



SoilsForLife
AN OUTCOMES AUSTRALIA PROJECT

Case Study

Social Report - Fairhalt

Departing Canberra

in December 2019, The Soils for Life team drove past hundreds of farms with bare paddocks and dead trees - to find a green, sheltered, regenerative agricultural landscape near Crookwell.

The area received 62% of average rainfall in 2019. At the front of the shed, preparing the work team for the day, Garry and Daniel Kadwell, fourth and fifth generation potato, lucerne and lamb farmers were there to greet us.



2019 Rainfall
512mm

Ave
813mm

A man with grey hair, wearing an orange and blue high-visibility work shirt and shorts, stands smiling next to a large, rusty bulldozer. The bulldozer is mounted on a white trailer and has a red and yellow safety flag attached to its side. The background shows a cloudy sky and a green field.

From Bracken to Regen-Ag Lamb and Potatoes at Crookwell

Garry Kadwell uses his Komatsu D65P8 bulldozer to begin each of his environmental rehabilitation projects.

Garry's great-grandfather, a Goulburn based orchardist arrived in 1901 to settle the township and farming area of Crookwell.

Both Garry's grandfather and his father tended a market garden between the trees, and when Garry's father returned from holidays in 1980, his son had bulldozed the orchard. Garry had a vision for the farm.

Garry regards his father as 'a forward thinker, he implemented bulk handling and began applying lime in the 1970s.' However, Garry surmised that 'the orchard was unviable, and Dad was farming for nostalgia.'

Garry's first recollection is of planting trees with his grandfather. In the early 1970s, they planted Yellow Box together, and the elder Kadwell said, 'Garry, when you look at these trees you will remember me, and we will have made a difference.' Garry drives us to the 'first block I bought on my own, 22 acres of scrub. Dad couldn't understand why I bought it, but I had a vision for it. We half cleared the front half and left the rest as it was.'



From a bracken monoculture, trees shelter the rye, fescue and clover pasture paddock, and there is a noticeable temperature difference, 'That's now our safe lambing paddock.'



SoilsForLife
AN OUTCOMES AUSTRALIA PROJECT

Expanding Remnant Vegetation

Garry's grandfather's brother cleared the original *Fairhalt* block, leaving some remnant native vegetation, 'The majority of the Crookwell area was clear-felled as that was Government policy at the time,' he notes.

Decades later, Garry noticed changes caused by stock pressures on the remnant vegetation, 'We were going down this path of natural destruction by stock disturbance. Daniel's kids won't have this resource if we don't protect it.'

“

We still had healthy trees, but we risked losing our seed bank and the potential to regenerate these areas naturally if we didn't do something to address the problem.'

Garry fenced his first vulnerable stand using second-hand posts and wire, 'Landcare wasn't formed when I started protecting trees.'

Garry creates new corridors and continues maturation of protected tree stands. He shifts the fences out from the tree line, scarifying the ground which encourages natural seeding, and allows nature to 'do its thing.'

Thirty-two per cent of the property is dedicated to conservation areas and ecological zones, and that percentage is increasing. Garry always wears both his farmer and environmentalist hats.

”



A new environmental project is implemented every year, 'Whenever we fence or do anything, there's an overall plan. I want to do something environmental as well as practical with managing stock,' Garry states, 'My workers sometimes think, what the hell is he doing now?'

With the rehabilitation and extension of open and diverse native vegetation habitat, Garry has noticed the return of native animals on the farm such as kangaroos, echidnas and abundant birdlife including parrots.

Tall grasses, young hickory trees, wattle, wild cherry shrubs and native orchids are emerging alongside salvaged peppermint and 300-year old snow gums.

“

I've been watching a crag being built by wedge-tail eagle, right up in the top of a big gum tree,' observes Garry.

He chooses to leave the vegetation where the ground is rocky as that is the best land use for that area.

Remnant vegetation is now protected by new stock-proof fencing.

”



SoilsForLife

AN OUTCOMES AUSTRALIA PROJECT



A Snow Gum estimated to have been growing on the top of this hill for 300 years.

Garry appreciates the difference that grants make; Greening Australia gave substantial funds to fence the wetlands and the headwaters of the Crookwell River.

Lachlan Catchment Management Authority and Landcare have supported projects and more recently, South East Local Land Services. Land for Wildlife began a comprehensive flora and fauna study of the properties; work which continues.

In 2017, Garry Kadwell was awarded State Champion of NSW Landcare for Leadership in Innovation and Landcare Management Sustainability Practice.



Constructing Wetlands

'The wetland is one of the life-changing parts of the farm - even this year we have an option to grow something or do something... it is nice just to sit there and listen to it.'

In the early 1990s Garry built a small wetland covering a quarter of an acre. 'It's one of those things that keeps growing on you, and you want to keep doing more and more,' Garry says, 'After constructing the 32-acre wetlands, we drought-proofed ourselves by growing fodder and opportune crops at different times of the year and in different seasons.'

We have this beautiful environmental area that is now home to many species of birds and animals and has created an oasis for the tough times. You can sit down after having the hardest day, listen to the chorus of frogs and be at peace, see such tranquillity and get such enjoyment from it - that gives you the resilience. It's worked environmentally and farm-wise, and it's a win for both sides.'





Garry outlines his experience of changing to regenerative agriculture, 'Most good changes you make in life have small increments.'

'It is understanding that your farm is a system and every change you make influences the system. Every decision you make is for a lifetime, not for that year or that season.'

Garry shares his experience and the regenerative agricultural landscape he works with, 'We purposely built this road up in the wetlands so that we can bring the tours – people feel that they are in the environment.'

'A National Parks person told me that birds need a rising and falling water table to breed. We have been able to create that through irrigation.'

We are going to pump it right down this year because all these birds are breeding in here now, but the foxes are taking them. I want to build a nesting island inside the water, and this is a once-in-a-lifetime opportunity to do it.

Then I can then change the water level slightly to create a marshland. That is where the birds can feed, in the shallow water.'



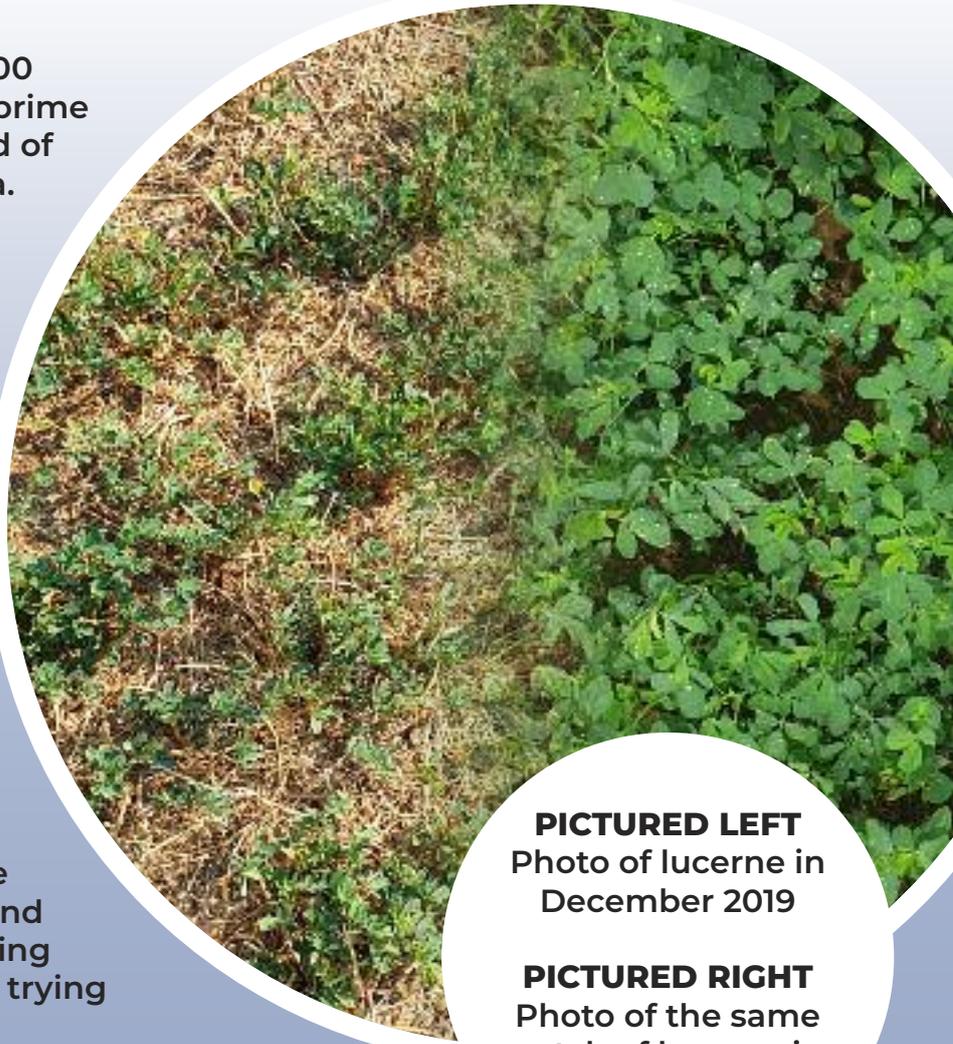
Growing Lucerne and Pasture

Garry produces an average of 2000 tonnes of seed potato and 1,800 prime lambs while conserving one-third of his property as an ecological area.

'We do everything based on soil test results. We sap test the potatoes every fortnight and adjust microelements. We put all our energy and work into keeping the plant at its optimum nutrition, and that builds up a natural immunity to insect and disease pressures.'

'The two biggest changes have been understanding our soils, the nutrition of our plants and our integrated pest management program. All these ecological zones that you can see now build up beneficial insects and birds that we require - we're getting back to working with nature, not trying to manipulate it.'

Understanding plant nutrition has made an enormous difference to the cropping and farming operation.'



PICTURED LEFT
Photo of lucerne in
December 2019

PICTURED RIGHT
Photo of the same
patch of lucerne in
March 2020



SoilsForLife

AN OUTCOMES AUSTRALIA PROJECT



Garry realised years ago that the practice of spraying insecticide was unsustainable, 'We needed to change our way of thinking and break the chain.' Live bacteria and seaweed foliar sprays are applied to growing crops to enhance growth and combat common potato pests. 'As the ecosystem function has increased, the landscape is more resilient, and I am using far less insecticide, and fungicide - the crops and stock are healthier than ever.'

'Sowing lucerne lifts the nitrogen level in the soil; pH is corrected by liming and general pasture will maintain that level for a decade. We need multi-species plantings to create even more carbon for greater water retention.

Gains [from the ecological zones on the farm] are as simple as wind and frost protection which leads to an increased lambing percentage in the protected paddocks. We see more growth in our pastures and crops. Wind protection allows even irrigation application.'

Creating Compost in a Gravel Pit

The most significant shift in cropping systems on *Rosedale* and *Fairhalt* is fertiliser management. Early in his farming career, Garry was a Hi-Fert agent, and he worked with agronomists who taught him about plant nutrition. After years of higher application rates, learning about the basis of nutrition, and molybdenum tie-up, Garry realised that the practice of spreading chemical fertiliser was not sustainable, 'It is a finite resource, like a drug – we're always looking for the next fix.' He learned about the availability of nutrients, he focussed on resilience through microbial activity of soils and plants and has observed a dramatic change in the agricultural landscape.

'We have gone away from chemical fertilisers; we do as much as possible with manures and compost, we have got the soil so active underneath that the soil is working for us now.'

Garry and his team apply four cubic meters of compost to the acre every year. The firm, dry base of an ex-council gravel pit provides an ideal location to form the compost by mixing manure from local suppliers.



SoilsForLife

AN OUTCOMES AUSTRALIA PROJECT

Making a Meal of Lamb and Potatoes

'We have hosted long table lunches under those trees with the slow food movement from Canberra. We celebrated the International Year of the Potato with fifteen different countries that speak roast lamb and potatoes in eight different ways.'

Garry Kadwell works closely with seed companies, potato breeders and researchers, 'We have gourmet potatoes including Julia Crème, Andean Sunrise, Dutch Creme and Kipfler - it's not so much the product it's the story and the experience behind the story.'

'Our potatoes are in Australia's top restaurants. Chef, Lennox Hastie, the 2020 Chef of the Year, is coming up to stay with his family in the break between Christmas and the New Year because he wants to see the story of the food. Food that he will cook and promote, having a deeper understanding of how nutrition, our plants and our soils work.' Kadwell grown potatoes are now served in both State and Federal Parliament Houses.

'If you can give people an experience of your place, of your farm they will always remember that.'



'We work to have our pastures grow longer and more productively. We leave the stock in until we see the ground bare out and we make sure we get them out before we lose ground cover.'

'We don't set a date for rotational grazing yet - we do it as per conditions.'

'Whenever we put up a fence we try and make it dual purpose. This fence [for example] was put up for conservation, but then we make a lane system so we can bring stock from any part of the place straight to the shearing shed. It's a one-person muster job nowadays, especially when you are shearing - you just drop them in the lane, open the gates, and when you go back, they're there.'



Photo of laneway from the shearing shed to the paddock taken in March 2020



An open area for sheep pasture with shade. Carry mulches most weeds and uses the material as organic matter to improve the soil.



SoilsForLife
AN OUTCOMES AUSTRALIA PROJECT

Potatoes ready for harvest
in March 2020.



KADWEL & TAP TUBS
TUBING
MET
LARGE
DATE



Colour indicates
nutrition and flavour.



Solar panels power the current cool room, Garry and Daniel are investigating building an extensive solar power source for irrigation and a complete off-grid pack house for the potatoes.



SoilsForLife
AN OUTCOMES AUSTRALIA PROJECT



There have been many changes in Garry's working lifetime: from the manual labour of the original potato grader and shifter to the current high-output automated packing machine.



Self-Funding and Resilient Crookwell Community

Founded in 1820, located on top of the Great Dividing Range in the Southern Tablelands of NSW, in the Upper Lachlan Shire, Crookwell is home to 2,600 people.

Garry reports that the community has changed over the last five years with the addition of life-stylers attracted by 'every service you could want in a town – particularly as we age.'

Retirees are a significant component of the population and 'for a small town, we have excellent medical services with four or five doctors, a good hospital and reliable school systems.'



SoilsForLife
AN OUTCOMES AUSTRALIA PROJECT

Garry sees the link between the restoration of landscapes, environmental health and improved mental health and resilience in land managers and their families. Extending the same robust health principles, during the Millennium Drought, Garry and community volunteers helped organise a *Look After Your Mates* dinner in collaboration with the NSW Department of Primary Industries.

Applying regenerative principles further, 'We've taken the big initiative of making ourselves a completely self-funding resilient community.' In 2011 a handful of community leaders established the Upper Lachlan Foundation to build a capital base of local contributions to meet the needs of the volunteer groups which form the basis of the small community. The group hold an annual *Laggan Pub Pig Races* fundraiser. They recently paid for new football jumpers for the junior team and a stove for the kitchen at the High School.



Two aged-care homes – one in Crookwell and the other in Taralga are run by the community, 'We are a volunteer board.'

'We have started home care services in the last 14-months, which is growing fast. We started off with one vehicle, and I think we have eight or nine now.'



A Long-term Plan for the New Block

The district of Crookwell is 'fast becoming non-agricultural because the returns just aren't there for the investment cost,' observe the fourth and fifth-generation farmers Garry and Daniel Kadwell as the local area divides into smaller, lifestyle parcels.

Garry has recently leased with the option-to-buy a new 1,000-acre block which includes 400 acres of natural bush including an area of critically endangered, intact native grassland.

'I've called this the *Crookwell Connectivity Hub*. I have a long-term plan for all the Landcare areas around to link back into this big patch of bush.'

'This was bracken fern when we started - it wouldn't have carried three fleas and a possum.'





'The first actions are fencing and implementing the bulldozer to begin the regenerative practice.'

'You never have any money to do these things, you just make it happen and back your own ability.'

The new block was 'non-productive in every form.' Garry and his team applied two tonnes of lime to the acre initially, and now they're introducing substantial rates of compost which will improve the pastures 'and that's how we will create the ongoing production cycle of growth.'



'We looked at some biobanking on this block, and I want to put a permanent covenant onto it into the future, I'm starting to draft up a proposal.'

'This has taken an enormous effort in a short time, but now this part is functional and fenced. The rest of the work is ecological. We need these beautiful remnant areas stock-proofed, and we will work our way around.'



'If we are going to derive any benefit from payment for carbon sequestration, it would be on this block before the carbon levels build. Soil quality when starting with this block was phosphorus Colwell of 12 and pH was an acidic 4.1. A non-productive soil plot with little nitrogen or organic matter.'

A lot of people said to me 'it was a pure waste of money, and why would you bother?'
'There was a big reason for it; there was a bigger picture for this place.'

Further plans include a solar farm to power the irrigation system and earthworks to create a series of 37 dams and nesting islands to protect the native birds including both the Australian White and Straw-necked Ibis. Garry has also seen platypuses in the wetlands. Garry said, 'We can all be like this.'



“ I view our natural environment as a community responsibility, not an individual responsibility. We must put money back into our agricultural landscape - people will contribute if they have the opportunity. ”



SoilsForLife
AN OUTCOMES AUSTRALIA PROJECT

Garry is planning to convert a former car-race track on the property to a more passive mountain bike track. Cabins and a bird-watching hide will be constructed for guests to immerse themselves in the peace that nature provides.

'You need funding to help you do these projects because you have still got to make a living and keep your business viable.'

'Regenerative farming is not that segment in time that's in our life - it's about the lifetime plan and the vision that we all need to maintain farming in an environmentally sensitive and responsible way.

My vision is only a part of the puzzle, it'll go on for generations to come.'



“ Every area is unique and situation specific. It is satisfying if visitors take away one snippet of knowledge from this farm. ”