the leucaena network

Case Study

Gaining Resilience with Leucaena

Brett and Theresa Blennerhassett

Goshen Station, Mount Garnet

The potential to reduce the turn off time of their live export and feeder cattle was the catalyst for Brett and Theresa Blennerhassett, 'Goshen Station' at Mount Garnett, to participate in the MLA Producer Innovation Fast-Track program 'Redlands for Regions' with The Leucaena Network.

Redlands, the new psyllid tolerant leucaena variety, was officially launched in May 2019 but not before Brett and Theresa were one of six producers who trialed the variety to verify establishment capacity.

Brett and Theresa had previously planted 240 ha of Cunningham, which had been consistently decimated by psyllids, so the opportunity to trial the Redlands variety was a welcome one.

32ha of Redlands was planted on 2nd and 3rd February 2018, in 10m twin rows with one metre spacing between the rows. The 32ha comprised cleared ground that had previously been prepared by offsetting four times and ripping to 400mm deep.

Planting was undertaken with a Norseman planter set up for double rows with double press wheels, disc openers and precision depth control utilising GPS 2cm variation auto steer. Fertiliser was applied at planting at a depth of 54mm and placed at 150mm to the side of the seed.

The 29 eight hundred metre long leucaena rows (4.64ha per planted row) were planted at a seed rate of 1.8kg/ha with seed spacing at 75mm. Single Superphosphate was applied at planting at a rate of 150 kg per planted hectare (29 rows x 800 m x 2m = 46,400 sqm / 10,000 = 4.64 ha planted row).

Due to an imminent forecasted rain event and equipment malfunction, no herbicide was applied at planting.

The original planting depth of 35mm was found to be too deep for optimum germination with 50% germination achieved. Concurrent plantings of Redlands leucaena at the shallower depth of 21mm resulted in a more satisfactory germination of 70%.

Brett credits good germination with consistent seed depth, something the Norseman planter was able to achieve.

“Depth of the seed at planting is one of the critical factors in the successful establishment of leucaena and is dependent on each situation, soil type and characteristics,” Brett said. “We found that, here on Goshen, even an additional 10 to 15mm hindered the seedlings’ ability to break through the soil.”

To compensate for insufficient Phosphorous being applied at planting, CK66S was applied on 12 April 2018, nine weeks after planting. The CK66S was applied at a rate of 284 kg per planted hectare. A 3- point linkage fertilizer box with the two spinners removed enabled the fertilizer to drop directly on top of the plant.

Single Superphosphate (P 8.8% S 11%) was applied in June, directly over the plant, at a rate of 500kg per planted hectare. An additional application of Single Superphosphate was undertaken in January 2019, broadscale over the entire paddock at a rate of 180 kg/ha.

Whilst weather conditions and mechanical issues did not allow for the application of herbicides within the first month after planting, both chemical and mechanical control measures were implemented for maintenance of the growing leucaena.

In April 2018, nine weeks after planting, a grubber/scuffler was used to cultivate weeds and grass from both the inner row and the outer row to one metre. Spinnaker 700 WDG and Verdict 520 were applied immediately after cultivation, using a sprayer fitted at the rear of the leucaena planter, band sprayed at a width of three metres over the plants. Spinnaker was applied at a product rate of 140g/ha with a water rate of 160 L/ha. Verdict was applied at a rate of 800 mL/ha with a water rate of 140 L/ha.

In January 2019, 11 months after planting Brett offset between the rows for weed control.

The leucaena trial on Goshen Station benefitted from consistent rain with a total rainfall of 1834 recorded in the sixteen months from planting in February 2018.

Field day at ‘Goshen Station’ April 2019

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Grass pastures were planted between the leucaena rows in late January 2019 at a rate of 2.5 kg/ha Callide Rhodes, 2.5 kg/ha Bissett and 1 kg/ha Secca Stylo. Favourable weather conditions in the four months following planting resulted in excellent establishment and pasture growth.

177 weaners were put into the trial paddock and the additional 32ha Redlands paddock for five weeks in May 2019. After five weeks, 90 head were removed and the remaining 87 remained in the paddocks until May 2020.

Following the full integration of the trial paddocks and concurrent plantings into Goshen Station's grazing system, Brett and Theresa agreed to participate in The Leucaena Network's Northern Australia Live Weight Gain Trial. The trial is part of the MLA assisted Producer Demonstration Site (PDS) program.

The initial twelve months of the trial averaged a daily live weight gain of 0.581kg over 375 days.

Weighing Date	Mob Av. Weight (curfewed overnight)	No. Days	Mob Av. Gain	Av. Daily Gain
07.05.19	222		kg	kg
26.08.19	291	111	69	0.621
26.11.19	315	94	24	0.255
07.05.20	420	170	105	0.617

In addition to the leucaena live weight gain trial, Brett and Theresa have undertaken two grazing trials on native pastures.

The first trial with cattle on native pastures supplemented with dry lick and 8% phosphorous blocks resulted in an average daily live weight gain per head of 0.163kg per head over a nine-month period. The second native pasture trial was held over 92 days with cattle supplemented with a grain-based lick. This trial provided average daily weight gains per head of 0.336kg.

Whilst the native pasture trials indicate that supplementation can assist cattle weight gain on native pastures, the results further reinforce the potential benefits of the introduction of leucaena to suitable northern grazing systems.

	Improved Pasture + Redlands	Improved Pasture	Native Pasture-Trees
Species	Bisset, Seca, Rhodes, Verano, Buffel, Keppel, Redlands	Bisset, Seca, Rhodes, Verano, Buffel, Keppel	Kangaroo / Speargrass
Area	69	69	69
Stocking Rate (ha/AE)	0.6	2	6
Cattle numbers	120	34	11
Daily LWG (kg)	0.6	0.35	0.27
Annual LWG (kg)	219	128	99
Total LW/year (kg)	26,280	4,352	1,089
LWG value @ $5.00/kg	$131,400	$21,760	$5,445
LWG value/ha	$1,904	$315	$79
Supplements cost/head/year	$2.00	$10-25	$15-30
Fertiliser (DAP+S)	$350/ha (spread)	$350/ha (spread)	

Brett is confident the leucaena has an ongoing, valuable role to play in Goshen Station's future.

As at April 2022, Brett and Theresa have 400 hectares of leucaena-grass pastures in their grazing system with an additional 160 hectares planted in December 2021, that is expected to be fully integrated by May 2023. They anticipate planting an additional 160 to 200 hectares per annum for the next three years to complete their leucaena grazing systems.

"It's a no brainer – the results on leucaena's ability to boost productivity are clear," Brett said.

"We believe Redlands is the pathway to turning off our steers and heifers 6–12 months earlier. It's all about weight-for-age in northern beef.

"You want to own these cattle for the least amount of time, but it's also about getting yourself into a situation where you have some resilience when the harder times come."