



CASE STUDY BACKGROUND



David Hunter owns and manages an organic banana farm at Cameron's Pocket, near Calen, 55km north west of Mackay. The beautiful St Helens Creek and Eungella National Park border the 50 hectare property, which has 6 ha under banana production. When David moved to the property in 1989, banana crops were already established.

In 2000, David Hunter became interested in becoming a certified organic farmer and so began the first steps towards changing his farm. In 2003, David became A-grade organic certified. Since then, he has been busy doing significant revegetation of native species across his farm. This has included major efforts planting up bare hill slopes and putting in wind-breaks for crop protection. Unfortunately damaging winds from Tropical Cyclone Debbie in March 2017 lasted for 4-5 days at David's property, causing shredding of leaves to the majority of his trees as well as many parent trees being knocked over and destroyed. In hindsight Dave noted rather than putting up supports for the trees prior to the cyclone he would have cut the tops off parent trees so that at least the suckers could now be supported with the parents' trunks.

FOCUS ON

- ▶ Cover crop diversity
- ▶ Building soil carbon
- ▶ Improving soil biology within and between the rows
- ▶ Biological control of pests



KEY POINTS

- ▶ Feeding the biological system with brush cuttings from the interrow
- ▶ Emphasis on increasing soil carbon and therefore soil fertility across the entire banana crop
- ▶ Suppressing less desirable species by promoting growth of preferable species e.g. Pinto Peanut legume to fix nitrogen in the soil



Dave's philosophy is "The more you tap into the natural system you will find that nature will keep things working on its' own." To be certified organic means that David is not allowed to use chemicals to control pests such as weeds, rats and insects on his farm. Dave says all of the weed control is currently done mechanically, by slashing and brush cutting. The grass cut from the interrow is thrown onto the rows as mulch and feeds the microbes, perpetuating the health of the biological system. He has also tried to encourage biological control of rats, noting that European rats cause worse damage than natives and the presence of native rats decreases in that of the European. Also, by ensuring the grass is kept short so that they can be better exposed to their predators. During his fallow, David also utilised brassica crops that can help provide a natural control for soil pests such as nematodes. For nutrients, David says he is only allowed to use certified organic fertilisers. "We make our own compost onsite from a range of organic sources such as chook manure, and this is spread out under the bananas." David also uses a legume crop called Pinto Peanut in his crop and interrow to help provide some nitrogen and ground-cover, leaving no soil exposed. Dave says that rather than constantly fighting the variety of weeds that have arrived over the years he has found it better to work with nature, helping to promote the growth of preferable species over potential competitors.

One area of the farm that Dave was keen to improve was his irrigation system. He was using a high pressure overhead sprinkler system and was noticing some issues. “In the Mackay Region, we need to have a lower planting density than up north, to let sun into the crop during our colder winter.” Also, with the decreased canopy cover, some run-off was caused by the high pressure irrigation. Dave was keen to prevent this run-off and was successful in getting funding to implement an under-canopy micro-sprinkler irrigation system with fertigation capabilities. This meant that Dave had to change the entire setup of his farm to suit the new system and obtain the most benefits. The banana crop with the irrigation system is now a double row of bananas so as to maximise the 3 metre diameter of the micro-sprinklers and to get the best root growth from the crop. Dave has noted reduced losses from evaporation, and uses a fertigation system for applying fertilisers like fish emulsion and trace elements such as Boron and Zinc. “This means we can apply the right amount at the right time and have confidence in the equipment we are using.”

To better understand the benefits that Dave’s practices are having on the soil health and improved soil biology, Reef Catchments has assisted with funding a series of soil tests to determine whether any changes or improvements are occurring. Dave has placed significant emphasis on increasing his soil carbon across the entire banana crop. Microbial tests



“If you want to have a great diversity of biological life in your soil, you need to have a great diversity of plants so we don’t look at weeds as the enemy anymore””



undertaken provide comparison from within the row of trees (in the row) and between the row (inter-row) of trees across a site. Dave is hoping that the soil health is improving overall, so that the banana root systems are able to extend further and access nutrients in the soil between the rows.

Reef Catchments has helped David implement a number of changes to his farm. He was always keen to look at adopting an improved irrigation/fertigation system, but the cost was going to make it a long-term project. The work David is doing through Reef Catchments is improving water quality through reduced sediment and particulate nutrient losses by maintaining inter-row ground cover and soil health. David is also reducing the risk of dissolved nutrient losses with accurate-targeted nutrient applications through a fertigation system and nutrient rate based on crop requirements.

Continued professional development in biological farming means Dave is at the forefront of practice change with in region. His ongoing research and trials are beneficial to other growers seeking to improve farm fertility and water quality.

OUTCOMES TO DATE

- ▶ A-grade certified organic
- ▶ Prevented run-off by moving away from high-pressure irrigation to microsprinklers
- ▶ Promotion of soil health into the interrows crop root growth
- ▶ Improved water quality by reduced risk of sediment and particulate nutrient losses from good inter-row ground cover



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