



## New temperate legumes for Northern NSW

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There are many winter growing legumes available for sowing in the winter rainfall area of southern Australia, however there are fewer legumes adapted to the summer dominant rainfall zone. The main species used in Northern NSW are: lucerne and the annual medics on the more alkaline wheat growing soils; white, red and sub-clover on the slopes and tablelands; serradella on the acidic sandy soils such as those of the Pilliga Scrub.

Improved legumes pastures have long been a backbone of the grazing industries, but they have not been as readily accepted into the large scale farming systems, due to the better returns from cropping and the lack of suitable pasture legume varieties. There has been an increasing realisation that legumes are needed in rotations to maintain soil physical and chemical fertility. It has further been shown that legume-based pastures are one of the best solutions (Dalal *et al*, 1992).

### Methods

A national project involving all States and the CSIRO, is evaluating a large range of legumes, which have been collected overseas and stored in the genetic resource centres in Perth and Adelaide. This material is being evaluated nation-wide for tolerance to water-logging, salinity, insects and diseases and climate adaptability.

In Northern NSW there are 2 sites near Moree and another near Gilgandra. These sites represent soils from slightly acidic, sandy loams to heavy alkaline clays. Sites were sown in May 1998 to 80 lines of mainly annual legumes representing 13 medic and 17 clover species as well as 16 other species from 10 genera. These included several new legumes such as *Hedysarum* (Sulla), *Scorpiurus* (Scorpion tail), *Trigonella*, *Hymenocarpus* and *Tetragonolobus* (Winged pea) as well as serradella, *Lotus*, sainfoin and *Biserrula*.

### Results and Discussion

The winter/spring of 1998 was the wettest on record in Northern NSW. This meant that lines were evaluated under unusually wet conditions and so yields are given at 2 different times. The effect of the extended growing season can be seen in the table, with some species continuing to increase production while other species had "hayed-

Table 1. Pasture yields (kg DM/ha) 110 and 160 days after sowing of some productive lines on a black earth at Moree.

Legume species	Yield 10 <sup>th</sup> Sept, 1998	Yield 4 <sup>th</sup> Nov, 1998
Nitro Persian clover	6500	6100
<i>Trifolium isthmocarpum</i>	5800	9850
Zulu arrowleaf clover	5725	13475
Frontier balansa clover	5300	6925
<i>Trifolium glanduliferum</i>	5575	4700
Hykon rose clover	3825	7325
Caliph barrel medic	3125	3125



off' and yields had declined. Caliph is included as a representative of a commercial line.

The highest yielding line in the trial was Zulu arrowleaf clover, which is an erect growing, late maturing annual. It reached a height of 1 metre, late in the season as the trials were not grazed. It is reputed to be non-bloating and is also an excellent hay or green manure legume.

Other new legumes that performed well later in the season were:

Sulla which yielded 11,925 kg dry matter/ha,

*Scorpiurus* 11,325 kg dry matter/ha,

*Hymenocarpus* 7,800 kg dry matter/ha,

*Lotus maroccanus* 7,600 kg dry matter/ha,

Zodiac murex medic 7,250 kg dry matter/ha,

Several unreleased clover species yielded over 10,000 kg dry matter/ha.

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#### **References**

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