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NATURAL RESOURCE MANAGEMENT
case study

Demonstrating whole farm sustainability

Managing riparian vegetation for multiple benefits

"Wyadrigah" is a 3,600 ha, carbon-neutral property owned by the Barlow family, growing irrigated cotton just east of Mungindi on the NSW-QLD border.

The property, owned and managed by Anthony Barlow (pictured), has two significant riparian zones, one along the Boomi River on the south-eastern end of the property, and the other on the Barwon River on the north-western side.

The natural vegetation consists largely of coolibah and black box woodland, with healthy stands of river red gums in the riparian zones.

The health of these zones is important to the Barlows, who have been involved in several studies that benchmarked the condition of their riparian country, exploring their role in integrated pest management and their value in creating a carbon neutral farm.

However, in a continuing theme among cotton growers, the preservation of these areas is seen as important to maintain the aesthetic value of the places they call home.

"These areas are part of the natural landscape that needs preserving," said Anthony.

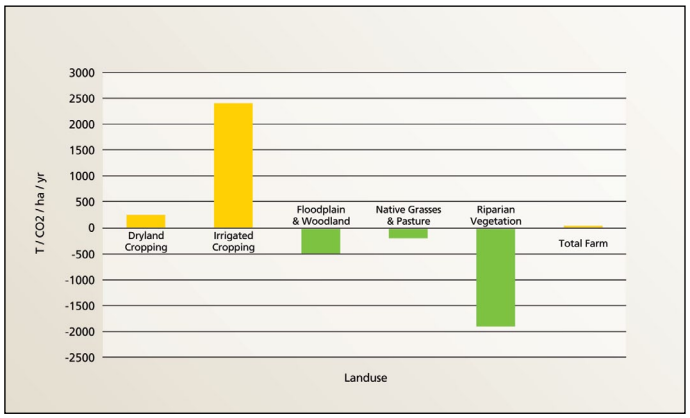
"In my experience, riparian zones on irrigated cotton farms clearly can't be farmed, and are rarely grazed these days, so they aren't negatively affected by selective or over-grazing, or by erosion of river banks from stock creating pads down to the water.

"That is the case with our riparian zones. The area along the Barwon River in particular hasn't been stocked for about 30 years."

Benchmarking biodiversity: Mungindi Area Wide Management Group

In 2013 Anthony was part of a Benchmarking biodiversity study along with five other landholders in the area. The initial aim was to identify the value of native vegetation for integrated pest management.

As a result of this investigation, the landholders identified the need for accurate baseline data about the health and diversity of the native vegetation and its role in production and maintaining biodiversity



Annual greenhouse gas emissions by land use category (kg CO2e/ha) on "Wyadringah."

on farm. This led to the assessment and benchmarking of the condition of a combined 16,830 hectares of native vegetation across the five farms involved in the study.

"We have a history of practicing Integrated Pest Management (IPM) in our operations here, and we see beneficials as an important part of that regime," Anthony said.

"Assessment of our riparian areas received a good report card and the report on habitat complexity was impressive.

"It was a learning experience for sure and really interesting to take a close look at these areas with the ecologist Dave Carr to learn more about things like the age of some of the trees and the variety of species there.

"What interested me was the age of some of the understory trees in relation to their size. I was really surprised to learn that some of the coolibah were over 100 years old, a lot older than what I had thought going purely off their size."

Biodiversity monitoring results

Across the study area the biodiversity assessment revealed positive results, with biodiversity along creeks and riparian areas currently in very good condition.

The survey data showed:

- Habitat complexity of the sites was very good overall, with most sites recording a lot of trees with hollows, undisturbed fallen logs, and young regenerating trees.
- There was a good mix of native plants and a high diversity of tree species in a wide range of age groups.
- Density of low shrub species and litter was low, which is typical of these type of woodlands.
- Vegetation along creeks and riparian areas was well connected to water and other patches of remnant native vegetation larger than 20 ha.
- Vegetation connectivity to cropping paddocks could be improved to fully utilize the benefits of natural pest control.

The Barlow's report card from the assessment was very positive: the Barwon zone (ungrazed for 30 years) and the Boomi zone (sporadically grazed) were found to be excellent examples of healthy riparian zones.

"It was great to get a deeper understanding and knowledge of the native vegetation on our farm," said Anthony.

Going forward, Anthony believes that if the cotton industry wants to promote sustainability, the benefits and measurements of environmental health have to be quantifiable.

"It is one thing to say we are managing our land well, but to have this quantified through a close up study is a powerful tool for the industry," he said.

"It is a similar story with carbon emissions and our carbon footprint."

Ecologist David Carr and Anthony Barlow assess riparian zone vegetation on "Kintyre."

case study

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The value of carbon in the sustainability equation

"Wyadrigah" is a carbon-neutral cotton farm. Anthony has been very interested in the relationship of native vegetation and his whole farm carbon emissions, and worked with CottonInfo Carbon and Climate Technical Specialist Jon Welsh to study carbon emissions and sequestration on farm.

Carbon management tools were used to ascertain the potential for Anthony's farm to be classed as carbon-neutral based on the existence of well-managed riparian vegetation.

Based on a five year irrigated cropping rotation (across 1,483 ha) consisting of three cotton crops, one cereal crop and one fallow, the CO2 emissions were calculated at 2,414kg per ha per year.

"Wyadrigah" has three vegetation categories across the non-cropping areas of country: riparian vegetation dominated by River Red gums, floodplain woodlands, and native grasslands and pastures.

Overall, when multiplied according to the proportions of different land use, the farm is carbon neutral, that is, total carbon sequestration on farm is equivalent to the carbon emissions generated by farming practices, with riparian vegetation playing the most valuable role in storing carbon.

Anthony recently received the good news of the outcome of the study. "Naturally I'm really pleased with this result, even a little surprised," said Anthony.

"This is a great result. Knowing our carbon footprint is important to us. There is going to be more market pull-through around this issue and it is a good thing to start monitoring now so we can make sure we are on the front foot in terms of quantifying our carbon emissions.

"I see traceability in terms of sustainability and carbon footprint becoming more important to consumers into the future, and the research is also telling us that.

"Cotton consumption is increasing but our market share is decreasing, so going forward our industry is going to need every edge to be competitive.

"The goal is to be carbon neutral, so if we benchmark this, we can learn from those performing better."

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- Natural Resource Management page:
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