

The Benefits of Silvopasture at Boomerang

Husband and wife partnership Bill and Angela Schulke manage an integrated grazing and timber production enterprise near Gin Gin in the Bundaberg region. They mainly produce steers for the domestic market, and also export bullocks and heifers to the Japanese and United States prime beef markets.

In addition to running cattle on their own property, the Schulkes agist cattle on neighbouring properties. One of these agistment properties – Boomerang Station – is owned by Ergon Energy and managed by Private Forestry Services Queensland (PFSQ) for timber production, predominantly producing poles for the power distribution network. Bill works as a forestry specialist for PFSQ, combining the management of the timber resource at Boomerang with the agisted cattle.



Grazier and forestry specialist Bill Schulke

Silvopastural trials

Silvopasture is the practice of managing trees, pasture and livestock in a mutually beneficial way, and one critical factor in silvopastural systems is the density of trees. A Producer Demonstration Site project initiated by Meat and Livestock Australia (MLA) and the Queensland Department of Agriculture and Fisheries (DAF) aimed to measure the impact of managing tree density on pasture and timber productivity. The benefit of forest density management (thinning) for timber production is to allow better trees to access the available light, water and nutrients to grow faster; the benefit for beef production is that pasture cover increases as shading is reduced.

Bill and Angela were keen to become involved with the Producer Demonstration Site project to demonstrate that grazing and timber management can be successfully combined to improve cattle productivity, carbon capture, reduce soil erosion and increase biodiversity. Through his work as a forestry specialist, Bill has seen first-hand the advantages of timber management and wanted to use the PDS project to provide evidence of this to others.

At Boomerang, plots were established and forest thinning was carried out in half of them in September 2020. In February 2021, the baseline native pasture biomass was assessed. After that, the plots selected to be sown with improved pastures were sprayed with glyphosate herbicide, and a mix of grass and legume seeds was sown in March 2021 (Table 1). To enable pasture measurements, cattle exclusion cages were set up.

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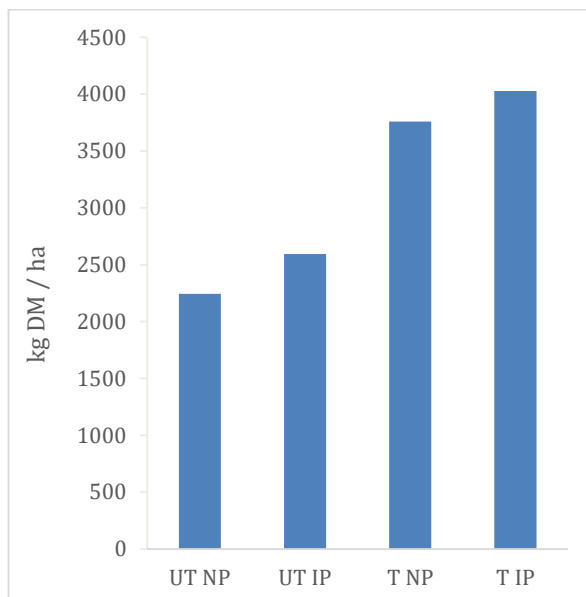
Table 1: Improved pasture mix

Pasture species	Cultivar	% of mixture	Seed rate adjusted (kg/ha)	\$ / kg	\$ / ha
Signal grass	Basilisk	25%	1.4	14.5	20
Rhodes grass	Katambora	25%	5.8	10	58
Shrubby Stylo	Siran	25%	1.3	19.5	25
Siratro	Aztec-atro	10%	1.3	30	38
Caribbean Stylo	Verano	10%	3.0	16.5	50
Fine Stem Stylo		5%	0.5	20	10
			13.2		200

Pasture assessments

Pasture biomass from the cattle exclusion cages was measured each year. At the end of the trial, compared to the control plots (unthinned, native pasture), the dry matter in plots with:

- unthinned trees, improved pasture had increased by 16%
- thinned trees, native pasture had increased by 68%
- thinned trees, improved pasture had increased by 80%.



Mass of pasture (kilos of dry matter per hectare) in four treatments: unthinned (UT) and thinned forest (T), and native pasture (NP) and improved pasture (IP).

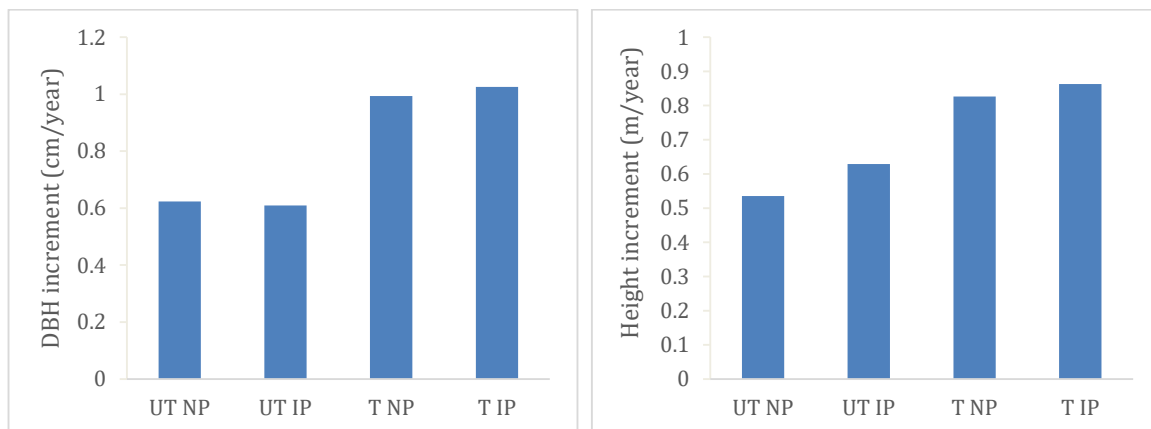
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Tree assessments

The main commercial tree species at Boomerang were spotted gum, narrow-leaved red ironbark, forest red gum, red and brown bloodwood, turpentine and white mahogany. Thinning was undertaken in August-September 2020, retaining the trees with the best form and commercial timber potential.

The average initial stand density prior to thinning was 353 stems/ha and after thinning, average stand density was 126 stems/ha. Comparing thinned plots with unthinned plots, measurements taken almost 3 years later showed:

- a 64% increase in the diameter at breast height (DBH) growth increment
- a 45% increase in the height increment.



Average annual DBH and height increments from four treatments: unthinned (UT) and thinned forest (T), and native pasture (NP) and improved pasture (IP).

The future

With the supply of poles from native forests dwindling, sourcing power poles and sawn timber from private land will become increasingly important in future. At Boomerang Station, the goal is to continue improving the timber quality to provide poles for Ergon’s energy distribution network, which requires 10,000 poles per year. This means that the forest must continue to be thinned and managed to produce the highest quality timber possible, while the defective and non-commercial trees are gradually removed from the property. Forest thinning is also an important way to improve the quantity of pasture available for livestock, so it is a win-win situation.

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Bill has some tips for other graziers who are considering managing native forests for timber production:

1. You CAN grow trees and cattle together successfully.
2. Commit to managing your timber. Schedule in some timber work each year, don't let it go unmanaged.
3. Invest in thinning, don't just harvest the best trees (known as high-grading) but concentrate on improving the quality of the remaining trees.
4. Fire is an integral part of pasture and land management – it can do much more than reducing fuel loads. Fire can manage the understorey, change species composition, maintain the tree/grass balance, and will save money compared to chemical treatments. Learn to use fire!



Angela and Maddison Schulke preparing for mustering, with spotted gum and ironbark in background.