

# Healthy soils, healthy crops

Cover crops and controlled traffic have helped transform these clay soils.

By Nathan Dyer



On a hot autumn afternoon, Grant Sims walks across a paddock in northern Victoria, shovel in hand. The temperature has just hit 30°C, but despite the heat and a long, hot summer just gone, a green tinge covers the paddock. Corn, peas, sunflower and buckwheat sprout between yellow rows of barley stubble, each plant doing its own special job to build healthier soil.

Digging into the soil, Grant leans down and takes a clump of dark dirt in his hands. "You can feel how cool it is," the 36-year-old says, turning the brown dirt between his fingers. "We've found that a good cover crop and stubble retention can reduce the soil temperature by up to 15°C at the height of summer, from 50° down to 35°," says Grant, explaining how that has improved the quality of healthy microbes in the

heavy clay soils on the Pine Grove property, 40 km south west of Echuca.

But cover crops are just one of the innovations the sixth-generation farmer has introduced to the family property since returning from a career as a tradesman 10 years ago. Farming with wife Naomi and his parents Ken and Wendy, Grant says he's not the first generation to do things differently on the property, which has been in the Sims family since 1877.

"My dad and his brother Neville were also innovative in their day and were early adopters of direct drilling in the mid 1980s," says Grant. Since then the Sims have transitioned from minimal till to zero till with the introduction of a disc seeder.

Traditionally a wheat and sheep operation, today the Sims

crop their entire 4,100 hectares, with wheat, barley, oats and canola the key winter crops in a 10-crop rotational mix that also includes legumes like peas, vetch and beans. "We find if we can keep full cover on the paddock, whether that's stubble or living plants, and minimal disturbance, the soil is getting softer and softer each year, with a lot more worms, and other soil life," says Grant.

## COVERING UP

Leaning on his ute, Grant explains how cover and companion crops have added diversity to the soils. Tillage radish, for example, is used for its thick tubers that tap deep into the clays. "We've dug pits and found them going down a couple of metres," says Grant. "They then scavenge all those

» The soil is getting softer and softer each year, with a lot more worms and other soil life « *Grant Sims*



- 1 Pine Grove farmer Grant Sims inspects the soil in a paddock on his Victorian farm, 40 km south west of Echuca.
- 2 Cover crops of corn, peas, sunflower and buckwheat have helped create healthier soils on the Sims family farm.

nutrients from the sub soil which all our winter crops can't access, and bring them back up to the top soil." The holes created by the tubers can measure up to 10 cm in diameter and run 200 mm deep. "So effectively you've deep ripped your paddock with a plant."

In addition to radish, the cover crop mix includes sunflowers to bring up calcium and zinc; peas to fix nitrogen; and buckwheat and linseed, the acidic roots of which help unlock phosphorous from the soil and make it available for the next



crop. "So all these plants do a job," says Grant.

Another key part of the Sims' farming puzzle has been the introduction of controlled traffic. Using their own GPS base station, set to 2.5 cm accuracy, and customised machinery, the family have developed a 12-metre system to control paddock traffic across the farm. The disc seeder and harvester are both 12 metres in width, with wheel spans of three metres allowing all machinery to run on the exact same line with auto-steer guidance.

"On a 12-metre system, depending on the width of your tyres, you can get your traffic down to 11 percent of the paddock and the rest of it never gets driven on," says Grant. "And it doesn't take long, especially in our clays, for the soil to become lighter because you're not driving that wheel over it."

Along with improved water infiltration and deeper root growth in the softer soils, Grant says the compacted "tramlines" have their own benefits. "When you drive on those tramlines again and again they become more like a road, and what we've found is that reduces wheel slippage and therefore increases fuel efficiency."

#### CUTTING INPUTS

While improved soil health is an obvious positive, Grant admits the real test is whether the bottom line is improving. And in a region that often receives just half of its long-term average rainfall of 430 mm per year, the profit and loss sheet can be particularly fickle. That's why reducing input costs has also been a key focus.

The Sims have cut back on inputs, with no fungicides,

insecticides or urea used. "I'm not saying not to use those things. You have to be smart about it, if you have to use them you do," says Grant. "But we've got to a point where we're able to leave those things out without sacrificing yields."

Last harvest saw the Sims double their long-term yield average on wheat, barley and oats, despite reduced inputs. But Grant admits it hasn't been for the faint hearted. "You have periods where you're getting attacked in areas, but after a while, through good rotations and diversity, and better soil health, a lot of these things are just symptoms to a problem, so if you try to get rid of the problem the symptoms stop appearing."

#### SHARING IS CARING

Later, looking over a mob of Black Angus heifers (another recently introduced soil management tool), Grant says sharing knowledge has been critical to success. As vice president of the Victorian No-Till Farmers Association, and a former Farmer of the Year recipient, Grant has travelled extensively to research different cropping models.

He's also developed a close network of other young farmers to share ideas. "I've got a few mates and we get together and drive around each other's farms," says Grant. "We've all got different rainfall zones and soil types, and we're all trying different things, so we learn off each other."

Above all, Grant says you have to be prepared to make mistakes. "Because to improve and get better you've got to take risks and be prepared to have failures," he says. "If something doesn't work, well I see that as a great learning opportunity, and that's how you get better." ■



- 3 The Sims family are using cattle to graze cover crops as part of a complex soil management plan.
- 4 Ken Sims with a sample of grain from the 2016 harvest.
- 5 Field peas sprout through stubble in one of the Sims' paddocks.

## Milking the market

A fledgling new sheep dairy industry grows during a downturn in New Zealand's sheep numbers.

By Jerome Civanovich



Sheep once famously outnumbered New Zealanders by a ratio of 22 to 1 but over the past decade the national flock has decreased by more than 30 percent. These days the country has fewer than six sheep per person. It is a sad sign for a nation that once prided itself as living "off the sheep's back".

One sign of hope is the growth of sheep dairy farming. Interest in sheep dairying has been around since at least the 1970s but marketing efforts have had only limited success until the 2000s. Today sheep milk is attractive for many offshore markets. An estimated 50 percent of Asians are intolerant of cow's milk. There is a high demand for infant formula, bulk milk powder and cheese, and research is being carried out into other sheep milk products such as pharmaceuticals and cosmetics.

It is a fledgling industry in New Zealand but surprisingly its most successful and oldest farm business has one of the largest dairy flocks in the world – milking 14,000 ewes.

Antara Ag runs three farms at the bottom of the South Island – one at Brydone, north east of Invercargill, and two near Springhills, together covering 800 hectares. Between them is a runoff of about 300 hectares which works in conjunction with the milking platforms and is also part of an in-house stud operation. Brydone milks about 4,000 and the other two properties are milking about 5,000 each.

» This industry is still in its infancy. Get it right and sheep milk returns are two to three times above dairy cattle.

« Jazz Hewitson

The company was founded by Southland entrepreneur Keith Neylon in 2003. It started as a small sheep milking operation that was processing sheep milk in South Otago. Today it milks an East Friesian-based ewe flock across the three farms.

The milk goes into the Blue River Dairy factory based in Invercargill, which is currently producing the only sheep milk infant formula being exported to the Chinese market. Last year the company produced 400 tonnes.

General Manager of Antara Ag is Jazz Hewitson. He says pioneering the sheep milk industry in New Zealand has been a rocky journey. "Not only did we have to develop the farms and grow out the numbers from a really small base, but we had to develop all the processing and markets. Because you're pioneers everything is new."

In early December workers at the Brydone farm are in lambing mode – but unlike their sheep farming neighbours