

## fact sheet 1. *Leucaena* (*Leucaena leucocephala* subspecies *glabrata*)

*Leucaena* (*Leucaena leucocephala* subspecies *glabrata*) is a palatable and nutritious perennial legume shrub / tree that is ideal for cattle production in the sub-tropics and tropics of Australia.

### A Brief History

The distribution of the genus *Leucaena* ranges from southern Texas in north America through Mexico and into central and south America. Wild or common leucaena (*Leucaena leucocephala* subspecies *leucocephala*) arrived in coastal Northern Queensland in the late 1800s.

Whilst cultivated *Leucaena* (*Leucaena leucocephala* ssp. *glabrata*) is better known in Australia as high-quality livestock (predominately cattle) fodder, a range of species have been used for human food, timber and other uses for several thousand years.

In the 1600s, leucaena was utilised in the Philippines and South East Asia for use as a shade plant in tea and coffee plantations, a use that is still predominant today.

In the Philippines and Indonesia, leucaena has many purposes – timber, wood fuel, furniture, agroforestry as well as forage for ruminant livestock.

In Australia, the CSIRO released the first forage variety of leucaena in the 1960s. The first commercial plantings occurred in the 1970s and since the mid-1980s, leucaena has been used extensively as a commercial cattle feed system in Australia. Approximately 150,000 hectares of leucaena is planted in Australia, predominately in the ideal growing conditions of central Queensland however with the introduction of the psyllid tolerant variety, Redlands, plantings in northern Queensland and the Northern Territory are increasing.

### Benefits of Leucaena

*Leucaena* is suited to deep, fertile soils in sub-humid environments where annual rainfall averages 600–800 mm. With its tap root, leucaena is able to exploit deep soil moisture beyond the reach of grasses and so can remain productive well into the dry season.

A significant benefit of leucaena as a forage crop is the ability to efficiently fix nitrogen. Nitrogen fixation is caused by a symbiotic relationship between the plant and an introduced rhizobium bacteria (CB3060), which is applied to the seed prior to planting. Successfully nodulated leucaena will produce sufficient nitrogen for its own needs. However, incorporating a vigorous companion grass maximises pasture production where the grass, that is in close proximity to the leucaena plant, will utilise excess nitrogen to improve soil fertility, organic matter, soil health and structure.

The *Leucaena*-grass pasture is a productive and sustainable grazing system that will increase animal liveweight gain (250-300 kg/hd/yr), increase beef production per hectare (125-150kg/ha), maximise

business returns and provides flexibility to meet the carcass requirements of beef markets compared to grass-only pastures.

Once established and with periodic maintenance, well managed leucaena-grass pastures can remain productive for over 40 years.

## Mimosine

Leucaena contains a mimosine, a toxin that can directly cause weight loss, hair loss and potential eventual death in cattle. However, mimosine is quickly converted to dihydroxypyridine (DHP) in the rumen but this compound is also toxic to grazing animals. To overcome DHP toxicity, 10% of animals grazing leucaena should be inoculated with the anaerobic bacteria *Synergistes jonesii* or the 'leucaena bug'. Over a number of weeks this bacteria spreads to the non-inoculated animals to eventually protect the whole herd from the reduction in productivity this toxin can cause over time. The Leucaena bug is available for purchase through the Queensland Department of Agriculture and Fisheries (QDAF) Tick Fever centre at Wacol, Brisbane.

## Maintenance

Given the tree-like nature of leucaena, under light grazing pressure and favourable growing conditions (deep, fertile soils and warm and wet weather conditions) Leucaena can grow beyond the reach of cattle. Periodic intense grazing pressure can assist to minimise the growth of branches beyond cattle reach, keeping the plant more branched and leafy as well as reducing the opportunity for reproductive growth (flowering and pod production). However under certain circumstances mechanical trimming will be required to re-set plants back to a height to allow full grazing utilisation.

## Code of Practice

Leucaena produces viable seed that can cause weed problems in un-grazed areas such as gullies, banks of watercourses and road verges. The 'common' leucaena that arrived in Australia over 120 years ago has shown the colonisation potential in un-grazed situations. Cultivated leucaena will also colonise un-grazed areas if allowed to escape from grazed plantations, and precautions should be taken to prevent this.

The Leucaena Network recognised this risk and developed the Code of Practice. The Code is consistent with the Queensland Government's policy to reduce the weed threat of leucaena.

### Principles of the Best Management Code of Practice.

The Principle of the Best Management Code of Practice is to plant leucaena ONLY if you intend to manage it and are prepared to accept responsibility to control leucaena that establishes outside the planted area on your property, including watercourses.

Practices to comply with the Code are documented in The Leucaena Network's Fact Sheet 8.