



# The Main Family at Pinchgut Creek Pastoral Company

Optimising soil health for carbon sequestration  
in south-western NSW

*Part of a wider research project investigating the benefits of regenerative agriculture.*

**May** 2024



## Acknowledgements

This case study explores the holistic benefits of a regenerative approach to farming. It is one of six case studies prepared as part of a wider research project investigating the benefits of regenerative agriculture.

Soils for Life's contribution to the project is the development of case studies, which provide insights drawn from a diverse mix of Australian farmers.

Soils for Life gratefully acknowledges the generous contributions of the Main family.

## About Soils for Life

Soils for Life is an independent, non-profit organisation that works across Australia to support Australian farmers in regenerating soil and landscapes, to build natural and social capital, and transform food and fibre systems.

**Front image:** Cattle grazing at Retreat.

**Image source:** Courtesy of the Main Family.

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## About the Case Study Series

This case study series explores the holistic benefits of a regenerative approach to farming. This case study is one of six that are part of a wider research project investigating the benefits of regenerative agriculture.

It is important to ensure that farmers' perspectives are heard, valued and used to inform research findings and outputs. And so, these case studies have been developed by interviewing each farmer to understand their perspectives, their context and their approaches to new practices. This was done in order to understand their views on the benefits of a regenerative approach to farming.

These case study farmers were selected following an expression-of-interest process calling for farmers who self-identify as 'regenerative.' The project did not include any new on-ground testing or analysis of existing monitoring data by Soils for Life.



# Farm Facts

## Location

Wiradjuri Country | Cootamundra, NSW

## Climate

Hot dry summer, cool winter

## Average Annual Rainfall

608 mm (recent, 1993-2022)

## Agro-ecological Region

Temperate sub-humid

## Property Size

787 ha; Treetops (104 ha) and Retreat (683 ha)

## Elevation

318 m

## Social Structure

Family owned and operated

## Enterprises

Grazing (self-replacing beef cattle) of introduced and native pastures, pastured eggs and a soil carbon project

## Landscape

Gentle to undulating rises, footslopes, and plains formed on Quaternary colluvium and alluvium. Extensively to totally cleared eucalypt woodlands

## Soils

Deep, red and brown texture-contrast, neutral (Chromosols) and acidic (Kurosols) soils, red and brown structured (Dermosols) and structureless (Kandosols) soils, brown texture-contrast, sodic soils (Sodosols) on the footslopes, and alluvial soils (Rudosols) on the plains and along creek lines.<sup>1,2</sup>

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<sup>1</sup> The Australian Soil Classification (Isbell and NCST, 2021).

<sup>2</sup> Soil Landscapes of the Cootamundra 1:250 000 Sheet Report and Map (McNamara et al., 2008).

# The Highlights

## Practices and innovations

- A holistic grazing strategy with daily moves, high grass utilisation via matching grazing periods with available material, and long recovery periods
- Utilisation of two properties to manage cattle breeding and growing out
- No synthetic chemicals
- Trial of multispecies pasture with biological inputs
- Maximising soil health to facilitate high carbon sequestration and monitoring as part of a soil carbon project
- Reducing production costs with minimal outlays
- Upgraded water system with new infrastructure
- Long-term participation in a regenerative agriculture peer-to-peer network
- Collaboration with a local First Nations community group to facilitate cross-cultural exchange and preserve Indigenous cultural heritage

## Observed benefits<sup>3</sup>

- Increased species diversity across the farm
- Drought resilience through preservation of topsoil and water retention
- Positive family legacy, family cohesion and strong community networks
- A healthier farm with reduced chemical and toxic inputs / impacts
- Increased physical health from walking the property regularly
- Climate change mitigation via carbon sequestration

## Monitoring progress

- Monitoring ecological indicators since 2018 through the Land to Market program and Ecological Outcomes Verification
- Participation in the Resource Consulting Services (RCS) Executive Link program that provides accountability and support for monitoring business and production outcomes
- Monitoring landscape health through close, regular observation of the property while rotating livestock
- Maia Grazing and Blackbox digital tools for animal monitoring, grazing management and supply chain tracking
- Managing risk of a carbon project through professional learning and close association with the process.

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<sup>3</sup> These benefits are based on farmers' observations, except where noted otherwise. No additional testing or analysis has been undertaken for this case study.

## Landscape and Soils

Pinchgut Creek Pastoral is located on the South Western Slopes of the Riverina region of NSW, approximately 30 kms west of Cootamundra. The sub-humid climate is characterised by hot summers and evenly distributed annual rainfall, however water management is crucial for farming. Land use in the area is mostly winter cereal and fodder and canola cropping, and sheep and cattle grazing on improved pastures.

Most of the soils in the vicinity of the Pinchgut properties have formed on recent alluvium (deposited by rivers) or colluvium (deposited under gravity), derived from siltstone, sandstone, shale, and minor occurrences of volcanics. The major causes of land degradation in the area is moderate to severe gully erosion where flows are concentrated, streambank erosion along drainage lines, and sheet and rill erosion of some cultivated lands. Localised salinity may also occur.

The native eucalypt woodland has been extensively cleared for agriculture with only remnants remaining along road corridors and fence reserves. Common species include Blakely's red gum (*Eucalyptus blakelyi*), white cypress pine (*Callitris columellaris*), and belah (*Casuarina cristata*) on the heavy clay soils on some lower slopes. The sparse understorey can include a variety of shrubs, tussock grasses, sedges and annual forbs, including acacias (*Acacia* spp.), perennial ryegrass (*Lolium perenne*), and bromes (*Bromus* spp.).<sup>4</sup>



**Image 1.** An aerial view of cattle grazing at Retreat. Source: Rachael Lenehan.

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<sup>4</sup> Much of the soil and landscape information in this section is sourced from Soil Landscapes of the Cootamundra 1:250 000 Sheet Report and Map (McNamara, et. al., 2008).



## Meet the Mains

When Chris Main and his family returned to farming in 2015, Chris was clear he wanted to integrate regenerative principles into management to restore the diversity and health to the land. Chris grew up on the Treetops property and during much of his childhood the larger property, Retreat, was leased out for large-scale monoculture cropping. The land had been cropped heavily with chemical inputs for 30 years, and Chris notes that when he started managing it, 'There was basically crop stubble and not much else.'

Both of the Main family properties, Retreat and Treetops, are now run by Chris. Since taking over nine years ago, Chris has shifted from industrial cropping to a regenerative grazing enterprise with pastured eggs, run by his brother George and his partner Sean, and they recently started a soil carbon project.

As a young adult in the 1990s, Chris observed the Riverina region changing - it was the 'get big or get out' era of agriculture - when a lot of young people moved to the city and farming properties were sold and corporatised. Like many of his peers, Chris left the farm and went to university in Sydney to study agricultural science. Chris stayed in the city and began his career working for an investment company that partnered with innovative farmers to provide financial support. This work gave him the opportunity to visit regenerative farms and he was often impressed by how healthy the farms looked, how positive and welcoming the people were, and how their children wanted to continue farming on the family property. As Chris describes, 'The people were positive. They were happy to share what they were doing and their kids wanted to come back to the farm.' The differences that Chris observed in attitude, along with the health of the farms he visited motivated Chris to return to farming, and with his wife, Lucy and two kids Annabelle and Charlie in tow, the family moved back to the Riverina region of NSW in 2015.



**Image 2.** The Main family at Treetops. Source: Chris Main.



## Practices and Strategies

### Investing in new knowledge, networks and innovation

Before returning to full-time farming, Chris focused on learning all he could about the principles and practices associated with soil health. He read numerous books, attended conferences and field days, and was also influenced by early Soils for Life publications, which he believed were a 'game-changer' for supporting farmers when there were very few resources available.

After taking over management, Chris was proactive in driving innovation on the property. He invested time in networking and in building the family's knowledge and understanding, as well as in his personal and professional development, which have all contributed to growing confidence in trialling new practices. For example, Chris participated in the RCS Executive Link program to develop business skills and confidence in adopting regenerative practice changes, and the KLR Management program to learn about low-stress stock management. The Mains also continue to actively participate in an informal, long-running local regenerative farming peer-to-peer network called The 2AM Group. This group draws together people across the Riverina region on a similar farming journey to share stories and build supportive friendships.

### Improving grazing management

Grazing management at Pinchgut Creek Pastoral now incorporates planned, high-intensity grazing, with recovery periods up to 12-months of a self-replacing cattle herd. The Main family have a breeding herd at their property Retreat, moving the weaners to a separate property Treetops, to grow them out. The aim is to move cattle every day using portable hot wire. A key influence in terms of grazing management came from Graeme Hand, a Victorian Holistic Management educator who inspired Chris to rethink his initial approach to grazing, and to adopt intensive grazing with long recovery. Based on what he learnt from Graeme, Chris began to change his strategy from 2020 onwards to involve high grass utilisation through matching grazing periods with available material, and long recovery periods. Another important part of their grazing practice includes the integration of low-stress stock handling, which Chris learnt through participation in courses run by Grahame Rees and Bruce Maynard.

### Integrating a soil carbon project

Interested in how agriculture can help to mitigate the impacts of climate change, the Main family decided to introduce a soil carbon project, and the property was baselined for a project in February 2023. With guidance from a carbon project developer and in line with Chris' goals, he has been working to maximise the benefits of improved soil health in order to facilitate high carbon sequestration. Since making the transition from cropping to grazing, there have been no synthetic chemicals used on the property. The

Mains trialled guano fertiliser in 2022 as part of a multispecies pasture trial to increase the rate of growth and help accelerate rates of carbon sequestration.



**Image 3.** Pastured egg production at Retreat. Source: Rachael Lenehan.

## Respecting First Nations cultural heritage

For several years the Main family have collaborated with a local First Nations community organisation, the Cootamundra Aboriginal Working Party so they can better understand pre-European land use on the property, enable new forms of cross-cultural exchange, and help preserve First Nations cultural heritage in the region. The Riverina region had a very large Aboriginal presence prior to European arrival and the Main family have seen an ochre quarry on their property, scar trees, and implements such as axes and grind stones. With funding from Landcare, the family recently fenced off the quarry and are now working with the Cootamundra Aboriginal Working Party to look at ways to integrate this rich cultural heritage into the current story of Pinchgut Creek Pastoral.

‘What we are keen to do is show that you can have these things on your property. You can protect them, and you are not at any risk of losing your land. It adds a whole new dimension to your relationship with the land and the people.’

**Chris Main**

## Monitoring business, production and landscape function

Chris Main utilises a range of tools that help to monitor production, track animal and landscape health and run an efficient business. For example, Chris recently started using Black Box in conjunction with the online grazing management planning tool, Maia Grazing. Chris uses Maia Grazing for 'planning our grazing management as well as looking at grazing yields in each paddock.' Black Box is an individual animal management program that tracks animals through the supply chain. Chris says it provides 'really cool visibility,' with the ability to monitor 'average daily gains and carcass specification, potentially even when we no longer own the animal, and tie that back to the sires we used.'

To support landscape function, the Main family have been monitoring the farm since 2018 through the Land to Market program, which has facilitated regular ecological monitoring with the support of a trained monitoring expert who visits the property and generates useful benchmarks and data sets for Chris to work with. As Chris notes: 'You get hard numbers back and to me that's worth the cost of it ... but you're involved in it as well.' His interest in the Land to Market program has involved looking at how to increase the market reach and consumer awareness of premium regenerative grass-fed beef brands and markets, which the Mains supply into.

## Managing challenges and risks

In retrospect, Chris wishes that he had begun farming twenty years ago, because he feels for too many years he has missed the opportunity to do what he genuinely loves. Chris is confident about their decision to move away from cropping, because continuing to produce monoculture crops in their context would have involved more risk than the transition they have made to regenerative grazing.

While Chris doesn't perceive many risks in their current approach to grazing, he does acknowledge there are challenges to overcome in relation to their soil carbon project on the farm. He notes that carbon projects have a degree of risk, given that the carbon credit system can be co-opted and manipulated in disingenuous ways. This worries Chris significantly and along with his genuine concerns about climate change, his concern about the industry have motivated him to become professionally involved in the growing carbon farming sector.

## Observed Benefits<sup>5</sup>

### Soils and landscapes

#### Maintaining topsoil especially in dry times

Since adopting high-intensity rotational grazing, Chris has witnessed ‘incredible results’ and greater drought resilience. During recent dry years, particularly 2019, Chris recalls witnessing massive amounts of topsoil blowing off neighbouring properties, and observing how well his property responded in comparison. He notes, ‘We weren’t losing all that topsoil during those really dry spells ... that was a big thing I noticed.’ These experiences have helped Chris feel confident about what he can achieve in dry years.

#### Species diversity and increasing soil health

Chris has observed a significant increase in flora and fauna species diversity on the property since 2015, and he says this is supported by Land to Market monitoring that showed an increase in the number of species from 10 in 2018 to 25 in 2023. There are now many different ‘grasses, clovers, legumes etc that have come up in paddocks that were bare stubble when I took over, all from allowing the land to regenerate rather than from anything I have sown.’ Chris says that the same Land to Market monitoring found the amount of bare ground went from 12.94 % to 0.8 %. Chris and his brother have also observed numerous bird species, including rare nesting birds, and that a wide array of spiders and other beneficial insects, and an increase in worms, have appeared in recent years.

‘Walking through the paddocks and seeing all these different species of grasses come up and ground nesting larks and quails. There are heaps of those in the paddock now when you walk along, and there are spiders everywhere. It’s a different vibe in the paddocks when it has got all this life in it and the feeling of the soil is spongier.’

**Chris Main**

#### Carbon sequestration

Chris feels there are a range of ‘co-benefits’ that flow from the approach he is taking to improve soil and landscape health since taking over management in 2015. Importantly for Chris - carbon sequestration and climate change mitigation. He notes that he has ‘run my numbers using Ruminati, and my emissions are 839 tonnes CO<sub>2</sub>e (carbon

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<sup>5</sup> This section presents the benefits of practice change from the farmers’ perspective. It is based on the farmers’ observations, and in some instances their own interpretation of data and test results. The project did not include any new on-ground testing or analysis of the farmers’ data by Soils for Life.



dioxide equivalent) per year. If I increase my soil carbon by 1% over 25 years, I will sequester 4,263 tonnes of CO<sub>2</sub>e per year.'

## Farmer and Farm

### Professional skills and personal growth

Participating in the RCS Executive Link program helped to build Chris' confidence and develop his long-term strategic thinking. It has supported him in managing the stresses of farming and enabled Chris to better track production levels and business outcomes. Through the program, Chris developed business skills, while also learning more about himself. He notes that as well as developing applied knowledge, the RCS program (and others like it that he has participated in) are importantly about inner-development, 'It's not just a technical thing that you're learning. You're learning about yourself.'

### Lower running costs

The production benefits of Mains' approach include very low running costs, as Chris notes, 'I don't have any running costs of tractors and diesel and all that sort of thing. I use a contractor for pasture work and our running costs are very, very low.' When he contrasts that with the costs involved with intensive cropping, Chris feels that there are very clear differences in their long-term financial outlook and the resilience of the farm.

'Last year when fertiliser prices were going through the roof and there were worries about getting access ... it was still raining and the cost of that didn't go up, and the sun was still shining. So, our inputs are being provided for free.'

### Chris Main

Because the farm was leased out prior to Chris taking over, Chris has no previous running costs to compare with. However, based on estimates from a local consultant, the cost of production for the top 20% of producers in the area is approximately \$486/ha (excluding interest). This is significantly higher than Chris' own estimates, 'My costs excluding interest and wages for 2023 was around \$90/ha.'

### Community networks and wellbeing

Since returning to the farm, the Main family have been actively participating in a local regenerative farming network called The 2AM Group. Every six weeks they go to a member's house and get together to socialise, share information and network. As Chris says, 'We're connecting with like-minded people because most of our neighbours think we're weird and you know you don't have a huge amount in common.' The benefits of this informal group have been invaluable for the Main family in providing peer-to-peer interaction, accountability, support and validation.

‘We are no longer battling nature to make a living, and we can see huge beneficial changes to the farm environment.’

**Chris Main**

#### **Physical health benefits**

Chris loves the sensory experience of being in the paddock, and notes the exercise involved, ‘You get a much better understanding of what's happening in the paddock if you're walking it and it's good exercise.’ He notes how regularly walking the property enables him to closely observe what is happening with his animals, in the soil and across the landscape, which he believes has multiple benefits in terms of his own knowledge and responsiveness to conditions.

‘One of the best things in life is when you’re moving cattle every day. You go and wind up the hotwire to let them into the next section of grass and they are all just standing there waiting patiently; then they move in and the noise that they make when they’re grazing happily, there’s just something about that.’

**Chris Main**



**Image 4.** Cattle grazing near rotational hotwires at Treetops. Source: Chris Main.

## Looking to the Future

The Mains are currently implementing an upgraded water system at Retreat with the intention of improving water quality and hydration across the landscape. Chris has recently become more interested in how water moved in the landscape historically prior to European arrival. He is also looking into ways that farmers can influence hydrological cycles now and the restoration of wetland habitats in the area.

‘One of our landscape goals is to get the wetland area back again so it holds that moisture. It’s starting to look a little bit better in places, but there is still a long way to go on that journey.’

**Chris Main**

The Mains would like to introduce First Nations cultural burning practices onto their property in addition to what they are already doing in collaboration with the local Aboriginal community in the region. They are looking into how to make this happen and are curious as to whether it will further help improve the soil and landscape health of the area.

In recent times, the extended Main family led by Chris’ father Jim, have worked together to build an equitable succession plan, which attests to the importance that the family now places on social cohesion, a positive legacy, and a long term, viable vision for Pinchgut Creek Pastoral.

Chris is aware that climate change is a contentious issue in the farming community but he wants to do his bit in trying to change attitudes, particularly in relation to how regenerative agriculture is communicated as a ‘climate solution’ because of the multiple benefits that he believes it can provide. Chris feels like he has a role to play in mitigating climate change, saying:

‘With climate change, this is something that I really feel is something that we can help with. I can’t help much with the energy transition and I can’t help much with over-consumption and the hype for consumerism and all that sort of stuff. But I can help on our little patch and pull carbon out of the atmosphere and secure it underground.’

**Chris Main**

In late 2023, Chris was unexpectedly offered a role as CEO of Australian Soil Management, and accepted the offer. He is now balancing life on the farm with his new

job. Chris is concerned about climate change and perceives carbon markets as a viable way for the agriculture industry to be effective in mitigation (if managed properly). He has hired a farm manager who will continue to implement the management plan for Pinchgut Creek Pastoral Company, along with ongoing input from Chris.



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