

ESTABLISHMENT OF PASTURE LEGUMES ON RED-BROWN EARTHS

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Pasture establishment on red-brown earth soils in the Central-west of NSW is made difficult by the formation of surface crusts and the poor penetration of roots into the heavy subsoil. To add to these difficulties, the undersowing of wheat with an annual pasture legume is at a cost in terms of wheat grain yield and legume dry matter and seed yield (Poole and Gartrell 1970; Brownlee and Scott 1974). In a programme, recently commenced at the Central West Research Unit, Forbes, the establishment, growth and persistence of a wide range of annual pasture legumes will be examined.

In the first experiment the establishment and long term persistence of a range of annual pasture legumes will be compared. The species being examined are *Medicago murex* CD 26, CD 53.1, *Trifolium balansae* cv. Paradana, *T. resupinatum* S.A. 14433, S.A. 12240, *T. subterraneum* cv. Dalkeith, cv. Junee, cv. Seaton Park and cv. Woogenellup. The nine lines were sown in two trials, with and without irrigation; also included was a fallow control. A fine cultivated seedbed was prepared, trifluralin was incorporated two weeks prior to sowing, and lines were sown in plots 36 x 6 m, using an Aitchison seeder. Sowing rates depended on seed size and germination percentage, and ranged from 7 kg/ha for cv. Paradana to 19 kg/ha for subclover.

We hypothesise that moisture may be a major factor influencing yield of roots and tops. Water use is to be monitored in detail in the Dalkeith, Junee and CD 53.1 treatments. Light may affect dry matter yield and seed production. Radiation will be measured at the top of pasture canopy and at ground level. The effect of competition on seed reserves will be monitored beyond the first growing season.

More detailed work will investigate the differing abilities of the species to germinate and emerge on this soil, with special emphasis on the rate of germination and the effect of soil moisture on emergence. The competitive ability of these lines when sown under wheat will also be investigated.

**REFERENCES**

- Poole, M.L. and Gartrell, J.W. (1970) *Australian Journal of Experimental Agriculture and Animal Husbandry*. 10:84-88.
- Scott, B.J. and Brownlee H. (1974) *Australian Journal of Experimental Agriculture and Animal Husbandry*. 14: 785-789.