

Engineered Woodlands

The “Lakeview” demonstration/trial site @ Uralla

By Shane Andrews

Engineered woodlands are paddock-wide tree plantings where the trees are wide-spaced and designed to allow grazing and the efficient use of machinery for normal management. They provide improved shade and shelter and a diversity of other NRM outcomes over current pasture-only land use but do not displace pastures and livestock.

This article describes one of the sites established near Uralla and the thoughts of its owner, Cam Banks, on woodland design and management.

Becoming involved in the Engineered Woodlands Project

Cam Banks and his family are the owner-operators of “Lakeview”, a 500 ha grazing property which is located several kilometres south of Uralla.

Cam’s interest in the Engineered Woodlands Project stemmed from his past observations on the benefits to pasture and animal production of appropriately placed trees and shrubs in a number of landscapes in central and southern Queensland.

“We used to live and farm at St George, and whilst operating that property had the opportunity to witness how some innovative farmers elsewhere in Queensland managed their woody vegetation,” Cam said.

“The farmers who cleared strips of vegetation and retained wooded strips as a significant percentage of their paddocks often had far better results than farmers who wholesale cleared,” he said.

Cam spoke of graziers in central Queensland who only partially cleared brigalow and gidgea scrub country despite that vegetation strongly suppressing grass growth under its

canopy. They would blade plough or pull with dozers only a couple of passes wide and then leave a strip of trees before repeating a few passes of the blade plough/ pulling when establishing buffel grass.

They did this across the paddock and got tremendous establishment and growth of the grass due to the shelter and shade that the retained brigalow or gidgea provided (see Photo 1).

Such results inspired Cam to only partially clear scrub paddocks on his own farm with similar good results (see Photo 2).

“The quantity and especially the quality of the herbage grown in these areas was far better than in exposed paddocks devoid of trees. They contained green feed throughout winter, even in dry frosty years when the rest of the place was brown,” says Cam.

Cam then invested in establishing woody vegetation back into long-cleared paddocks to improve productivity and biodiversity. He used Old Man Salt Bush to provide pasture and animal shelter as well as fodder from the edible leaves.

It was not long after moving to Uralla that Cam realised the benefits of well placed tree and shrub lines in the New England climate as well. He also noticed that pasture production and soil moisture status were often better in areas shaded by trees (see Figure 1).



Photo 1. Blade-ploughed strips with buffel grass amongst strips of retained Brigalow (Photo by Cam Banks).



Photo 2. Partially cleared pine and scrub on the Banks' property at St George showing green herbage amongst the trees (Photo by Cam Banks).

Figure 1. The effect of an east/west orientated windbreak of pine trees on pasture production in a grazed paddock on “Lakeview”, showing the amount of pasture biomass recorded by Cam Banks in November 2007 in various zones relative to the windbreak.

‘Drip line’ refers to pasture underneath the canopy of the trees; ‘Tree effect’ refers to the pasture in the shade zone outside of the canopy and to the south of the trees; ‘Outside the trees’ refers to open paddock away from the shade zone; ‘Around rock’ refers to pasture surrounding a small rock outcrop.

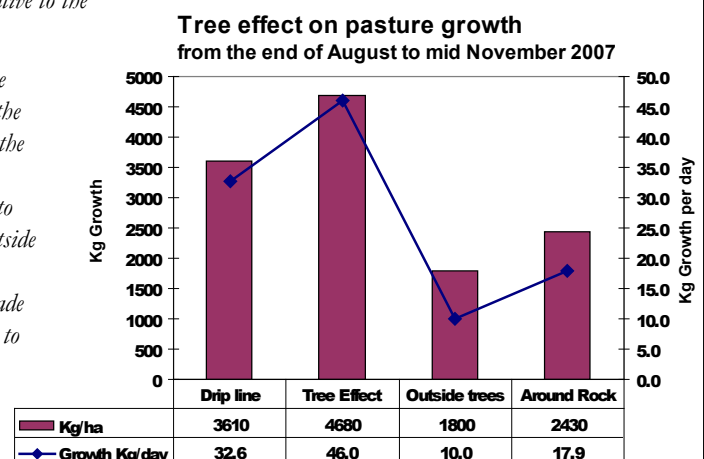




Photo 3. Sheep browsing Old Man Salt Bush on the Bank's property at St George.



Photo 4. The engineered woodland paddock on "Lakeview" showing the temporary fencing used to allow livestock to graze alongside young tree and shrub seedlings (Photo by Cam Banks).

Box 1. Lakeview's EW Design

8 tree/shrub belts at 50m centres.

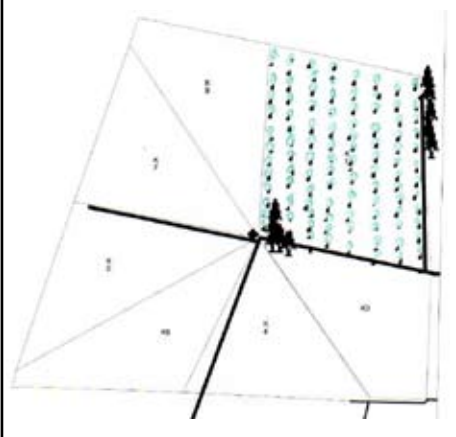
8 pasture bays each approx 2 ha.

Each belt is 2 rows – western row = trees, eastern row = shrubs.

Tree species include: *Pinus radiata*, Shining Gum, Manna Gum and Snow Gum.

Shrub species include: *Acacia dealbata*, *A. filicifolia*, *A. amoena*, *A. rubida*, *A. viscidula*, *Casuarina rigida*, *Jacksonia scoparia*, *Tagasaste*, Old Man Salt Bush.

Thick lines indicate water pipelines. Seedlings planted October 2007.



"The obvious benefits of trees for stock shelter in the largely open country around Uralla cannot be overstated, however I became involved in the engineered woodlands project to more closely incorporate trees and shrubs within my pasture for other reasons also," says Cam.

Cam thinks that there are likely improvements to biodiversity, soil biology, soil mineral cycling, more productive grasses in the tree shade zone and visual aesthetics in an engineered woodland.

"After the good experiences with saltbush at St George, I am also keen to trial various fodder shrubs in the woodland design, especially to try and lift the protein content of the forage offered to stock in the winter," says Cam. Box 1 details the engineered woodland design on "Lakeview".

Woodland design: managing the establishment phase

The paddock used to establish the trial engineered woodland on "Lakeview" is only gently sloping and Cam was interested in investigating intensive grazing management on the site. Therefore, tree and shrub belts were established in straight rows (to make fencing easier) approximately 50 m apart and livestock will have access to the paddock throughout the tree establishment phase. This is achieved by temporarily fencing each bay of pasture between tree belts to allow a mob of livestock to graze for a few days at a time.

At the completion of each graze period the stock and their fences are moved to the next bay for grazing.

"We have been involved with planned grazing for a number of years with great success and I am interested in the principles of techno-grazing – this layout allows the sequential grazing of the paddock in 2 ha blocks with small to moderate sized mobs of livestock at high livestock density," says Cam.

Water is provided via a pipeline along the southern boundary of the paddock which has a hydrant for each pasture

bay, a water trough moves with the livestock from bay to bay. Once the shrubs are suitably established the temporary fencing will be arranged to allow stock access for browsing. The period the shrubs can recover from browsing will be managed by the appropriate placement of the temporary fence each time the pasture is grazed. It is likely the shrubs will be grazed only once or twice a year whereas the pasture may be grazed several times.

Cam maintains detailed records for monitoring the performance of his paddocks. The performance of the engineered woodland paddock on "Lakeview" will also be carefully watched along with the other sites involved in the overall project.

The Engineered Woodlands Project aims to demonstrate a profitable land use that integrates the growing of trees for carbon and timber within agricultural production systems.

The Engineered Woodlands Project is an initiative of the Northern Inland Forestry Investment Group (NIFIG) a sub-committee of the Northern Inland Regional Development Board – Co funded by the Board, the Namoi CMA for sites within the Namoi catchment, and the Border Rivers-Gwydir CMA for sites within the Gwydir catchment. "Lakeview" is within the Gwydir Catchment.

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