

## **The role of balansa clover (*trifolium balansae*) in cool elevated pastures**

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Since balansa clover was first released in 1985 it has established a role as a valuable legume in Eastern Australia in the 480 to 700mm rainfall zone (1). Its high level of hard seed and the large number of small seeds produced can result in thick stands of clover, although competition from other species, particularly in autumn, can reduce its vigour. The only cultivar available, Paradana, is similar to Seaton Park sub clover in flowering time, and therefore too early to be considered as a legume for medium to high altitude pastures. This paper reports on the results of two experiments which examine its role in elevated natural pastures.

### **Methods**

In the first trial, balansa clover at 4kg/ha and sub clover, cv Woogenellup at 10kg/ha were spread on the surface of a heavy clay soil of basaltic origin near Cooma N.S.W., elevation 900m a.s.l. These soils are relatively high in phosphorus but deficient in sulphur. Sulphur at 30kgS/ha was therefore applied as gypsum. *Poa labillardieri* dominates the natural pasture with few legumes being able to survive the heavy frosts and low rainfall (450mm) except for native trefoils. The second trial was sown at Tumbarumba, annual rainfall 980mm, elevation 680m a.s.l., into a granite derived soil carrying native pasture. Twelve lines of sub clover sown at 20kg/ha were compared with balansa clover sown at 5kg/ha in a randomised block design with 4 replications.

### **Results and discussion**

Drought conditions in the first year at the Cooma site resulted in no growth by either of the legumes. In the second year, the Paradana produced more seedlings and significantly more herbage than the sub clover which consisted of just a few scattered plants. Herbage production increased from 2.7t/ha on the unfertilized treatments to 5.5t/ha where balansa and gypsum had been applied. Despite a dry October, the Paradana was able to set seed. Summer thunderstorms subsequently germinated some Paradana seed and produced green feed in January-February.

At the Tumbarumba site, Paradana produced more early spring (Sept-Oct) growth in the first year than all of the midseason sub clover lines and about 10% more herbage than Woogenellup despite very low temperatures. The balansa set in excess of 97kg/ha seed with some additional seed not being harvested due to shattering. In the second year the balansa germinated strongly and began to colonise adjacent plots. Herbage production of Paradana up to mid September was 30% greater than Woogenellup and by late September was similar to Woogenellup. Although the balansa flowered earlier than the sub clover cultivars, it stayed green until November. Balansa clover appears to have potential as an opportunistic species to increase the nutritive value of elevated natural pastures, although the selection of a later flowering cultivar would be desirable. Observations of other trials at Cooma have indicated that Paradana is better able to withstand frost heave on heavy basaltic soils than *T. repens*, *T. subterraneum* and *T. pratense*.

(1) Dear, B. S. and Lattimore M. A. (1988). Balansa Clover. Agriculture & Fisheries Agfact P2.5.24.4pp.