

SUNFLOWERS AS AGRICULTURAL AND CULTURAL CHANGE AGENTS

Lucas Ihlein and Simon Mattsson

Nuffield Scholar and Queensland sugar cane farmer Simon Mattsson gave a passionate speech at Futurelands2 on the importance of soil health in agriculture. Sediment, fertiliser and pesticide run-off from terrestrial agriculture in Queensland is one of the major threats to water quality in the Great Barrier Reef. Since 2015, Simon has been collaborating with KSCA artists Lucas Ihlein, Kim Williams and Ian Milliss. Their project Sugar vs the Reef? brings together farmers, artists, and community members for a series of public events, including Sunset in the Sunflowers (described briefly on these pages) to catalyse positive transformations in the sugar cane industry. The group is currently working towards the creation of a crop of sugar cane and sunflowers as a land art installation at Mackay Regional Botanic Gardens. The project generates space for public education around soil health, agricultural economics and labour histories.

In November 2015, Simon Mattsson's first ever dual crop of sugar cane and sunflowers was in its prime. Here's Simon with fellow canefarmer Alan McLean, posing among the cane and flowers:



Rewind a few months to the time of planting. Here you can see sugar cane popping up in the foreground, with sunflowers in the row planted behind:



And above you can see it from another angle, to give a sense of the scale of this experiment.

This dual crop idea is unusual: the sugar cane industry generally deploys cane as a monoculture. Sometimes a legume (soy beans for example) is planted as a rotation crop at the end of the sugar cane's ratoon cycle, but the idea of planting something else at the same time is (depending on how you look at it) quite new, or very very old.

Simon's experiment tests how the two crops might be mutually beneficial. In an ideal world, this is what happens:

The sunflowers and sugar cane are planted together in early April. The sunflowers pop up very quickly to take advantage of the available sunlight. Annual plants like sunflowers grow much faster than perennials like sugarcane in the first 3-4 months after planting. The sunflowers shade the soil, suppressing the emergence of weeds.

The sunflowers assemble their own sub-soil community (nematodes, bacteria, animals, fungi) which flourishes around their roots in the rhizosphere. This is a different rhizosphere community to that which accompanies the sugar cane roots.

This diversity (two subsoil communities instead of one) helps prevent the build up of the pest species which are attracted to monoculture crops. Hence, pesticide use can be reduced.

By late August, the sunflowers are ready to harvest. At this stage, the sugar cane is only half grown, so you can harvest the flower heads over the top of the canestalks without disturbing them. Thus you get two harvests from the same field.

After harvesting the sunflowers, their stems can be knocked over in the field to form part of the biological matter mulching and enriching the soil, and further supporting the growth of the cane.

Next year, the cane can be harvested as normal. At the harvest, it would be a good idea to check the sugar-per-tonne levels of this yield to see if the dual cropping with sunflowers has had a positive effect on the sugar cane.

In theory, the increased diversity in the sub-soil ecosystem, and the addition of more biological matter to the field, should result in an increase in soil carbon. This would perform carbon sequestration in the soil (carbon dioxide having been pulled from the



Photo by Summer Rain Photography, Mackay, 2015.

atmosphere for the building of the sunflower plants).

A boost in carbon content also makes the soil more “spongy”, so it can better retain moisture, requiring less irrigation and producing less run-off to the Great Barrier Reef.

The other thing about sunflowers is that they have cultural value, not just agricultural value – they are beautiful!

Just being around them makes you happy. Last year, people were stopping their cars to take selfies with the sunflowers and Mackay photographer Summer Rain got a bit of business shooting wedding and baby photos on Simon’s farm.

In this way, Simon has begun to realise the value of aesthetics. A sugar cane plantation (unlike, say, a grape vineyard) does not ordinarily possess a bucolic aura of romance. It’s a functional, industrial crop. People in Mackay frequently refer to it as the sugar cane industry. This language turns the field into a sort of factory.

So that’s why for the last few years we’ve organised “Sunset



in the Sunflowers”, a gala event for a small group of enthusiastic folks from Mackay to spend an evening swanning around the beautiful yellow nodding heads of the sunflowers, shooting some gorgeous photos, like the one

above. The pay-off (besides the pleasure of the experience itself) is that having the sunflowers there attracts human bodies onto the farm, where they are inevitably prompted to ask the question: “Tell me again, why did you plant

sunflowers in among the sugar cane?”

At this point, you’ve got them! Now a discussion begins about how to farm better for the health of the soil, and who knows where that might lead?