2021

PROJECT CATALYST

Case Study

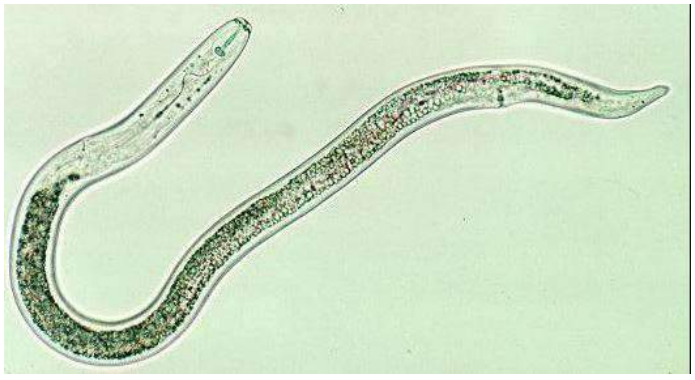
Using Molasses to Help Mitigate Nematode Damage on Sugarcane Roots

LANDHOLDER	John Arrate
LOCATION	Home Hill
CATCHMENT	Burdekin
RAINFALL	948mm
PROPERTY SIZE	43ha
ON-GROUND PROVIDER	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 bene its 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.



Root lesion nematode

Close up of molasses mixture coming out of applicator

Australian Government | REEF TRUST | Great Barrier Reef Foundation | THE Coca-Cola FOUNDATION | WWF

Goal

To reduce plant parasitic nematode damage on sugarcane roots by using a molasses mixture at two different rates applied subsurface.

Calibration of molasses applicator

Overview

John Arrate's farm is located on the banks of the Burdekin River. In the last several years, John has experienced a significant amount of nematode damage on majority of his farm. Previous testing has shown that both root knot and lesion nematodes are present above the optimal level. John would like to control for these nematodes in a less invasive and more cost effective way than pesticide use.
He had heard from veggie growers that they used to use molasses for their nematode issues, so he considered that he could do the same in his cane crop. The molasses would provide a food source for the whole soil microbial ecosystem which will ultimately increase the complexity of the food web.

Molasses density being measured

Action

The trial had three treatments:
1. Control (no molasses)
2. One application of molasses at 500L/ha
3. Two applications of molasses at 500L/ha each with four weeks between applications

These treatments were set out in five row plots and each was replicated three times.

A soil test was taken prior to the molasses application to determine nutrient requirements and a nematode test taken to determine the current nematode pressure across the block. The molasses was then calibrated at a 1:1 ratio with water. We calibrated the brew to apply at 500L/ha and this was applied over the block. The second application was applied four weeks later at the same rate. Nematode samples were then taken again in each treatment four weeks later to compare the nematode population's response.

Outcome

From the nematode test results we found that there was already a higher number of beneficial nematodes compared to plant parasitic nematodes (PPN) in the baseline test which was unexpected given his history of high numbers. After the second lot of tests came back from the individual treatments we could compare how the populations of PPN and beneficial nematodes had changed in response to the molasses. We found that the baseline and the control samples were at very similar levels which was expected. The single application of molasses had a higher amount of PPN, whereas the two applications had more beneficials and less PPN. This could indicate that the single application increased the overall nematode population, but in doing so the PPN population increased. Whereas a second application helped feed and boost the beneficial nematodes and other microbes therefore suppressing the PPN.