

Butterfly pea in Queensland: a tropical forage legume success story

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Background to success

Butterfly pea (*Clitoria ternatea*) is a productive and persistent legume adapted to a range of soils and climates in northern (tropical and subtropical) Australia. Cultivar Milgarra, a composite line of introduced and naturalised accessions, was released in Queensland in 1991. The area planted in Queensland is a measure of its success, reaching <500 ha in 1996, 5 Kha by 1998, 30 Kha by 2000, 50 Kha by 2002 and 100 Kha by 2004. Butterfly pea is used by cattlemen mostly to grow and finish cattle. It is not grown extensively as a ley legume yet. Farmers, who crop and have cattle, plant it but usually on cropping soils with limitations, e.g. low plant available water capacity, shallow, low-N or duplex soils. Farmers without cattle generally choose to use inorganic nitrogen as an N-source for crops.

Many research trials were conducted throughout N Australia from the 1940s to the 1990s. Data on establishment, production and adaptation were collected from small plot trials planted across a wide geographical area. Grazing sites produced data on grazing management and animal weight gain. Trials were conducted to determine appropriate row spacing, seeding rate and weed control. Appropriate techniques were developed to control butterfly pea in a subsequent crop at the end of a ley phase. Data on organic matter and total N accumulation were collected.

Major reasons for success

1. *The technology worked.* Butterfly pea establishes quickly to produce a relatively cheap but high-quality, productive pasture on soils previously considered 'difficult to establish'. It is an effective conduit for farmers, who wish to change from farming to grazing for many reasons, including lifestyle choice, cost: price pressures of farming, or to avoid re-investment in expensive new farm machinery.
2. *The technology met a need* for a persistent legume that produced quality pastures to finish cattle at a younger age to meet market specifications. It also restores soil fertility. Nitrogen rundown is causing declining production from pastures and crops. Alternative legumes in this region have serious limitations.
3. *A team approach was used* to develop and extend agronomic principles for butterfly pea for varying farming/grazing systems by using the individual skills and experience of farmers coupled with good science

and understanding of researchers and extension staff. Importantly, butterfly pea technology was incorporated successfully into an 'agronomy package' developed by farmers and scientists working together.

4. *Champions* from the farming and scientific communities constantly and enthusiastically promoted butterfly pea and its management. Field days, bus tours, publications and one-on-one extension were used. A video was produced and distributed to interested producers. A booklet (*The Butterfly Pea Book — a guide to establishing and managing butterfly pea pastures in Central Queensland*) was published. Extensive use by farmers occurred only after an 'agronomy package' was developed and extended.

5. *The R&D was done in partnership*, drawing on the practical experience of farmers and technical skill of scientists to develop solutions. Funding bodies funded R&D after commercial release. Problems and gaps in technology were identified and resolved and 'best practice' was developed and adopted. This allowed the new cultivar to achieve its potential.

6. *High quality, cheap seed was available.* The decision not to apply Plant Breeders Rights to butterfly pea ensured that large quantities of high-quality but cheap seed were available. This encouraged additional seed growers to grow increased seed quantities, which reduced the seed price (initially from AU\$12 to AU\$3/kg, currently AU\$4–5/kg) and increased the numbers of farmers planting, area planted and planting rate.

Conclusions

Growers did not adopt butterfly pea when first released. The area planted in Queensland, especially in central Queensland, is increasing each year but this occurred only after R&D by researchers, extension staff and farmers with financial assistance from funding bodies. Developing an agronomic package, demonstrating best practice and providing information on managing the pasture, animal performance, controlling weeds and producing quality seed ensured producers quickly adopted the new pasture legume. Proven establishment and management technology and a plentiful but cheap seed supply ensure that butterfly pea will continue to play an important role in providing quality pastures to finish cattle at a younger age. Butterfly pea will be used as a ley more often and on larger areas as cropping soils age and N declines or when the return from cattle decreases and from crops increases.