

Register of Australian Herbage Plant Cultivars

B. Legumes

8. Lucerne

b. *Medicago falcata* L. x *M. sativa* L. (lucerne)

cv. Cancreep

Reg. No. B-8b-1

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Origin (1, 2)

Bred by H. Daday, Division of Plant Industry, CSIRO, from Rambler, Hunter River, African, and Siro Peruvian, in an attempt to incorporate the creeping-rooted ability and underground stem crown of Rambler (4) with the forage productivity of the *sativa* cultivars.

The parental cultivars were grown at Canberra under spaced plant conditions. Twenty-five creeping-rooted plants of Rambler were selected from 400 plants and 5 clones obtained from D.H. Heinrichs of Swift Current, Canada; and 20 plants were selected from a population of 3000 plants of African, Siro Peruvian, and Hunter River on the basis of summer and winter vigour and resistance to leaf spot (*Pseudopeziza medicaginis*), black stem (*Ascochyta imperfecta*), and downy mildew (*Peronospora trifoliarum*). These selected plants were intercrossed in a glasshouse and the F₁ crosses gave only 5% creeping-rooted plants. The F₁ plants exhibiting the strongest creeping habit were intercrossed and backcrossed. The F₂ consisting of 1232 individuals yielded 6% creeping-rooted plants. In the F₃ generation of 3600 individuals the percentage of creeping-rooted plants was 34% and 43% in the backcross. The creeping percentage increased to 70% in the F₄ and remained at the same level in the F₅ and F₆. No further response to selection was obtained using mass selection. Selection for winter and summer forage production under Canberra conditions was made simultaneously with the selection for creeping-rootedness; and after the final selection for these characters seed production was improved by the selection of 20 plants with good seed-setting ability.

Submitted by H. Daday and recommended for registration by the New South Wales and Victoria Herbage Plant Liaison Committees. Registered January 1968.

Morphological description

Most of the plants of this cultivar have branched root systems and some also have an associated intermediate to long tap root as well. Adventitious shoots may arise from some of the branched roots, which are located in a horizontal position 10-15 cm below the surface of the soil. The stem systems are erect, prostrate, or intermediate and the last is most common. The main branches arise from a crown, which is more deeply seated than that of Hunter River and is usually below the soil surface. Leaflets vary in shape from narrow oblong to broadly ovate, reflecting the influences of *M. falcata* and Siro Peruvian. Flower colour ranges from yellow and variegated to blue and purple.

Agronomic characters

On the basis of small grazed-sward trials in a number of locations in south-eastern Australia, Cancreep showed good adaptation to areas of cool temperate climate such as occur on the Southern Tablelands of New South Wales; under these conditions it has equalled or exceeded Hunter River in both summer and winter production (3). Under spaced plant conditions at Canberra, Cancreep persisted better than Hunter River (3).

The degree to which the creeping habit is expressed is determined largely by plant density in the stand. Under the conditions of trial, 70% of the plants grown at 61 cm centres developed new plants from horizontal roots, whilst no plants did so when grown at high density (sowing rate 4.5 kg/ha). The relation between density of associated grass or weed species and creep is not known.

It is not adapted to hotter and drier summer areas. Under dry-land conditions at Narrabri, N.S.W., the spring, autumn, and winter yield of Cancreep compared favourably with Hunter River over two seasons but during the third and fourth seasons the stand of Cancreep thinned more rapidly and yield became inferior (6). In South Australia Cancreep is reported as yielding less than Hunter River at all

seasons during a 3 year trial and not creeping at all either at high and low plant densities (5). In other trials in South Australia under cutting and heavy grazing, yields and survival of Cancreep were also poor compared with Hunter River (7, 8). In the heavy grazing trial 20% of the plants of Cancreep crept but the creeping plants survived no better than non-creeping plants (7).

Seed yields of up to 336 kg/ha have been obtained under favourable conditions in Canberra, A.C.T., and Bordertown, S.A.

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