

Lifting Leucaena Yields with Fertiliser

Laurie and Gwen Peake 'Cherwondah' Wandoan

As leucaena producers for more than 18 years, Laurie and Gwen Peake have significant knowledge of the legume and the benefits it brings to their property Cherwondah at Wandoan.

The couple attribute the legume to increasing their carrying capacity and the ability to turn off their Wagyu feeder steers and heifers at the maximum weight prior to winter compared to grass only pastures.



Laurie and Gwen commenced their leucaena journey in 2001 when a neighbour extolled the increased weight gain he was experiencing with leucaena. Over the next ten years, Cherwondah's 260 hectares of cultivation was developed to leucaena.

"My neighbour told me it would be like having oats for nine months of the year, so I gave it a go!" Laurie said.

"Another neighbour said, 'the only problem with is that I've only got half enough! He only had 400 ha. of leucaena! So without further ado I got to and systematically planted my wheat country to leucaena."

Having previously taken part in a University of Queensland fertiliser trial on a small segment of their established leucaena and having observed the benefit of increased leucaena and pasture biomass, Laurie and Gwen were keen participants in The Leucaena Network's MLA funded Producer Demonstration Site (PDS) project - Improving the Productivity of Leucaena in Grass Pastures with Fertiliser.

As part of the project, Laurie fenced off two 8.1 ha (20 acre) plots of Tarramba leucaena, planted in 2005 – 'Beta' which was fertilised in July 2016 with off-the-shelf product Granulock Z Extra at a rate of 244kgs/ha. The fertiliser was applied by tyne at a depth of 100 – 150mm and at 300 – 500mm away from each row.

The increased growth and more vibrant colour visually observed was ground-truthed with three biomass assessments throughout the project. The analysis of both the pasture and leucaena growth indicated a doubling of the available pasture comprising slight improvement in the leucaena yield and significant improvement in the grass yield at almost seven times the unfertilised plot.

Fertiliser treatment	Pasture	Nov-16	May-18	May-19	Across years	Total pasture yield
No fertiliser	Leucaena	302	427	491	1220	
	Grass	591	2085	2487	5163	6383
Granulock Z extra @244kg/ha	Leucaena	301	430	421	1152	
	Grass	4020	5265	4586	13871	15023
Custom blend @250kg/ha	Leucaena	412	379	590	1381	
	Grass	650	1665	2673	4988	6369
Fertiliser applied: July 2016.						
Granulock Z extra: 29kg/ha N; 48kg/ha P; 13kg/ha S; 5kg/ha Zn.						
Custom blend: 60kg/ha P; 80kg/ha S; 120kg/ha K; 140kg/ha Ca; 5kg/ha Cu; 5kg/ha Zinc; 0.15kg/ha Mo.						

The increased biomass was correlated with two years of live weight gain trials which commenced 14th August 2016. Eight Wagyu steers, aged thirteen months were inducted into each paddock – fertilised and unfertilised.

Dry weather and declining feed required the cessation of the trial on 14 November 2016 however the live weight gains were measured for the 90-day duration. Those cattle on the fertilised leucaena achieved an average weight gain of 114kg and 1.7kg/day compared to 63kg and .7kg/day on the unfertilised leucaena. Total group weight advantage for the eight cattle in the fertilised paddock was 408kg or 51kg per head.

A second live weight gain trial commenced in October 2017 with a reduced number of cattle per paddock. On the 19th October 2017, five weaner steers with similar weights were inducted each paddock. The youngest steers possible were used to allow for the longest trial time.



Laurie and Gwen report that the trial was almost at termination point again in January 2018 due to another very dry summer however February produced good rains with 68mm over three days from the 2nd to the 4th February and another 110mm received from the 18th to the 24th February. The cattle achieved market weight of at least 420kg by 20th April 2019 (183 days), one month earlier than expected.

Cattle on the fertilised leucaena achieved an average weight gain of 181kg and .99 kg/day compared to 170kg and .93kg/day on the unfertilised leucaena. Total group weight advantage for the five cattle in the fertilised paddock was 55kg or 11kg per head.

In total, over the two trials, the total group weight gain of the cattle on the fertilised leucaena compared to the unfertilised leucaena was 463kg.

Laurie recognises that the increased weight gains did not come without a cost.

“The cost of the fertiliser was \$2016 and I would estimate that the application costs were around \$15.00 per hectare so it is not an insubstantial investment,” he said.

Laurie estimates that in the short 18-month term of the live weight gain trails he would be about \$517 out of pocket. However, he is adamant that he will continue to see benefits in the years to come.

“We have had some shocking, dry years during this trial period and yet we have continued to see weight gain from the leucaena and particularly from the fertilised leucaena and grass pastures.

“Based on my experience with the previous fertiliser trials with UQ, I do not believe we will truly see the benefit of the fertiliser until we get a significant rain event but when that happens, and let’s hope it is soon, I hope that the fertilised paddocks will go ahead in leaps and bounds and pay dividends for many years to come.”