

# CASE STUDY

JULY 2023

## Zero Till Planting of Legumes

### Storing Nitrogen to Reduce Fertiliser Inputs

Pindi Pindi farmer Paul Manning has long recognised the importance of nitrogen storing legumes in improving the health of his soils. By using an air-seeder and zero-till planter he has improved his success with planting mixed crop legumes after sugarcane.

Paul farms in the Pindi Pindi area on the Mackay North Coast. His soil type is mainly Solodic - a sandy clay loam over a mottled grey clay subsoil. These soils can be prone to waterlogging due to slow permeability and can be sodic at depth. The topsoil is also subject to hard-setting and compaction. Paul is continually trying to improve his soil health and over the years has tried to plant legumes in worked fallow with mixed success.

### QUICK FACTS

- **Grower:**  
Paul Manning
- **Project Focus:**  
Nutrient Management
- **Project:**  
\$19,000 incentive contributed to the purchase of an air seeder and legume planter.
- **Outcomes:**  
Reductions in future fertiliser input due to the nitrogen stored by the legume crop.

In 2021, Paul used the MAPS planter to direct drill soybeans into the old sugarcane stool area. This was a success and produced a uniform green manure crop. He recognised the importance of being able to zero till plant legume crops after sugarcane, as well as the necessity of having his own equipment - especially with his dryland conditions.

This case study was developed by Mackay Area Productivity Services as a delivery partner for Reef Catchment's Reef Trust VII Project.



## Activity

Through MAPS, Paul applied for a grant from the Proserpine O'Connell Basins Water Quality Project towards the cost of a new legume planter and received \$19,000. Paul constructed his own planter, similar in design to the MAPS planter, but with some major differences – he fitted some extra coulters to cut through the trash and purchased an air seeder box instead of the conventional seed plate boxes. This also gave him the ability to plant different crops with different seed sizes.

In early January 2023, Paul planted both Mossman soybean and Caloona cowpea onto the old cane row and later sprayed out the sugarcane with the herbicide, Verdict. Despite receiving over 850mm of rain in 7 days in the middle of January, the legumes were not submerged and survived.



Figure 1: Paul with his new air seeder

## Outcome

Paul also decided to plant a demonstration site with various legume varieties with his new air seeder. With help from a local agronomist from an agricultural retail company, he planted several strip sites; a multispecies, a mix of legumes and individual legumes. The multispecies included cowpea,

sunn hemp, buckwheat and plantain, while the legume mix was soybean, cowpea and sunn hemp. He also applied a residual pre-emergent herbicide in some of the strips as a visual demonstration and for phytotoxicity symptom purposes.

A grower field day was held in February 2023 to view the planter, the strip sites, and the rest of the legume planting on the farm. This was an excellent opportunity for growers and extension staff to discuss the various crops, the weed control and their own experiences with break crops.

Biomass samples have been taken from the legume crops for analysis of Nitrogen content. Paul will continue to improve his soil health by planting legumes and might also do some planting for his neighbours.



The Targeted support to maximise soil, biodiversity and vegetation outcomes in the O'Connell and Proserpine basins of the Mackay Whitsunday NRM region Project is funded by the Australian Government's Reef Trust.

