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DIGGING THROUGH THE COALFACE OF CONSERVATION AGRICULTURE

Last month, Coonamble farmers, Ray (pictured left) and Anne Williams claimed the title of 2012 Conservation Farmer of the Year Award at the annual Conservation Agriculture Conference in Griffith.

To those at the award presentation, their win was not a surprise, as the Williams family have long been recognised for their dedication to improving their farming systems at the same time as contributing greatly to the knowledge base of their industry.

Ray and Anne started conservation farming in 1996 on their property "Magomadine", about 25km east of Coonamble. The 1994 drought was the catalyst behind the family's decision to purchase a Ground Hound parallelogram planter in preparation for the 1996 planting.

Starting with 375 hectares in 1992, the Williams' slowly built up the area across which they farm, reaching a personal milestone this year when they cropped just over 2,000 hectares of their own country as well as share farming 283 ha.

Yields have been the driver behind the early decision-making in the Williams' farming business. Initially it was to catch up with those who were already conservation farming. Prior to no-till, their mean wheat yield was about 1.7 tonne/ha. This figure grew to just over 2.5 t/ha in 1999 before they started to plateau.

"We started looking around for reasons why some of our country was no longer improving under no-till," said Ray.

"We tried fertiliser but it didn't give us an economic benefit. We sought outside expert help and we started to think our sub-soils were hostile to plant growth."

Through a process of research, exploration and self-directed learning, Ray and Anne started to look at biological farming information for a solution to the issues they were facing.

It was internationally renowned soil microbiologist, Dr Elaine Ingham who became instrumental in convincing the Williams family that the answers to their declining yields, despite their other conservation agriculture practices, lay in the biology of their soils.

They went on to research many other sources of information about the science, the products available, as well as conducting many on-farm experiments over the next few years.

"After all our experimentation and trials, we think we have simple, cost-effective methods of regenerating

CONSERVATION AGRICULTURE & NO-TILL FARMING ASSOCIATION (CANFA)
PO BOX 276 WELLINGTON NSW 2820
T: 02 6845 1044 M: 0427 452 488 E: canfa@bigpond.com W: canfa.com.au

our soils, which seems to work best on our older, worn-out soils," said Ray.

Since 2008, they have been making their own compost using feedlot cow manure, straw and waste grain gradings.

"It seems to give the wheat a real kick, but unfortunately it's impossible to cover every acre this way. To be able to cover more area we've converted our air seeder to be able to handle liquid injection at sowing.

"We submerge the compost in water to create a compost tea which we then use at sowing. This way, the soil bugs are put into damp soil with the seed so growing roots will attract them."

The Williams estimate it costs about 30 cents per hectare to make and apply what they refer to as "muddy water".

Since 2007, wheat yields and the income per hectare on "Magomadine" has improved, particularly in some the "worst" paddocks, explained Ray.

"Our worst paddock in 2007 came second in the district wheat competition in 2011. Despite the loss of chickpeas in 2010 and a dry July and August in 2011 our income was still better than it was before.

"Compost hasn't solved all our problems, but we're making more money from cropping now than we ever have before," he said.

Anne Williams monitors the biological systems of the farming operations and is also undertaking a doctorate on the organic amendments in no-till agriculture through the University of New England. She now has a dedicated laboratory space on the property for testing and measuring the results of soil biological activity.

The Williams' maintain that every change they make to their farming system seems to add between five and ten percent extra productivity to their operation, which now includes being able to double crop a couple of paddocks since 2008.

"We've been averaging 3t/ha for our wheat over the past four years. We even reached 6 t/ha in parts of some paddocks for the first time last year," said Anne.

"While we can't say scientifically that it is the compost that has made the difference, we believe it is at least part of the reason we've seen such great improvements. We did a trial in 2007 and we got 20% increase in yield then from applying compost at sowing, which we thought was enough for us."

Anne is somewhat reserved about openly declaring the soil biology approach as being completely responsible for the improvements in their bottom line. However, there's enough evidence for her and Ray to continue what they're doing and for her to continue her research and learning in the area.

So, at what point will Anne believe their farming system has reached a point of equilibrium – both below the ground and above?

"We're not there yet," she said. "From now on we're going to try and hone in on it with different products now we know it works, such as specific nitrogen fixing bacteria. We don't know if it's in our compost or not, it's just pot luck.

“With the lab set up now I hope to answer some of the questions we have about what is it that’s working.”

Anne draws a parallel between what she and her family are doing now in their farming system to the early days of no-till farming.

“It took probably 15 years for the true significance of no-till to appear. For us it was almost instantaneous but in other areas it took much longer to repair the damage to the soil. With faith, people kept with it and I think it’s the same with the compost. We just need to look at how can we manipulate it and make it better to get the response we need.”

Like others recognised for their conservation farming practices, Ray and Anne Williams believe timing and attention to detail are critical to the success of their operation.

“We haven’t got it right, but that’s what we’re aiming for. It’s about being more proactive than reactive. Identifying issues before they are a problem, such as herbicide resistance.

“Everything we do has pluses and minuses but we are looking at long-term plans for reducing our chemical usage and I think soil biology will come into play there too, particularly with insecticides.

“We haven’t had to spray our mung beans for heliothis even though everyone else has. We may have had one or two and then they disappear. The more you read about the interactions between the plants and insects and soil biology, it’s a finely balanced system.

“This is just the tip of the iceberg of the new revolution in agriculture,” said Anne. “If we can understand how everything is inter-related it’s going to be magic.”

Anne is reluctant to think she and Ray are on the coalface of the new revolution, describing it as being more like being underneath it and trying to push through.

“We don’t want to be organic as it presently involves cultivation to control weeds, but we like some of their other principles and we want to make money as well. We do what we do and some might think we’re nuts, but it is a means to an end for us at the moment.

“We want to move to the next step but we want to do it in a financially successful way.”

Ray and Anne Williams are an example of CANFA’s philosophy in action - the promotion of healthy soils and management systems supporting profitable farm businesses, rewarding lifestyles, and a healthy environment.

Ray and Anne Williams: 02 6825 6212 or 0428 256 212 (Ray)/ 0428 177 225 (Anne)