



Balansa clover

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Updated: March 2006

AG0714

ISSN 1329-8062

Balansa clover (Trifolium michelianum) is a hairless, semi-erect annual legume. It is well adapted to most soils on which subterranean clover grows, has a high feed value and is palatable to livestock. This note describes the origin, management, cultivars, Victorian trial work results and fodder conservation of this species.

Background

Balansa clover (*Trifolium michelianum*), an annual self-regenerating clover introduced from Turkey is well adapted to most soils where subclover grows well and also waterlogged and slightly salt affected soils. It has performed well in soil pH values ranging from 4.5 to 7.5 (CaCl₂) but has performed poorly on deep acid sand soils.

Balansa has good levels of hard seed which allow balansa clover to regenerate well after a season of cropping. In such a system it provides nitrogen and also serves as a disease break. If maximum production is to be achieved over the long term, management must be geared to achieve maximum seed yields and regeneration.

Early, mid and late maturing varieties of balansa clover are commercially available, and this range allows the species to be grown in areas receiving between 350 and 800 mm of annual rainfall. Balansa clover grows best in monoculture; however, good performance with perennial grasses or short-lived ryegrass has been reported. Under these conditions it is an alternative to subterranean clover. However, in mixtures with grass, subterranean clover can perform better than balansa clover.

Description

Balansa clover (*Trifolium michelianum* Savi) has until recently also been known under the scientific name *T. balansae*, but it is now considered that these two species are synonymous and *T. michelianum* is now the preferred name. This semi-erect hollow-stemmed species can grow up to 80 cm tall but remains prostrate under grazing. Leaves vary greatly in size, shape and leaf markings. Some leaves have strong markings, ranging in colour from white to silver, pink or purple while others are plain green. Leaf markings can be smooth or serrated. The variation in leaf markings is a result of cultivars being a mixture of different genotypes and lines.

Flowers are 20-25 mm in diameter and consist of up to 45 florets per flower. They are white-pink in colour. Flowers

are held at the top of stems and become light brown as they mature. The species is strongly outcrossing and very attractive to bees. Seed colour can be olive green, yellow, or light to dark brown with 3-4 seeds/pod. Seed size varies and seed weights range from 0.4 to 1.1 mg.

Victorian results

The average seed set in trials (monoculture) has been around 700 kg/ha, which results in a seedling population of around 6-8000 plants/m² in the second year. This level of regeneration leads to very high winter production. Dry matter production of up to 60 kg/ha/day has been recorded in July-August with the result that 20-30 sheep/ha can be carried during this period if the stand is continuously grazed during summer, autumn and winter.

In saline/waterlogged areas balansa has out-produced subclover by 900%. In areas where subclover is well-adapted, balansa has out-produced Trikkala in winter by 59% and at Hamilton, Bolta balansa clover out-produced Leura, by 85% in late spring after severe summer-autumn-winter grazing. Production of up to 14 t DM/ha/year has been measured under grazing in the western district.

Balansa clover is very tolerant to clover scorch *Kabatiella caulivora* and its levels of oestrogen are low, so infertility in sheep is not a problem.

Management

Paddock preparation and sowing

Paddocks should be free of weeds by spraying with an appropriate knockdown herbicide. An insecticide should also be mixed with the herbicide to minimize populations of red-legged earth mites. With good sowing technique and favourable rain, a sowing rate of 2 kg/ha may be adequate but as the seed is very small and seedlings can be weak and very susceptible to red-legged earth mite, a minimum of 5 kg/ha is generally used.

Seed must be inoculated with group C (WSM 409) inoculant when sowing. Seed harvested on farm will have a very high proportion of hard seed and must be scarified before use to ensure good seedling germination and establishment. Certified seed purchased commercially will already have been scarified to ensure a high percentage of soft germinable seed. The seed should be placed no deeper than 1 cm. Broadcasting the seed on the surface of cultivated ground also provides good results. Light

harrowing and rolling will improve establishment. If the balansa is to be direct drilled the seed should be placed on a very shallow groove. This technique will give good weed control early as undisturbed ground stays weed free for longer after spraying.

The paddock can be grazed soon after sowing or left set stocked lightly during the first winter. Balansa clover responds well to applications of P, K and S fertiliser. Fertiliser doses should be formulated after requirements are determined by soil testing.

Grazing

To achieve maximum seed set, balansa must not be grazed once flowering commences in the first spring. In subsequent years balansa can then be grazed in spring as a good seed bank has been established. In contrast, conventional grass-subclover pastures need to be kept short in spring for optimum clover seed production and a high stocking rate is necessary to achieve it. Keeping a high stocking rate on grass-subclover pasture allows spelling of pure balansa clover pastures at this time and therefore benefits both pastures.

Soon after maturity when the feed nutritive value is still high (mid to late December when the seed heads dry off) balansa paddocks must be heavily stocked and the grazing pressure kept on until the beginning of the following spring. The optimum level of residual dry matter would be close to zero at the start of the autumn rains to achieve the best possible balansa regeneration.

Having sheep on the paddock before, during and after the autumn break is the best management for regeneration of balansa clover and for weed control. Grazing hard in summer does not affect the seed bank as a large percentage of seed can survive passage through the digestive tract of sheep, goats and cattle and will be returned to the paddock undamaged. Balansa clover does not need to be spelled in autumn. It does very well under continuous grazing but not well if it is allowed to accumulate a large bank of herbage.

Varieties

Frontier

The earliest maturing cultivar available. Registered by SARDI in 2000 and was commercialized by SGB Australia. It flowers in early September in Victoria and can be grown successfully in areas receiving between 350

and 450 mm annual rainfall. Like all commercial balansa clovers it has low oestrogen levels and can tolerate waterlogging and mild salinity. Results so far suggest that it may be suitable for pasture:crop rotations. In the 450 mm areas it could be sown in a mixture with Paradana.

Paradana

The first commercial balansa clover cultivar to be released. Paradana was developed by the South Australian Research and Development Institute. It can be grown successfully in areas receiving between 450 and 700 mm annual rainfall. It is hardseeded and can regenerate well after one year of cropping. At higher rainfall levels it can be grown in a mixture with Bolta. Paradana starts flowering in late September in Victoria and will continue flowering for about 8 weeks. Seeds can mature quickly if subjected to spring drought.

Bolta

Bolta is suited to areas receiving at least 550 mm of annual rainfall. In soils with a high moisture holding capacity it has performed well on 500 mm annual rainfall in southern Victoria. At this lower rainfall level it would be advisable to sow Bolta in a mixture with Paradana. Bolta flowers about 10 days after Paradana and will normally produce an extra tonne of dry matter in late spring if growing conditions are favourable. Bolta regenerates well in a 1:1 pasture:crop rotation. Wheat sown after bolta has outyielded that sown on Leura subclover by 10% in south west Victorian trials.

Fodder conservation

The rapid growth of balansa clover in spring, its erect growth habit, its high level of tolerance to clover scorch disease and its high digestibility all make it ideally suited to silage and haymaking. It does not regrow well after cutting for hay. Well-established balansa pastures that are cut for hay should still recover the following year from hard seed reserves set in previous years. Balansa clover hay typically has a digestibility of 76-82% with a crude protein content of 14-18%.

The previous version of this note was published in August 2001.

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