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ESTABLISHMENT AND EARLY REGROWTH OF SHEEP'S BURNET

(*SANGUISORBA MINOR* SSP. *MURICATA* (SPACH) BRIQ.)

EXAMINED MULTIVARIATELY

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Typical foliage and inflorescences of sheep's burnet.

ABSTRACT

Factors affecting establishment and early regrowth of the low growing perennial herb, sheep's burnet (*Sanguisorba minor* ssp. *muricata* (Spach) Briq.), were investigated in field and controlled environment studies. Lucerne (*Medicago sativa* L.) and sometimes birdsfoot trefoil (*Lotus corniculatus* L.), were included as dryland standards in the establishment studies.

Sheep's burnet emerged more slowly than lucerne and birdsfoot trefoil, but early vegetative growth was similar to that of lucerne and faster than birdsfoot trefoil. Under lower North Island field conditions, spring sown sheep's burnet established and tolerated three partial defoliations (5-7 cm stubble) as well as the legumes and averaged a total of 6.3 t DM ha⁻¹. Regrowth in the autumn indicated that a defoliation frequency of four weeks was suitable.

Field emergence of sheep's burnet was influenced markedly by temperature and was 66% on relatively warm, sandy soils at Flock House compared with 27% at Riverside. Seedlings emerged approximately 3-4 days earlier at Flock House. At constant temperatures of 10, 15, 20 and 25°C, final emergences of sheep's burnet were similar and averaged 70.4% but rates of emergence were again faster at higher temperatures. The minimum temperature for satisfactory (50%) emergence of sheep's burnet was 4.9°C and this was discussed in relation to sowing time. Temperature also had a pronounced effect on times to reach various seedling growth stages.

Large (>2.8 mm) seeds occasionally provided faster seedling emergence than small (<2.0 mm) and medium (2.0-2.8 mm) seeds, and at constant temperatures, large seeds gave greater emergence (81%) than small seeds (62%). Large and medium seeds also produced a greater proportion of seedling pairs (>50%) per hypanthium ("seed") than small seeds (9%), which may have advantages for rate of ground cover and perhaps earlier provision of forage. Field sowings of unseparated seed averaged 30% seedling pairs. Large seeds frequently produced superior seedlings and seed growers should be encouraged to produce similar seed. Material from Oregon, USA was

generally superior to that evaluated in early New Zealand trials but this depended on the evaluation environment, particularly temperature.

Foliar regrowth from a range of partially defoliated glasshouse grown plants was superior to that of plants defoliated completely. Reduction in root mass was the most important morphological effect of complete defoliation. The results indicated that current photosynthates from residual leaves were important in supplying energy for regrowth and this was discussed in relation to possible stand management. Osmotic adjustment was suggested as accounting for satisfactory growth of sheep's burnet in dry environments.

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