



# Case Study

## Improving Soil Health and Income Diversity with Extended Break Crops



<b>LANDHOLDER</b>	Joe Muscat
<b>LOCATION</b>	Oakenden
<b>CATCHMENT</b>	Sandy Creek
<b>RAINFALL</b>	1500mm
<b>PROPERTY SIZE</b>	172ha
<b>ON-GROUND PROVIDER</b>	Farmacist Pty Ltd Author: John Turner

**Project Catalyst** is a grower led, sugar cane innovation and adoption project that explores, develops and validates farm management practice change to improve the enduring water quality of the Great Barrier Reef.

### BROADER ADOPTION VALIDATION & GROWER SUPPORT

Founded in 2009, the project operates in the Mackay Whitsunday, Burdekin and Wet Tropic regions to deliver valued practice change outcomes and develop methods for industry adoption. Under the Broader Adoption and Grower Support program, professional on-ground service providers assist selected growers to adopt and validate appropriate change practices. Service providers continue to monitor implementation benefits and derived environmental performance improvements. Through targeted extension activities, the program seeks to accelerate the uptake and broader adoption of improved farming practices at local, regional and industry levels.



Fig.1 Joe harvesting maize crop



Fig.2 Joe's grain storage increases marketing flexibility



Great Barrier Reef Foundation



●●●● Goal

To integrate extended break cropping into the farm system to improve soil health and farm productivity outcomes.



Fig.3 Joe Muscat demonstrating his soybean break crop to growers at field day

●●●● Overview

Trials conducted by the industry's step-change research effort, the Sugar Yield Decline Joint Venture, determined that long-term breaks in the monoculture of sugarcane resulted in significant increases in soil health and sugar cane production.

A number of crop types are considered valuable to this whole farm system approach: legumes (ie. cowpea, mungbean, sunn hemp, soybean), grain crops (ie. sorghum, maize) and fibre crops.

Joe's aim was to reduce pachymetra and nematode populations in his lighter soils by increasing crop diversity. The break crops selected also had to be economically viable.



Fig.4 Joe Muscat inspecting sugarcane crop

●●●● Action

Joe, in consultation with Farmacist, wanted to investigate his options to break his sugarcane monoculture by introducing a three crop, 18 month fallow (summer-winter-summer).

Joe introduced a rotation of soybean, followed by maize and back into soybean as the final crop before returning to sugarcane.

All break crops were intended to be harvested for grain.

●●●● Outcome

Joe observed that productivity throughout his paddocks became increasingly more uniform as each crop was grown.

Experience is that the second soybean crop performs better than the previous crop. He believes this is due to the improved soil health that has resulted from increased beneficial soil biology. Pachymetra and nematode populations following extended break crops have decreased.

Additionally, the introduction of legumes has produced an opportunity to reduce nitrogen rates on the following cane crop. Joe has worked hard to ensure the selected break crops perform optimally to provide an economical benefit. Joe will continue with an extended fallow using break crops as part of his whole farm system.

For further information contact John Turner (Farmacist) Mb 0437 581 921.

