance and enhancement of these carbon reserves would help mitigate atmospheric $CO_2$ increases.

## RESULTS

The study, by Plus Group, set out to quantify both the above- and below-ground carbon storage, including its environmental and economic implications in New Zealand kiwifruit orchards.

The study showed:

» SOC varies greatly across New Zealand's kiwifruit growing regions.

» Older, more established orchard blocks had sequestered more carbon than younger blocks.

» Soil at a depth of 9 metres under a 30-year-old kiwifruit orchard sequestered significantly more carbon than an adjacent pasture soil. The kiwifruit vines are developing soil at depth.

» By extrapolating the 9-metre depth results of this study across the total landmass dedicated to kiwifruit production, it can be estimated that the New Zealand kiwifruit industry sequesters approximately 90 000 tonnes of carbon annually.

» This research study found that kiwifruit orchards sequester carbon equating to 4 percent of the GHG emissions associated with the production of Hayward kiwifruit for consumption in the UK in the top 1 metre of soil. If the top nine metres of soil were included in the calculations, the amount of carbon sequestered equates to approximately 42 percent of the GHG emissions.

Growers are continually looking for ways to reduce orchard inputs, such as fertilisers and protective sprays, without compromising fruit quantity, quality, size, and taste or storage life. By fully understanding the stored carbon profile of their orchard, a grower may be able to tailor orchard management practices to maintain and improve it. Any increase in SOC will improve soil drainage, root penetration, soil aeration and help to reduce compaction, enhancing the natural water storage capability and the soil nutrient and microbial activity. In practical terms this may mean less nitrogen and irrigation is required across the orchard.

A fact sheet is available from the following website: **http://www.plusgroup.co.nz**

## AT A GLANCE

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|---|---|
| SFF project | C09/20 Carbon storage in kiwifruit orchards to mitigate and adapt to climate change |
| SFF investment | $459 614 |
| Other contributors | Zespri ($159 200) |
| Total project value – $628 814 | |

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New Zealand Government