



CASE STUDY

BACKGROUND

Ken and Mary purchased Longmile Mangoes, a 32.4 ha Seaforth property in 1995. The former cane farm is located approximately 60 km north of Mackay between Mt Ossa and Seaforth within the Murray Creek Catchment. Today, the property is primarily used for mango production, with 1000 trees on a 6 ha mango orchard. As part of a holistic farming approach, the property also carries 50 head mixed cattle and pasture hens.

In 2014, after spending years observing the rural sector for ideas on how to improve soil health, Ken and Mary learned about the benefits of biofertilisers, and how to implement them. Their learnings were substantiated after attending a farm tour organised by Reef Catchments.

Since then, with Reef Catchments support and through funding from the Queensland Government, Ken and Mary have implemented a Soil Health trial, which aims to demonstrate improvements in soil health and tree crop productivity. A range of Mashumus organic fertiliser products are applied, which are made on-farm by Ken himself.

Funding provided through the Australian Government Reef Programme has also allowed Ken and Mary to improve water quality leaving their farm, with the installation of 1800 m of riparian and gully fencing, together with the establishment of two off-stream watering points for controlled stock access. This has allowed stream banks to recover, reducing sediment runoff into the Great Barrier Reef Lagoon. Additional land type fencing has been installed by Ken to improve his overall grazing management and ground cover.



FOCUS ON



Ken and Mary Ede Longmile Mangoes

- ▶ Ken, like many other farmers in the region, faced challenges including declining yields, poor soil health, and the desire to reduce nitrogen inputs.
- ▶ Today, the Ede's focus is on their inputs and measuring improvements in soil health, fertility and carbon levels.
- ▶ Sustaining the environment is important to Ken. Through his on-farm operations he is demonstrating that soil health is a critical foundation for a more productive operation. By significantly reducing chemical fertiliser inputs and instead focusing on home-made Mashumus biological fertiliser, the Ede's have realised both economic and environmental benefits.



WHAT'S HAPPENING?

Ken and Mary's farm consists of five blocks of mangoes. Adjacent to their home and packing shed are Front Block's A & B, with the latter being implemented recently during the 2015-16 wet season. On the outer margins of their property are Back Block's A, B & C.

Southeast of Back Block A, a control site has been implemented. This site does not receive the Mushumus treatment but is used as a comparison site to examine treatment potential.

The property is situated mainly on Wagoora soil with moderately deep (0.6 to 1m), red-brown, non-cracking clay soil that is formed on basic volcanic rocks and occurs on a landscape of gently undulating rises. The soil is relatively uniform over most of the blocks but changes to darker, poorly drained soil half way along Back B block.

The Mushumus treatment consists of a fish emulsion and molasses mix. The emulsion is brewed from fish frames added to the base mixture of cow manure, molasses, milk and yeast.

Four other mixes that supply macro (phosphorous, potassium and calcium) and micro (iron, boron, zinc, cobalt, silica and molybdenum) nutrients are used as required. For the application 20 L – 30 L of each of these mixes is added to a 500 L spray tank that is topped up with water and sprayed onto the mulch layer under the mango trees. Nutrient levels are monitored via soil and leaf analysis twice annually (January and May). This provides the trial baseline data.

Under-tree mulching is practiced on the orchard whereby the inter-row cuttings are deposited under the trees by a side-throwing mower.

Foliar applications of Bio-Kelp mixture, Fruit and Flower, potassium sulphate and boron are also made around the flowering period from July to September. Typical fungicides, insecticides and herbicides are applied as required throughout the year.

To control weeds, glyphosate is applied when necessary. However, liquid humic, worm juice and molasses are applied one week after the glyphosate treatment to stimulate soil microbial populations.

Soil microbial analysis is conducted four times a year for this trial to determine the effects on the soil microbial applications, with base line sampling undertaken in March 2015.

“We looked at all these different kinds of farming systems, but I didn't want to jump in until we found something that could be commercially viable. We've reduced our fertiliser use by 85% and that's with a slight rise in productivity most years.”

- Ken Ede, Longmile Mangoes



OUTCOMES TO DATE



While results started to become apparent to the Ede's from observation, it was important that they were measured. Over the past three years, Reef Catchments has assisted with monitoring, measuring and researching the changes in the soil. Soil attributes like microbe levels and activity, soil carbon and water holding capacity are monitored. The reduction of artificial fertilisers has resulted in increased nutrient availability and enhanced soil quality.

Following the success of the treatment on his fruit trees, Ken has started applying the same concept to his grazing pastures. For several months since early 2016, Ken has applied his biofertiliser via boom spraying to his paddocks shortly after they have been intensively grazed and new grass shoots emerge. This has greatly improved 3P grasses and dung beetle populations have multiplied.

For the future, Ken and Mary are planning to implement a fertigation system on their orchards and pastures with a view to increasing their carrying capacity of cattle.

KEY POINTS



- ▶ 32.4 ha property
- ▶ 1800 m of riparian and gully fencing
- ▶ Installation of two off-stream watering points
- ▶ Soil health improvements by applying biofertiliser (i.e. Mushumus) to mango orchard and pastures
- ▶ Ongoing soil tests and analysis to provide regular data and to track the outcome of applications on the mango orchard
- ▶ Ken was one of the key speakers at the Mackay Healthy Soils Symposium 2016, hosted by Reef Catchments. The event was designed to stimulate learning and discussion amongst local horticulturists, graziers, cane farmers and other industry members. Participants of the Healthy Soils Symposium gained an insight into what growers are trialling locally and heard from experts, including Kym Kruse from RegenAg, on how they can benefit by making soil health a priority. The event was well attended, including the workshop delivered on the following day, with more than 65 farmers engaged.

REEF CATCHMENTS (MACKAY WHITSUNDAY ISAAC) LIMITED

PH (07) 4968 4200

E info@reefcatchments.com

www.reefcatchments.com

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