

## Plant selection of perennial pasture legumes and cocksfoot for a niche environment

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A major limitation to the sowing of perennial pastures in dryland salinity recharge areas in central Victoria is the limited selection of commercially-available species and cultivars which are adapted to the gradational, acid soils and Mediterranean climate of the region. Two programs are underway at Tatura: (i) to identify suitably adapted perennial legumes and, (ii). to develop new cultivars of cocksfoot (*Dactylis glomerata*), for hill country groundwater recharge areas.

### Methods

#### *Perennial legumes*

In 1990-91, over 100 perennial legume cultivars and lines, representing 45 diverse species, were inoculated with the appropriate *Rhizobium* strains and established in replicate nursery rows in a hilly recharge area near Seymour, in central Victoria. The soil was rocky with pH(water) 5.1 to a depth of 50 cm and an average annual rainfall of approximately 600 mm. Observations have been recorded at the end of each season and include scores for vigour, health, habit, flowering, seeding, new shoot density and seedling regeneration. Plant samples have also been cut for the measurement of seasonal dry matter yields, prior to mowing or grazing of the entire site.

#### *Cocksfoot*

During 1990, 100 cocksfoot accessions were established in replicate nursery rows on 4 locations in hilly recharge areas across central Victoria. Commencing in February 1991 and at 2-3 month intervals, 5 plants per plot were cut to measure seasonal dry matter production. Following each harvest sheep were allowed to graze the residual plant material. Also observations were made on relative time of flowering, persistence, rust resistance and morphological characteristics.

### Results and discussion

#### *Perennial legumes*

After 2 years lucerne is the most consistently vigorous and persistent species. Some cultivars of *Lotus carnicularis* tolerate acid soils and in some seasons it has produced at least as much dry matter as lucerne. However, the lotus also has poor persistence under competition and dry conditions. *Lespedeza* spp. and native *Glveine* spp. have the capacity to grow under dry summer conditions, but overall dry matter production of these species is relatively low.

#### *Cock-Venn*

Dry matter production in each season was strongly correlated ( $p < 0.01$ ) between sites. As of spring 1992, a number of accessions from Spain and Portugal have produced cumulative dry matter yields at least as high as that of cv. Porto, while several accessions have produced significantly ( $p < 0.05$ ) higher yields in autumn and winter at sonic sites. The most productive and persistent accessions will be evaluated in grazed sward trials.