

## Subterranean clover improvement in New South Wales

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In New South Wales, subterranean clover is the main legume used in crop-pasture rotations on the Southern and Central Slopes, and for grazing on the Southern and Central Tablelands. A local project, integrated with the National Subterranean Clover Programme in Perth, was undertaken to improve the value of sub clover pastures for livestock and crop production.

### Evaluation of Subterranean Clover Strains

1973-78: On the Southern Slopes, there were several general problems on sub clover pastures, including poor clover persistence in many localities, the high oestrogenic activity of some ubiquitous strains (Dwalganup, Yarloop), and susceptibility to diseases such as clover scorch. During 1973-78, more than 50 selections and crossbreds of subterranean clover were evaluated on sites representing major soil types and climates within the southern wheat belt. The main characteristics measured were seed production (at the end of each year), seedling density (early winter), hard seed reserve (winter), and a rating of clover yield in July-August. Spring production was rarely measured, it being assumed to reflect the different maturities of the strains.

A soundly based system for recommending cultivars, with emphasis on their known persistence and growth in different environments, was developed. Two new low oestrogen crossbreds were assessed and recommended locally: Nungarin, a very early hardseeded strain that persists well in the drier parts of the wheat belt; and Trikkala, an alternative to cv. Yarloop on sites prone to waterlogging. A scorch-resistant crossbred, cv. Esperance, was found inferior agronomically to the existing midseason cultivars Seaton Park and Woogenellup. Northam (early), Daliak (early midseason), and Seaton Park were recommended as suitable alternatives to Dwalganup (highly oestrogenic).

In 1975, an exploratory experiment that contained 49 strains was sown at Temora (Southern Slopes), Trundle (Central Slopes) and Cooma (Southern Tablelands). The top strains in 1978, in terms of seed and herbage production, were:

<u>Temora</u>	<u>Trundle</u>	<u>Cooma</u>
Dwellingup A	Baulkamaugh	47267E
Spencers Brook	Walebing	Dinninup C
24420	Dwellingup A	Woogenellup
Northam	24420	Mt. Barker
Northam F	47275	Marradong, Daliak

Clearly, a different set of agronomic characteristics was required for production and persistence at each locality. At Trundle in particular, most commercial strains performed poorly, and improvement appeared both necessary and possible.

1979-1982: A new series of on-farm experiments was conducted in localities on the Central Slopes where clover regeneration is often unreliable (Goolgowi - Gubbata - Condobolin, Dubbo - Dunedoo). Following drought in 1980, only hard-seeded strains regenerated in 1981. Harder seeded cultivars, particularly in the midseason group, are required. An introduced strain, Dalkeith, and crossbreds with Dalkeith as a parent, may be worthy of commercial release.

### Agronomic Investigations

The on-farm evaluation of strains was supported by glasshouse and field experiments concerning the agronomy of sub clover. Some characteristics examined were the flowering times of strains in different

environments, the longevity of hard seed, the effect of moisture stress on seed production, the winter growth of sub clover strains, and the effects of blue-green aphids on seed production.