

Register of Australian Herbage Plant Cultivars

B. Legumes

1. Clover

(b) *Trifolium pratense* L. (red clover) cv. Astred

Reg. No. B-1b-5

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Released by Department of Primary Industry and Fisheries,
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Origin

Original seed was collected at Crato, Portugal in 1967 by Mr C. Neal-Smith, CSIRO Plant Industry. The seed was retained by CSIRO until 1973 when it was all sent to the Department of Agriculture, Tasmania, for seed multiplication and agronomic evaluation.

In 1976 this accession was found to reproduce asexually as well as from seed. Agronomic evaluation commenced using seed derived from plants grown from the original seed: the original bulk population. Astred is based on 243 plants with a formononetin content of <0.1% that were selected from the bulk population and 2 subsequent generations. Formononetin levels were determined by the isoflavone laboratory, University of Western Australia, using the method of Francis and Millington (1965).

Astred was submitted by the Department of Primary Industry and Fisheries, Tasmania, and recommended for registration by the Tasmanian Pastures and Field Crops Liaison Committee. The Department of Primary Industry and Fisheries, Tasmania, will maintain Breeders' Seed. Astred was granted Plant Variety Rights protection in 1993 (application no. 90/100).

Morphological description

A detailed description appeared in Smith (1992) and is summarised here. Astred is a distinctly prostrate red clover. The stems are markedly thinner and also tend to be softer than those of other red clovers, this probably being the main reason for the prostrate habit. The prostrate stems behave as stolons and new plants are produced vegetatively at the nodes, principally in the post-flowering period. This form appears to be a distinct variety within the species, but has not been

recognised as such in the most recent revision of the genus (Zohary and Heller 1984). Flower head size and colour of Astred are similar to those of other red clovers; the 1000 seed weight is 1.82 g, compared with 1.9, 1.8, 1.7 and 2.7 g for Grasslands Hamua, Grasslands Colenso, Redquin and Redwest respectively. Astred has a longer flowering period than most other red clovers.

Astred has lighter coloured, creamy green leaves that are both shorter and narrower than those of most other red clovers. The leaflets are 4–6 mm long and 2 mm wide. The colour and habit differences allow most plants of Astred to be clearly distinguished from those of other cultivars in the field.

Agronomic characters

Astred has been subjected to agronomic evaluation for 17 years. The oldest evaluation experiment was sown in 1976 and, in 1992, Astred had retained a ground cover of 55% compared with 2, 5 and 0% for Grasslands Hamua, Grasslands Turoa and Redwest respectively (Smith and Bishop 1993). In mid 1992 it was the dominant legume in the plots. During the first 3 years of this experiment dry matter production by Astred was similar to that of Grasslands Hamua but by the third year was significantly better. It was superior to Grasslands Turoa and Redwest from year 2. High production and persistence have been maintained under both set stocking and rotational grazing.

Similar results have been demonstrated in a second experiment (Smith and Bishop 1993) where, by year 3, Astred was producing significantly more dry matter than either Grasslands Hamua or Redwest. Comparative ground cover percentages were 16, 7 and 3% for Astred, Grasslands Hamua and Redwest respectively.

In late summer Astred produces strong stolons, and daughter plants grow from the nodes during and after flowering. The daughter plants usually appear within 100 mm of the parent. As these develop a root system, the connection to the parent plant degenerates.

The outstanding characteristic of Astred is persistence, this being a function of its ability to reproduce vegetatively. This character allows it to survive and withstand continual close grazing. In the above experiments Astred has increased its density even under conditions approaching set stocking with sheep. Previous attempts to select for longer stand life in non-stoloniferous populations have met with limited success (Brougham 1960; Cosgrove and Brougham 1965; Lancashire 1985). Thus, it is likely that other new red clover cultivars will have superior short-term production but will not persist any better than the older cultivars, whereas Astred will give

moderate to high levels of dry matter production and will be present in pastures many years after other red clovers have disappeared.

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