

## ***ILC2018 Poster and Producer paper\****

# **Irrigated leucaena in the Burdekin catchment produces high quality cattle for premium markets**

*Leucaena bajo riego en la cuenca del río Burdekin, norte de Queensland, produce carne para mercados premium*

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**Keywords:** Grazing, irrigation, north Queensland, tree legumes.

## **Background**

We are fifth-generation, north Queensland cattle producers. Between our 2 stations, Byrne Valley and Rangemore, we run around 8,000 head of cattle. The business focuses on producing beef for highly specialized markets in Korea, Japan and the USA.

Byrne Valley (12,000 ha) is 90 km south of Townsville on the lower Burdekin River and is operated as a back-grounding and leucaena finishing property. Rangemore (15,000 ha) is operated primarily as a breeding property with a 2,000 head *Bos indicus*-based breeding herd. In recent years, we have been infusing Angus genetics and aim to stabilize the herd at approximately 40% Angus content.

## **Leucaena in our program**

Initially we were hesitant about planting leucaena, due to a fear of farming, as we were cattle producers not farmers.

We planted our first leucaena at Byrne Valley in 1998, after several visits to Kununurra on the Ord River in Western Australia. We currently have 500 ha of leucaena under irrigation in an industrial-type farming operation (Figure 1). Paddocks have been laser-levelled (2,000 m long × 400 m wide with a 2 m fall). We plant leucaena on double raised-bed rows with 4 m inter-row spacing and deep inter-rows to speed water flow. Two centrifugal pumps deliver 150 L/sec to flood irrigate the pastures, with every second inter-row being watered on an alternating basis with a fast flush of water (Figure 2). Water and power usage have been halved using this method down a V-shaped inter-row compared with slow watering that soaks into a level inter-row. Leucaena is fertilized every 4–5 years with 500 kg/ha of superphosphate (8% P, 11% S).



**Figure 1.** Peter Heatley (left) and Bruce Mayne (right) inspecting the leucaena.



**Figure 2.** Alternately irrigated inter-rows in the leucaena at Byrne Valley.

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Key learnings with an irrigated system:

- Never plant prior to a wet season hoping for a free rainfall advantage as failed seed strike due to heavy rain events is a major loss.
- Initially lack of understanding about the importance of depth of planting (planting too deep) led to establishment failures after heavy rainfall events. These issues with seed strike are significantly reduced if planting occurs after the wet season.
- It is impossible to mechanically control weeds in a wet paddock.
- Control of grass and weeds is limited to a maximum of 2 applications of herbicide.
- Leucaena in an irrigated paddock is more important than roughage in the same paddock.
- Maintain a consistent watering pattern. It is false economy to start late, hoping to save water.

Psyllid infestations can be significant in this region but the new psyllid-resistant variety Redlands should help minimize this problem. Height management of leucaena is also a major issue in an irrigated system. We plan to address this in the future by decreasing our inter-row width from 4 m to 2 m, which will enable us to increase the stocking rate and allow cattle to have access to grazing height leucaena no matter where they are standing at all times.

### Animal production

We operate a rotational grazing system and move cattle to a new paddock every 14 days, removing all cattle from the leucaena during the wet season. Average daily gain (ADG) ranges between 0.9 and 1.4 kg/hd/d and by continued emphasis on genetic improvement we aim to increase these figures over time. Molasses is fed at 2 kg/hd/d to supply additional energy and we cut and bale (600 kg square bales) Callide Rhodes grass hay on the property as a source of roughage (Figure 3). The hay is provided on an ad lib basis and consumed by cattle at approximately 5 kg/hd/d. We bale approximately 700 tonnes hay per year and recoup about 30% of the production costs by selling surplus hay. By using this system, we have halved age of turnoff compared with cattle grazing a grass pasture-only diet and have the flexibility of marketing cattle at a time of year when prices are favorable, as opposed to having to sell as seasonal conditions decline when the majority of producers are also selling. Irrigated leucaena has eliminated many risks and variables in our steer production system, largely removing the influence of seasonal conditions, and we can calculate guaranteed kilos of beef which equals greater income and profit security. We sell direct to meat processors who supply markets in Japan, Korea and USA and our steers reach live

weights of 630–670 kg at 24–26 months of age with carcass weights of 340–360 kg (54% dressing percentage). In association with Prof. Luciano Gonzalez at the University of Sydney, we have introduced automatic walk-over weighing units and automated drafting of finished cattle. With our electronic identification system for animals, this has allowed us to monitor performance of all animals (identifying both high and low performers) and has enabled us to monitor the economics of the overall production system.



**Figure 3.** Crossbred steers (24 months) eating Rhodes grass hay and molasses in association with the leucaena.

### Future operations

We are currently developing an additional 700 ha for planting with leucaena and the planned decrease in inter-row spacing from 4 m to 2 m, to increase stocking rate and reduce maintenance trimming costs, as well as to change from fluming (Figure 4) to multiple fixed outlets in the underground pipelines.



**Figure 4.** The current fluming irrigation system in operation at Byrne Valley.

Our goal is to have every male weaner grazing leucaena as soon as possible after weaning. We are considering the cost-benefits of both selling slightly lighter younger steers

(to capitalize on superior feed conversion efficiency) and the economics of cubing or pelleting leucaena to supplement breeders.

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