

Kahl revegetation project

and the 6 steps for success for revegetation in cotton landscapes



Case study

MARCH 2025

The Kahl family run Merced Farming at Wee Waa in northwestern NSW. They farm eight properties in the district, and together the properties have 26 kilometres of river frontage on the Namoi River. They grow a range of crops in rotation, including cotton, wheat, corn and mung beans, and run a herd of 300 Angus cows.

As part of the Biodiversity Project, a partnership between Country Road and Landcare Australia, supported by Cotton Research and Development Corporation and Cotton Australia, Merced Farming undertook a major revegetation project on 12.5 hectares of riparian habitat along Namoi River.

"The goal has always been to find ways we can work with nature instead of trying to fight it all the time," Daniel Kahl says.

"The farms have 26 kilometres of river frontage and there's probably 230 hectares that's genuine riparian area along the river. Less than 50% of that is utilised for livestock grazing. So, there's different areas there that are fenced out or isolated.

"In terms of revegetation, it's something we've done in the past by isolating and fencing off areas and allowing the natural system to do its thing. This was an opportunity to be able to achieve more than we would have otherwise in terms of protecting those sorts of areas.

"This project was a really nice way to tie in some similar objectives and philosophies with Country Road – who are keen to provide the investment in those sort of outcomes – and with Landcare Australia who have the know-how and the resources to make that happen," Daniel says.



James and Daniel Kahl with Landcare Australia CEO, Dr Shane Norrish.
Image credit: Country Road



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“For us as a landholder that wants to look after the place, it was a really nice synergy with different parts of our supply chain. Nature will heal by herself but it tends to be a lot slower. To help it along a little bit quicker in that patch of our farm has been pretty cool.”

Working closely with Landcare Australia, the project followed the “6 steps for success” identified in the Native Revegetation Guide for Australian Cotton Growers. (<https://cottoninfo.com.au/publications/native-revegetation-guide>)



Establish your revegetation goals

The overall goal of the revegetation was to encourage biodiversity by creating habitat complexity along riparian zones, which tend to be biodiversity hot spots.

“Broadly, our goal between our cropping systems and our grazing systems is that we’re trying to work with our environment and with nature as much as we can,” Daniel says. “So, in our cropping system, we’ve got a really big focus on building beneficial insect populations and relying on them to help us manage our pests. With our cattle we’ve taken a holistic grazing approach. That’s our general philosophy, so in terms of revegetation, it’s something we’ve done in the past by isolating and fencing off areas.”

“We’re more aware now too, not just of beneficial insects that can live in the crop, but things like birds and microbats that help in our cropping systems but that rely on that greater level of habitat too. So, there’s 13 species of microbat on the place and they fly around the crops and pick up insects of a night time.”

The Kahl’s’ approach to grazing means that the riverbanks on their properties haven’t been compromised but protecting that from happening through revegetation and bank stabilisation is still a big part of their aim.

“It’s a bit of a balance,” Daniel says, “it’d be nice to fence the whole river off but we’re on a floodplain so it’d be an endless task of putting fences back up. So, it’s been a matter of trying to find a couple of areas where it can have the most impact.”

While the Kahl’s broad goals of working with nature mean that revegetating areas for biodiversity is a long-standing ambition, Daniel says that working with Landcare Australia has been invaluable.

“The scale of this project is not something we could have done in our own,” Daniel says. “Landcare being involved is really the difference between us having an interest or wanting to do something like this, and it actually happening.”



Before site prep and planting. Image credit: Landcare Australia



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Select your site (understand its history, characteristics and risks) and choose the best planting method

The area chosen for revegetation at the Kahl property was 12.5 hectares of riparian habitat along a large curve in the Namoi River. The area within the curve is essentially bounded on three sides by the river and is used for grazing Angus cattle. This meant that the entire revegetation area needed to be fenced to exclude cattle, which also prevented them from drinking at the river.

"We had to plan out exactly where the fence was going to go and where the watering point in the paddock was going to be installed," Daniel says.

"That's where we worked closely with Landcare Australia to put together the proposal. We worked on having a fence line that was a minimum of 50 m off the bank, but in places it's much more than that because it's also not following the exact curve of the river – there's only 4 or 5 corners in the fence line for ease of maintenance."

A Grazing Management Plan was also established to guide grazing during the post-planting phase. The project was divided into two areas, the eastern section of which was used by a researcher from the University of New England, Dr Rhiannon Smith, to trial a variety of tube stock types, mulches and watering regimes.

2500 seedlings were planted in this 6-hectare area. The western section involved 7 rows planted with approximately 1800 hiko (small) tubestock seedlings. Plant spacing and species selection within the rows were randomised to support habitat complexity.

Curving rows to follow the contours of the river was also important for creating a more random planting, which provides more complex habitat for wildlife in the long term.

The major risk at the site is the potential for flooding and the impact this has on species survival. Kangaroos, rabbits and feral animals are not prevalent in the area, so the chance of seedling damage was considered low risk.

The planted tubestock were however provided with tree guards, as Daniel explains: "The main purpose of the tree guard was just to help the seedlings get up above the ground cover, grasses and roly polys – the tree guard gives them a clear shot at the sky. We don't have a huge rabbit problem – there's a few hares but they don't really do any great damage. We've got kangaroos around, but they're not in so many numbers that they're doing any damage. So, the tree guard is mostly just to give the seedlings a bit of protection so they get up above the ground cover."



Create the conditions for your plants to thrive

Kahl's undertook pre-planting site preparation. Because the area had been grazed by cattle, soil compaction was an issue. Ripping mounds for planting trees helped break up the soil to give the trees a chance to get their roots into the ground.

Slashing and pre-planting weed control was also important. In one area the Kahl's brought in a forestry mulcher to clear away low woody weeds, box thorns, roly polys and dead growth that was a legacy from the drought, as well as stumps and logs that would pose a challenge for planting and for site maintenance.



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"It was a bit of a balance between making it easy for us to do the [planting] job and still maintain the important bits of habitat," Daniel says.

The work was undertaken along a fairly narrow strip and plenty of the woody material remained on the ground further back from the river.

STEP 4: PLANT



Give your plants the best start in life

The area was planted in September 2020, after a "soft break" to the drought. Rain had started in February 2020, but it was considered a "green drought" – the rain had just turned things green without infiltrating the soil. The young plants were watered from planting in September through to December to keep them alive.

"We had a fair few losses there in that process," Daniel says. "We did a fair bit of replanting in '22, and then of course we had flooding in the spring of '22 that knocked a bunch of that out."

Spring plantings can be challenging if they are followed by a summer without much rain, which was the challenge faced by the Kahl's, and means that autumn plantings are often recommended inland of the Great Divide. In this area of NSW, however, rainfall patterns can vary across the seasons, and it is very hard to predict the right time to plant to avoid both drought and major flooding.



Plantings. Image credit: Landcare Australia

STEP 5: GROW



Ensure you have the right plants for your farm

"All the grazing areas on [the properties] Glenarvon, Glencoe and Kangaloon are entirely underwater when it floods," Daniel says.

"The Namoi Valley acts like a traditional valley in the eastern end of it as far as Narrabri, but once you get west of Narrabri, you're in the lower Namoi. When it floods at Wee Waa, a lot of the water never returns to the river – it goes out onto the floodplain and never comes back."

The native vegetation on the floodplain is adapted to these cycles of wet and dry, with river red gums (*Eucalyptus camaldulensis*) the dominant tree. While the river red gums are well known for their presence along rivers, the grazing areas on the Kahl properties also go under water by up to two metres during floods, so river red gums are present right across the grazing landscape.

The UNE research meant that existing vegetation was identified and a list compiled for the site, comprising four trees, six shrubs and three ground layer species.

Of these, five species were chosen for active planting:

- River red gum (*Eucalyptus camaldulensis*)
- River she-oak (*Casuarina cunninghamiana*)
- Coobah (*Acacia salicina*)
- River coobah (*Acacia stenophylla*)
- Butterbush (*Pittosporum angustifolium*)

No grasses or ground layer plants were planted, but the expectation is that these will regenerate on their own.



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Measure your progress and record your success

Landcare Australia and University of New England took the lead with post-planting maintenance and monitoring for the first 12-18 months after planting, with the Kahl's assisting with slashing. After this time, the Kahl's took on full responsibility for post-planting weed control, ongoing maintenance, slashing and stock exclusion as per the Grazing Management Plan.

"Being a floodplain, the presence of weeds is pretty solid," Daniel says, "so there's been a few times when part of the challenge has been managing either roly poly or turnip or Noogoora burr in a few patches.

"Generally, the weeds come back quick and fast and that's just the natural ecosystem doing its thing – it's putting up those plants to provide shelter for the slow growing ones to eventually come up. So, there is a lot of effort in spraying around the trees and slashing just to try and help the trees establish."

In terms of the trees themselves, the sequence of dry then flood did lead to losses, which were replanted, so there is now a mix of ages among the young trees.

"Some of the original trees that made it are getting to be probably five metres tall now, particularly the red gums, and then we've got the latest planted ones that are just starting to stick up a foot above the tree guard. So, we've got a bit of a staggered development, which is kind of nice."

An unexpected cause of damage to the young trees was the cockatoos.

"The cockies decided to walk along and just nip everything off that had just started to poke its head above the tree guard," Daniel says. "So they haven't killed the tree, they've just nipped whatever was above the tree guard. Hopefully the trees will keep growing through that."

There has also been damage from pigs and goats, but this has been minor and not significant.



2023 - Luke Van Der Meer, Landcare Australia, with tree planted in 2020.
Image credit: Landcare Australia



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Benefits and challenges

As with any planting project, climate has the potential to pose the greatest challenge and the Kahl's' project has been no different – planting after the soft break to the drought meant watering was required, only for floods to kill many of the seedlings the following year. But with the ability to backfill these lost plants, the revegetation work is now well on its way, with some of the trees coming up to five years old and well established at five metres tall.

"It'll be something that's pretty neat to watch over the next five, ten, fifteen years as all those trees get up and we will have that river red gum corridor along the river," Daniel says. "There's river red gum forest on the Redbank property that's one, two hundred years old in some places, so it's pretty neat that we've been able to play a part in establishing a similar environment along another part of the river."

For Daniel, the revegetation project is another means of working with nature rather than against it.

"A lot of us [irrigation farmers] have an interest in looking after our patch of the river and not turning the bank into a stock ramp that's just getting trampled by 20,000 sheep going for a drink. And that's not for show, it's genuinely because we want to look after our patch.

"There's a pretty common interest in our part of the world to be looking after the river, because it's important in so many ways, not just in the water it provides to grow crops, but in terms of quality of life, and having a healthy river there gives us much nicer place to live."

For further information:

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Other resources and information

- Native Revegetation Guide for Australian Cotton growers: Revegetation to improve natural capital, ecosystem functions and services on cotton farms - 6 steps for success.
 - **Access via the CottonInfo website:**
<https://cottoninfo.com.au/publications/native-revegetation-guide>
- Managing Biodiversity in landscapes tool
 - **Access via the CottonInfo website:**
<https://www.cottoninfo.com.au/managing-biodiversity-cotton-landscapes>
- Cotton myBMP: Sustainable Natural Landscapes (Natural Assets) module
 - **Access via the myBMP website:**
<https://bit.ly/42R9xjS>



Tubestock for planting. Image credit: Country Road

This project is part of The Biodiversity Project, a partnership between Country Road and Landcare Australia, supported by the Australian cotton industry.



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