

Register of Australian Herbage Plant Cultivars

B. Legumes

1. Clover

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

Reg. No. B-1d-14

Registered prior to December 1971

Published in the 2nd Ed. of the Register of Australian Herbage Plant Cultivars, 1972

Origin

Attention was first drawn to this variety by Mr. J.E. Butler, a farmer of Clare, S.A., when he requested the Waite Agricultural Research Institute to identify it in 1941. Mr. Butler is reported to have said that it had been present on his property at Clare for 20 years and appeared more vigorous than the Mt. Barker variety (15). After examination at the Waite Agricultural Research Institute, C.A. Neal-Smith concluded that it did not resemble any previously described strain and named it Clare (15). Its early trial and seed multiplication on the property of Mr. J.E. (later Sir Ellerton) Becker at Keith, S.A., has been described by A.J.K. Walker and C.A. Neal-Smith (15). First certified in South Australia in 1950-51, New South Wales in 1955-56, Victoria 1956, and Western Australia 1958.

Morphological description (8,13,15)

Cv. Clare differs from the cultivars of the sub species *subterraneum* (vide Mt. Barker) in having stipules a little larger and broader at base; calyx smaller in relation to corolla tube; peduncles longer, thinner, and sarmentous, usually much longer than subtending petiole; pods larger with a keel and more leathery, much larger than seed and mostly exerted from calyx; larger burrs and larger seeds of different shape.

Grown as spaced plants Clare forms a medium number (12-28) of runners with medium-length internodes; produces some 4-5 laterals per runner; and the laterals branch once or twice. Plants generally appear to be a little leafier than Mt. Barker and have a more upright habit of growth than most other cultivars. Leaflets usually relatively large and only sparsely hairy; petioles and runners also hairless to moderately hairy. Under appropriate conditions (e.g. in spaced plants and during winter) the basal sector of the leaf is a deep chocolate colour; above this sector is a prominent central greenish cream crescent; and on either side two white bands extend to the edge of the leaflet. Stipules green with red veins and blotched with red. Calyx tube and lobes green with no red coloration. Burr is large and the calyces of the sterile flowers harsh and prominent. Seed purplish black or purplish red, ovoid to triangular, asymmetric with cotyledonary lobe larger, laterally compressed (i.e. more elongated, asymmetric, and laterally compressed than in other cultivars); approx. 77,000-100,000 per kg. Seedling as in Mt. Barker but radicles fluoresce moderately blue under ultraviolet light (2); hypocotyl with moderate pigmentation; cotyledons without anthocyanin markings; juvenile leaf tip rounded to acute with large green central mark, a dot of anthocyanin just below the green mark and a small basal brown area; first trifoliate leaf tip rounded to acute, large central green mark surrounded by a fringe of anthocyanin (2,14).

Agronomic characters (3,6,7,11,15)

Is early mid-season flowering and in southern States flowers in mid September, about the same time as Bacchus Marsh and Woogenellup; seed formation is also completed in the same time (i.e. two months). It has no cold requirement for flowering and in more northern districts flowers earlier than Bacchus Marsh (10). Adapted to a rainfall of about 500 mm over a minimum effective growing period of seven months.

It makes very vigorous seedling growth and rapid early growth in autumn and gives high yields in early winter. Its seedling vigour enables it to withstand weed competition better than similar maturity cultivars like Bacchus Marsh. When soil moisture is favourable it maintains growth later in spring than Bacchus Marsh. In Western Australia, however, it has not generally performed as well as Woogenellup under grazing (13). It grows well on slightly alkaline soils and soils usually more suited to annual species of *Medicago* than other subterranean clover varieties (3,7,11). It requires less zinc and manganese than Bacchus Marsh (6). It does not

bury its burr as readily as most other varieties. Its rhizobial requirements are similar to cultivars of the sub species subterraneum like Mt. Barker (q.v.).

It is more resistant to rust than Mt. Barker and this characteristic makes it suited for coastal areas (12). It is moderately resistant to clover stunt virus (5). Cv. Clare has a low formononetin but high genistein content. Its oestrogenic potency is low (1,4,9).

References

1. Bennett, D., Morley, F.H.W., and Axelsen, A. (1969). Adaptation by sheep to isoflavone in clover. *Aust. J. Exp. Agric. Anim. Husb.* **9**, 569-73.
2. 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.
3. Doolette, J.B. (1956). Clare sub clover outstanding. *J. Dep. Agric. S. Aust.* **60**, 137.
4. 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.
5. Grylls, N.E., and Peak, J.W. (1960). Varietal reactions and genetic resistance of subterranean clover (*Trifolium subterraneum* L.) to subterranean clover stunt virus infection. *Aust. J. Agric. Res.* **11**, 723-33.
6. Higgs, E.D. (1958). Choosing sub clover strains on your farm. *J. Dep. Agric. S. Aust.* **61**, 267-72.
7. Higgs, E.D., and Crawford, E.J. (1956). Choosing the right strain of subterranean clover for northern areas. *J. Dep. Agric. S. Aust.* **60**, 182-4.
8. Katznelson, J., and Morley, F.H.W. (1956). A taxonomic revision of Sect. Calycomorphum of the genus *Trifolium* I. The geocarpic species. *Israel J. Bot.* **14**, 112-34.
9. 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.
10. Morley, F.H.W., and Davern, C.I. (1956). Flowering time in subterranean clover. *Aust. J. Agric. Res.* **7**, 388-400.
11. Patton, C.T. (1956). Pastures in wheat farms - the competition in the Wimmera and western Wimmera zones. *J. Agric. Vict. Dep. Agric.* **54**, 665-70.
12. Peterson, S. (1954). Rust in subterranean clover. *Agric. Gaz. N.S.W.* **65**, 597-602, 605.
13. 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.
14. Stratton, P.K. (1960). Subterranean clover varieties. Seedling identification. *J. Agric. Vict. Dep. Agric.* **58**, 599-601.
15. Walker, A.J.K., and Neal-Smith, C.A. (1959). The history, characteristics and potential of Clare subterranean clover. *J. Aust. Inst. Agric. Sci.* **25**, 18-22.