

Register of Australian Herbage Plant Cultivars

B. Legumes

1. Clover

Trifolium subterraneum ssp. *subterraneum* (Katzn. et Morley) Zohary and Heller (sub clover) cv. **Dwalganup**

Reg. No. B-1d-2

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Origin

A naturally occurring line known to farmers of the Boyup Brook district, W.A., by 1900. Called originally "First Early Strain" (1) and later "Dwalganup Early" (2), seed was distributed from the property Dwalganup of P.D. Forrest near Boyup Brook (12). Seed was available commercially by 1929 and was first certified by Western Australia in 1934, by New South Wales in 1952-53, and by South Australia in 1955-56.

Morphological description (3,4,16)

Grown as spaced plants forms few (5-11) runners with long internodes, produces only one or two laterals per runner, and the laterals rarely branch. The few long runners and lack of branching give this variety a generally sparsely leaved appearance and a high stem-leaf ratio (3). Runners are very hairy. Leaflets, not indented, tend to be small, grey-green in colour, and very hairy on both surfaces; the leaflet markings consist of a well-defined cream or pale green central area with narrow white arms extending as crescent to the edges of the leaflet. Stipules green with reddish veins. The first flowers occur at the 4th or 5th node on the runners, corolla sometimes distinctly pinkish. Calyx tube green, reddish above, or with reddish lobes. Seedling as in cv. Mt. Barker but radicles give a bright white to ice blue fluorescent glow under ultraviolet light (5); juvenile leaf with general anthocyanin flecking plus a small basal wedge of brown, the central pale green area being small to medium in size and sometimes absent; first trifoliate leaf marked with general flecking, pale green and white marks, and with heavily pigmented petiole (10,14,19).

Agronomic characters (16,18)

Is very early-flowering; the first flowers appear about mid August, and seed formation is completed by mid to late October. It is suitable for districts with rainfalls of 400-635 mm with an effective growing season of six months in the eastern States, but will grow successfully in Western Australia in a growing season of four months. Performs best on sandy-surfaced soils with a clayey or gravelly subsoil; it will not thrive on heavy clay soils (17). Though best suited to acid soils will tolerate a reasonably high lime content. The rhizobial requirement for effective nodulation is the same as cv. Mt. Barker.

It makes good winter growth but is rather more "stemmy" than cv. Geraldton. It sets seed heavily below ground and generally will not form viable seed unless it can bury the burrs. Seed production is in general inferior to that of cv. Geraldton. At maturity it has nearly 100% impermeable seeds which soften slowly during summer to give a moderate level of permeable seeds by autumn (4); but in Western Australia in 4-5 months growing season districts most of the impermeable seeds soften and subsequent regeneration after a cereal crop is inadequate (17). The seeds have a moderate level of physiological dormancy (12).

Alleged to be resistant to leaf rust (*Uromyces trifolii*) (11) but observations not confirmed (15). Has only slight resistance to clover stunt virus (9). Oestrogenic potency is high to very high (6,7,8,13).

References

1. Adams, A.B. (1929). The early varieties of subterranean clover. *J. Dep. Agric. West. Aust.* **6**, 6-8.
2. Adams, A.B. (1934). Subterranean clover. New strains from Northam and Muresk. *J. Dep. Agric. West. Aust.* **11**, 592.
3. Aitken, Yvonne, and Drake, F.R. (1941). Studies of the varieties of subterranean clover. *Proc. R. Soc. Vict.* **53**, (N.S.) II, 342-93.
4. Carpenter, J.A. (1966). Personal communication. Waite Agric. Res. Inst., Univ. of Adelaide.
5. Cuthbertson, E.G., and Briton, Jean (1961). Seedling fluorescence and strain certification in subterranean clover - a reassessment. *Aust. J. Exp. Agric. Anim. Husb.* **1**, 40-5.
6. Davies, H.L., and Bennett, D. (1962). Studies on oestrogenic potency of subterranean clover in south western Australia. *Aust. J. Agric. Res.* **13**, 1030-40.
7. Davies, H.L., Rossiter, R.C., and Maller, R. (1970). The effects of different cultivars of subterranean clover (*T. subterraneum* L.) on sheep production in the south-west of Western Australia. *Aust. J. Agric. Res.* **21**, 359-69.
8. Francis, C.M., and Millington, A.J. (1965). Wether bioassay of annual pasture legumes. III. The oestrogenic potency of dry sub clover pastures and leaf blade and petiole in green state. *Aust. J. Agric. Res.* **16**, 23-30.
9. Grylls, N.E., and Peak, J.W. (1960). Varietal reaction and genetic resistance of subterranean clover (*Trifolium subterraneum* L.) to subterranean clover stunt virus infection. *Aust. J. Agric. Res.* **11**, 723-33.
10. Loftus Hills, K. (1942). A method of distinguishing the commercial varieties of *Trifolium subterraneum* in the seedling state. *J. Coun. Scient. Ind. Res. Aust.* **15**, 270-1.
11. Loftus Hills, K. (1942). The reaction of varieties of *Trifolium subterraneum* L. to leaf rust (*Uromyces trifolii*). *J. Coun. Scient. Ind. Res. Aust.* **15**, 272-4.
12. Loftus, Hills, K. (1944). Dormancy and hardseededness in *Trifolium subterraneum*. 4. Variation between varieties. *J. Coun. Scient. Ind. Res. Aust.* **17**, 242-50.
13. Millington, A.J., Francis, C.M., and McKeown, N.R. (1964). Wether bioassay of annual pasture legumes. II. The oestrogenic activity of nine strains of *Trifolium subterraneum* L. *Aust. J. Agric. Res.* **15**, 527-36.
14. Meyers, A. (1939). A means of identification of the early strains of subterranean clover. *Agric. Gaz. N.S.W.* **50**, 376.
15. Peterson, S. (1954). Rust in subterranean clover. *Agric. Gaz. N.S.W.* **65**, 597-602, 605.
16. Quinlivan, B.J. (1962). Certified strains of subterranean clover in Western Australia. *J. Agric. West. Aust.* **3**(4th Ser.), 113-25.
17. Quinlivan, B.J. (1971). The ecological significance of seed impermeability in the annual legume pastures of southern Australia. *Dep. Agric. West. Aust. Tech. Bull. No. 11*.
18. Quinlivan, B.J., Francis, C.M., and Poole, M.L. (1968). The certified strains of subterranean clover. *J. Agric. West. Aust.* **9**(4th Ser.), 161-77.
19. Stratton, P.K. (1960). Subterranean clover varieties. Seedling identification. *J. Agric. Vict. Dep. Agric.* **58**, 599-601.