



# Case Study

## Soil Biology Benefits of a Mixed Species Fallow and Cattle Grazing



<b>LANDHOLDER</b>	Gary Spotswood
<b>LOCATION</b>	Inkerman
<b>CATCHMENT</b>	Burdekin
<b>RAINFALL</b>	948mm
<b>PROPERTY SIZE</b>	171ha
<b>ON-GROUND PROVIDER</b>	BPS

**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.



Prior to mixed species fallow



During mixed species fallow



Great Barrier Reef Foundation



●●●● Goal

To investigate the impacts on soil biology before, during and after the growth of a mixed species fallow and cattle grazing.



Mixed species fallow

●●●● Overview

Gary Spotswood farms horticultural crops, cattle and sugarcane on his property south of Home Hill. He is focused on producing organic products for his consumers and understands the importance of soil health and the vital role it plays. Gary is interested in finding what soil health benefits he can get from using a mixed species fallow, followed by cattle grazing. He believes that doing this repetitively over a period of time should help increase his soil ecology before planting sugarcane back on the block.



Cows in paddock eating mixed species

●●●● Action

Gary wanted to test the soil bacterial, fungal and nematode populations in the block during his standard bare fallow, when the mixed species was rapidly growing and after the cattle had grazed the mixed species down. The mixed species were spread on the block and watered in May 2020; this mix consisted of lab lab, corn, mung bean, cow pea and tillage radish.

A soil test was taken to establish the nutrient baseline and nematode samples were taken to find the nematode population level. Biological samples were taken at four points in August and these same locations were sampled again during the mixed species growth. These will be sampled once again when the cattle leave the block. The results will then be compared to the baseline test to find how the soil ecology has changed. A final nutrient soil test will also be taken to find if there have been any significant nutritional changes.

●●●● Outcome

The mixed seed came up quite well in some patches, there was a high population of lab lab, mung bean and corn. However, there were also grasses and vines that came through. From the soil test results it was found that the ESP of the block was above optimal levels. Mainly grasses and vines were found in the areas with high ESP and most likely was a contributor to the mixed species not emerging as expected. High EC irrigation water was used in the drier periods of the year which could not be prevented. To counteract the salinity/ sodicity issue before planting cane, a crop of forage sorghum may be planted to help alleviate salt levels.

From the biological test results so far it has shown that the microbial biomass has increased significantly from bare fallow to mixed species in all sample locations, the fungal to bacterial ratio has increased in some areas but decreased in others.

