

(Below) HCPSL Agronomist Richard Hobbs talking legume rotations with Brenden Accornero.

The project, *Measuring soil health, setting benchmarks and driving practice change in the sugar industry*, is funded and supported by SRA, HCPSL, BPS, Queensland Department of Agriculture and Fisheries, Wilmar, the University of Queensland and University of Southern Queensland.

To see a video of Richard Hobbs talking sugarcane soil health and biology, visit the media section of sugarresearch.com.au

USING LEGUMES TO BOOST SOIL HEALTH AND PRODUCTION

BY RUNNING MULTIPLE FARMS SPREAD OVER THE HERBERT REGION, THE ACCORNERO FAMILY HAVE LEARNT THAT THEY NEED TO ADJUST FARMING PRACTICES IN A WAY THAT BEST SUITS THEIR OWN CONDITIONS AND BUSINESS.



Growing about 35,000 tonne of cane on several properties across the Herbert Region, Stephen Accornero and his son Brenden are long-term growers of a range of fallow crops.

After more than 30 years of experimenting in different seasons, locations and crops, they now feel they have struck a workable rotation pattern on most of their farms, aiming to improve overall farm profitability and build soil health to lift cane production.

Brenden Accornero said one of the key lessons the family had learnt was that every farm was different, and that it was important to find the balance right between getting an income from the crop, improving soil health and boosting cane production.

"The main emphasis with the soybeans is soil health, as we know we are going to run into challenges with the weather and harvest," Brenden said. "If we harvest them, that's a bonus. With rice, we spread our risk, and we also use a different line of chemicals to avoid herbicide resistance, but being a grass it's also not providing the same rotational benefit (as legume crops such as soybeans)."

HCPSL Soil Health Officer Richard Hobbs has been working with the Accornero family in assessing and improving their soil health as part of a major project on this topic, which is working with growers in multiple regions to assess the improved farming system practices that were initially developed through the Sugar Yield Decline Joint Venture.

Richard said that legume crops were the ideal rotation to break the sugarcane monoculture.

"With crops like maize and rice, the grass-on-grass crop after cane is a drawback, but the legumes break the monoculture and provide additional nitrogen for the next crop of cane," Richard said.

"At the same time, we have limited chances to harvest a crop from legumes here in the Herbert with the risk of crops sprouting from late rain, meaning most of the crops are green manure, sprayed out and incorporated into the soil. It is through their soil health benefits that they pay off.

"Sunflower is another crop being looked at more around here as green manure, including by Stephen and Brenden, to break the monoculture and help break up the soil with its deep taproot."

Growing legumes is one of the key recommendations provided by the Sugar Yield Decline Joint Venture, along with minimum tillage, green cane trash blanketing, and controlled traffic.

Richard said that the Accorneros had made other changes to their farming system, but had approached these in a way that best suited their farms being spread across the district.

Brenden explained that they were generally time-poor, as the farms are located in different parts of the district and this requires intensive management.

"We're in the ute or truck a lot of the time," Brenden explained. "We tried 1.8 metre rows and the weeds beat us, so we ended up going to 1.72 metres which is helping

us improve our row profile and shape but giving the cover to help with the weeds.

"We also need to put machinery on trucks to move between farms, so us cultivating 2 rows at 1.8m would entail 3.6m wide loads and would require us to obtain oversize escorts to move machinery between farms or duplicating machinery for each farm. So we found the 1.7m works best for us in several ways."

Having a diverse spread of farms means they also grow a range of varieties, including Q208[®], Q240[®], Q250[®], Q253[®], Q242[®], Q138, Q183[®] and Q231[®].

"Each farm is different, so we are choosing varieties that suit each particular area. In the heavy soil we are aiming for good tonnes and reasonable sugar, but in other areas we know we will never get massive tonnes, so we are also looking at ground cover to reduce weed pressure, while at the southern end we are looking at salinity and sodicity and a few other soil health problems as well," Brenden said.

Richard said the Accornero family were an example of adopting principles of the Sugar Yield Decline Joint Venture, but also doing it in a way that best worked for them.

"There's no hard and fast rule that works for everybody," Richard said. "We look at where people are at, where we can make an improvement, and approach things steadily.

"Through this project, we are getting the data about improving soil health, but also about specific issues and seasons. We know that what works one season might not work six months later." ■