Register of Australian Herbage Plant Cultivars

B. Legumes
1. Clover
(*k*) *Trifolium resupinatum* L. var. *resupinatum* Gib. and Belli (Persian clover) cv. Persian Prolific

Reg. No. B-1k-2

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Origin

Persian Prolific was collected 3 km north of Menemen, Turkey, by J. Katznelson and E. T. Bailey in 1967 and introduced as CPI 45887. It was obtained by the Australian Trifolium Genetic Resource Centre, Perth, Western Australia, in 1986 from G. P. M. Wilson, NSW Agriculture, Grafton.

Persian Prolific underwent preliminary evaluation and characterisation in Perth, Western Australia, in 1987 (Snowball 1993). It was selected by Richard Snowball from a group of accessions on the basis of winter and spring vigour, seed yield and hardseededness. It was grown in 1989 and 1990 for further preliminary evaluation and seed increase. It underwent limited field evaluation at Harvey and Goomalling, Western Australia, in 1989 (Snowball 1991), followed by extensive field evaluation in the Katanning region of Western Australia between 1992 and 1994 (Evans and Snowball 1993; Evans 1995).

Persian Prolific was recommended for registration by the Western Australian State Pasture Industry Advisory Committee. Seed certification will follow OECD protocols. Persian Prolific has provisional protection under Plant Breeders Rights legislation (application no. 97/036). Agriculture Western Australia will maintain breeder's seed.

Morphological description

Persian Prolific is a prostrate to semi-upright glabrous winter annual. Basal rosette formed in winter; stems develop rapidly in spring. Stems 3.7 mm thick at full flowering. Leaflets rhomboid, oval or obovate, 23 mm long by 14 mm wide. Petioles shorter and thinner than Kyambro, 75 mm long and 1.4 mm thick. An average of 77% of plants have leaf marks of some type. In comparison with Kyambro, plants with a silvery-pink coloured leaf mark (6%), a silvery-pink band (6%) or a purple crescent (4%) are less frequent, while plants with a black and green band with a green crescent (4%), a silver band (11%), a silver band with a black crescent (9%), or a silver band with a green crescent (19%), are present in Persian Prolific but absent in Kyambro. Leaf flecking occurs in 66% of plants (80% in Kyambro). Inflorescence 15 mm wide. Seed colours occur in the following proportions: brown 26%, yellow 5%, green 43%, and dark green 26%. Seeds are small with about 1 250 000 seeds/kg (range 1 064 000 to 1 515 000 seeds/kg).

Agronomic characters

Persian Prolific is a vigorous, early maturing cultivar. Rhizobium specific for Persian clover is commercially available. Persian Prolific is predominantly outcrossing (5–10% selfing) and flowers between 68 and 127 days (average 105 days) after sowing at Perth, Western Australia, compared with a range in flowering time for Kyambro of between 120 and 148 days (average 133 days), and for Nitro Plus of between 68 and 142 days (average 114 days). Its early maturity will allow it to grow in areas receiving between 350 and 500 mm annual rainfall.

In medium rainfall areas Persian Prolific was similar to or better than Kyambro for the parameters measured. On average it produced 7% less dry matter in winter, 5% less dry matter in spring, about 14-fold more inflorescences in October, and 38% more seed than Kyambro (Evans and Snowball 1993; Evans 1995). In 1994, Persian Prolific produced more than double the spring growth and seed of Kyambro in its first year at a non-saline, non-waterlogged gravel soil in the Katanning region of Western Australia. In the same year a regenerating stand at the Pingrup experimental site of Western Australia, which received only 234 mm rainfall produced about 5-fold more seed than Kyambro. Rainfall for 1994 was well below average and illustrates the advantages that an early flowering cultivar like Persian Prolific has in survival, seed production and regeneration. Hardseededness contributes to its survival. Persian Prolific has a moderate level of hard seededness at maturity (51%), and has a moderate rate of seed softening (40% soft after 4 months in a fluctuating temperature cabinet). Regeneration is also ensured by virtue of the small seed size (about 0.8 mg), allowing passage of seed through the grazing animal. Heavy autumn grazing is essential for successful regeneration through the removal of dry matter.

Persian Prolific can be grown over a wide range of soils from moderately acid to alkaline (pH 5.5–9.0) as a companion with Paradana Balansa clover and Nitro Plus Persian clover, or as an alternative to annual medics. It performs particularly well on winter waterlogged sites or mildly saline soils in areas receiving between 300 and 400 mm annual rainfall. In 1994 at Pingrup, Western Australia, Persian Prolific outperformed Paradana balansa clover, producing 135% more seed.

From 1 year of field testing at Denmark, Western Australia, Persian Prolific showed resistance to clover scorch disease caused by *Kabatiella caulivora* (Kirchn.) Karak (D. J. Gillespie pers. comm.). It contains traces of formononetin, genistein and biochanin A (P. G. H. Nichols pers. comm.). Persian Prolific is sensitive to red-legged earth mite (*Halotydeus destructor* Tucker).

Acknowledgments

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References

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