

## Register of Australian Herbage Plant Cultivars

### B. Legumes

#### 1. Clover

#### (d) *Trifolium subterraneum* L. var. *yanninicum* (Katz. et Morley) Zohary & Heller (subterranean clover) cv. Gosse

Reg. No. B-1d-31

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#### Origin

Gosse originated as an F<sub>5</sub>-derived selection from the cross Neuchatel/CPI 39314 YB//*Meteora*//*Trikkala*, made in 1980 by P. E. Beale (South Australian Department of Agriculture) at the University of Western Australia. Field testing, using the code name FS-24, was conducted, as part of the National Subterranean Clover Improvement Program, by G. J. Mitchell, M. L. Stanley and A. D. Craig (S.A. Department of Agriculture), P. G. H. Nichols (Western Australian Department of Agriculture), B. S. Dear (New South Wales Agriculture), K. F. M. Reed and S. G. Clark (Victorian Department of Agriculture) and P. M. Evans and R. J. Orr (Department of Primary Industry, Tasmania).

It was selected by G. J. Mitchell and recommended for registration by the South Australian Herbage Plant Liaison Committee. The South Australian Department of Agriculture will maintain breeders' seed.

#### Morphological description

Gosse is typical of var. *yanninicum*, being almost glabrous and producing cream-coloured seeds. Growth habit is semi-prostrate. Leaves are obcordate and bright green. Leaf markings are different from those of *Trikkala*, *Larisa* and *Yarloop*, and are almost identical to those of *Meteora*; Gosse has somewhat more leaf flecking than *Meteora*. Leaflets of Gosse possess a light green crescent-shaped band, extending to the margin of leaflets of mature leaves, without crescent arms (C4 and B2, Collins *et al.* 1984). In cool weather Gosse exhibits purple–black flecking across leaflets which is more prominent than for other *yanninicum* cultivars, although the flecking virtually disappears with warmer spring temperatures. Stipules are green, possessing red veins and occasionally with red flushing between the veins. The calyx tube is green, glabrous and the corolla is white with only slight pink venation. Seed is enclosed in a transversely wrinkled calyx. Seed is ovoid, approximately 105 000/kg.

#### Agronomic characters

Gosse contains low concentrations (0.06% dry weight) of formononetin (P. G. H. Nichols and B. H. Tan pers. comm.). Of early midseason maturity, Gosse commences flowering about seven days later than *Trikkala*, eight days earlier than *Larisa* and 13 days earlier than *Meteora* (Mitchell *et al.* 1988, 1990; P. G. H. Nichols pers. comm.). It persists satisfactorily in areas receiving at least 450 mm annual rainfall in South Australia. At Shenton Park, Western Australia, Gosse flowers 12 days later than *Trikkala* and 10 days earlier than *Larisa* (P. G. H. Nichols pers. comm.).

Gosse has better seedling vigour than *Trikkala*, *Larisa* and *Meteora* and consistently yields more dry matter than *Trikkala* in the year of sowing (Mitchell *et al.* 1988, 1990, 1991). Gosse produces slightly less seed than *Trikkala* in the first season (Mitchell *et al.* 1990). Gosse produces more hard seeds than *Trikkala* and *Larisa* but less than *Meteora*, although no consequent agronomic benefit has been identified in South Australia. The low hardseededness of existing cultivars limits the use of var. *yanninicum* in dryland areas subject to periodic waterlogging in New South Wales (Dear *et al.* 1987).

Gosse tolerates waterlogging and has grown well on acid and neutral soils. In situations where newly sown clovers suffer little competition from other species or resident subterranean clovers, Gosse appears to offer no benefit over *Trikkala* in long-term production or persistence. Where sown into mixed pastures or weedy situations however, Gosse has persisted and produced significantly more forage than *Trikkala* over 3 years. At Flaxley, Gosse produced 130% more forage than *Trikkala* in 3-year-old mixed swards, 217% more at Willunga and 15% more at Wirrega (Mitchell *et al.* 1991). *Larisa* was comparable to *Trikkala* in these trials.

Gosse is able to displace the *yanninicum* cv. *Yarloop*, a highly oestrogenic cultivar. Three years after being sown into *Yarloop*-dominant land at Conmurra, Gosse comprised 59% of the resultant pasture versus 36% for *Trikkala* and 32% for *Meteora* (Mitchell *et al.* 1991). In a similar trial at Flaxley, Gosse comprised 25% of the resultant pasture, compared with 18% for *Trikkala*, 4% for *Larisa* and 2% for *Meteora* (Mitchell *et al.* 1991). Gosse's vigorous seedling growth and resistance to clover scorch [*Kabatiella caulivora* (Kirchn.) Karak] are thought to be responsible for its superior performance in these mixed swards.

Gosse has demonstrated better field resistance to clover scorch than *Trikkala* and *Larisa* in Western Australia (D. J. Gillespie pers. comm.) and in South Australia (Mitchell *et al.* 1988, 1990, 1991). Limited testing indicates Gosse has slightly better resistance to phytophthora root rot (*Phytophthora clandestina* Taylor, Pascoe, Greenhalgh) than

Trikkala (S. Flett, pers. comm.), although its resistance to highly virulent isolates is not as good as that of Larisa and Meteora. It has the same level of tolerance to redlegged earth mite (*Halotydeus destructor* Tucker) and lucerne flea (*Sminthurus viridis* L.) as Trikkala and Larisa (P. Schutz, A. W. H. Lake, J. Howie and D. J. Gillespie pers. comm.). In laboratory screening Gosse is very tolerant to blue-green aphid (*Acyrtosiphon kondoi* Shinji), tolerant to spotted alfalfa aphid [*Therioaphis trifolii* (Monell) f. *maculata*] and susceptible to cowpea aphid (*Aphis craccivora* Koch) (P. Schutz, A. W. H. Lake and J. Howie, pers. comm.), although none of these aphid pests have seriously damaged subterranean clover pastures in South Australia (Mathison *et al.* 1978).

Gosse is a direct replacement for Larisa and Meteora in South Australia. It is also a supplementary cultivar to Trikkala, having better production and persistence in mixed pastures in areas receiving more than 500 mm annual rainfall.

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