

Joe Muscat in the paddock with the agmusa farming system as part of his SRA-supported Nuffield scholarship.



Nuffield scholar looks at Brazil planting system

When Joe Muscat set out on his Nuffield Scholarship he had three main objectives regarding fibre crops, but along the way he discovered something else. By Belinda Billing

Farmer profile – Joe Muscat, Nuffield Scholar 2014

Farm focus

Improve soil health parameters to drive increase in production and reduce environmental impact of farming business

Joe's three objectives

1. To investigate pathways to commercialisation of fibre crops
2. To develop a better understanding of the processing and marketing systems for these crops
3. To assess whether fibre crops add value to the Australian sugar industry.

Joe's standard farming system

- Green cane trash blanket
- 1.8m row-width with controlled traffic and minimum tillage
- Fallow cropping, mung beans, soybeans, peanuts (harvested), sunn hemp
- Herbicides/pesticides applied as required, based on monitoring
- Nutrition applied based on SIX EASY STEPS™ calculation with consideration to crop stage, soil requirements and long term known yield potential
- Overhead low pressure irrigation
- Banded mill ash and mill mud at 100 tonne/ha on the bed pre-planting

While visiting the Brazilian sugar growing area of the Sao Martinho milling area, he discovered the agmusa planting system. Agmusa is a holistic planting system that brings together many elements that hold interest for Joe, including an integrated break crop and the promise of improved production along with environmental outcomes.

“I believe that this system focuses on improving the health of our soils and that it will allow us to increase production while addressing environmental issues such as poor water quality leaving our farms by improving the capacity of our soils to support a good crop with an overall reduction in chemical inputs and a reduction in losses,” explained Joe.

The system has been used in Sao Martinho for over a decade and, according to Joe’s Brazilian sources, has led to an increase in plant cane production for the milling region of more than 10 to 15 percent. Joe is now investigating whether the system can do the same for Australia and is running a trial on his Oakenden farm.

Understanding the concept and why it delivers an increase in production is crucial to be able to replicate the benefits in the Australian sugar industry.

Agmusa brings together a set of practices that have the potential to address issues affecting yield decline; an ultra-clean planting source, fallow cropping, deep application of a soil ameliorant (compost), and understanding soil requirements. Joe said the system is best described as follows:

- Harvest block April-July
- Prepare block for planting (cultivation)
- Plant compost utilising GPS guidance, 15 t/ha across the whole paddock (subsurface applied compost, prescription compost prepared for block requirement)
- Plant cane in two rows leaving the next six or eight rows fallow. The plant source is either one-eye setts or tissue culture (clean plant source)
- Plant a legume in the 6 or 8 rows (legume selection is relative to the organic carbon level of the field, with a high organic carbon level >2 percent they would select peanuts, < 2 percent they would select soybeans, <1.6 percent they would select sunn hemp (*Crotalaria juncea*))

- The field would be managed for weeds/pests. Depending on the legume (if it was peanuts or soybeans) these would be taken through to harvest. If sunn hemp was selected then this would be incorporated for the bio-mass and the nitrogen value (300 + kg/ha).

The inter-rows (six or eight rows) would be prepared for planting March/April the following year, the two rows planted with the one eye setts or tissue culture would then be used as the plant source for the six or eight rows.

The plant source (two rows one-eye setts or tissue culture) would be harvested straight into the planter eliminating any extra handling causing damage to the plant source. The majority of the planting is billet planting with the two-row planter.

The agmusa system will be compared to Joe’s standard farming system. The trial work is being funded by the Federal Government’s National Landcare Program, with support from Reef Catchments and Farmacist.

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The agmusa farming system.