



A collaboration between AWI, GRDC, MLA, RIRDC and Dairy Australia

## Balansa clover

### Scientific name(s)

*Trifolium michelianum*

### Strengths

- Sets large amounts of seed.
- Hardseeded in cool climates
- Excellent waterlogging tolerance
- Adapted to a wide range of soil types and pH ranges.
- Mild salinity tolerance.
- Tolerant of clover scorch
- Regenerates well on suitable soils under appropriate grazing management.

### Limitations

- Not suited to deep infertile sands.
- Not suited to moderate-high soil salinity.
- Slow establishment in the first year if sown under cold conditions.

### Plant description

**Plant:** Aerial seeding, erect or semi-erect, much branched, self-regenerating annual temperate legume, growing to over 80 cm tall, but remaining prostrate when grazed.

**Stems:** Hollow, hairless.

**Leaves:** Comprise three hairless leaflets, of varying size, shape and leaf marking. Leaflet margins can be smooth or serrated. Some leaflets are plain green while others have white to silver, pink or purple markings.

**Flowers:** Borne in clusters in a globose flower-head 2 - 3 cm in diameter, each comprising up to 45 small white-pink flowers.

**Pods:** 3 - 4 seeds/pod, shattering readily on maturity.

**Seeds:** Ovoid-oblong, 1 - 2 mm long, olive green, yellow, light brown, dark brown to black in colour. 850,000 - 1.4 million seeds/kg depending on cultivar.

### Pasture type and use

Used as a component of permanent pastures, or in hay mixtures.

### Where it grows

#### Rainfall

Balansa clover is adapted to temperate climates with annual rainfall of 350 - 800 mm. Early flowering varieties are suited to lower rainfall zone, and later flowering varieties to higher rainfall areas. It can be grown successfully under irrigation.

#### Soils

Balansa clover grows across a diverse range of soil types, preferring soils of moderate to high fertility that are prone to waterlogging. It is not suited to deep sandy soils. It is adapted to acid and alkaline soils (pH<sub>water</sub> 5.4 - 9.0) although performs best where pH is below 8.3. Although displaying excellent tolerance of waterlogging, it has only low to moderate salt tolerance.

## Temperature

Widely adapted to the agricultural areas of Western Australia, South Australia, Victoria, Tasmania and New South Wales. Good frost tolerance.

## Establishment

### Companion species

Grasses: range of perennial (e.g. tall wheatgrass) and annual grasses.

Legumes: gland clover, Persian clover, subterranean clover (particularly ssp. yanninicum). It is often sown in a mix with subterranean clover, if parts of the paddock are poorly drained or subject to waterlogging over winter.

### Sowing/planting rates as single species

Typically sown at 5-10 kg/ha for hay crops. Seed should be scarified before sowing to ensure a high germination percentage.

### Sowing/planting rates in mixtures

Sown at 1-3 kg/ha in mixtures. Higher rates used when it is the only legume sown.

### Sowing time

Sown April - June under rain-grown conditions, or as early as February under irrigation. Good weed control is essential due to its small seed size and slow early growth. Shallow sowing (<15 mm) is essential.

### Inoculation

Commercial Group C (subterranean clover).

### Fertiliser

Phosphorus (with potassium on deficient soils) often applied at sowing - levels determined after soil tests. Trace elements (eg. Cu, Mo, Zn) may be required on very infertile soils.

## Management

### Maintenance fertiliser

Annual applications of superphosphate (with potassium on deficient soils) are usually required (on responsive soils) to achieve maximum productivity. Additional fertiliser applications may be required in spring (just prior to flowering) in seed and hay crops where soil nutrient levels are low. Soil testing is required to determine appropriate application rates.

### Grazing/cutting

Balansa clover can be lightly grazed in the first year. Care is needed to limit grazing pressure during flowering to ensure adequate seed set. Paddocks should not be "crash" grazed or cut for hay in the first year if the stand is expected to regenerate. However, plant residue should be grazed over summer to encourage hardseed breakdown and maximise regeneration. It can be used for both continuous and rotational grazing but persistence is better under the former. It remains relatively prostrate when continuously grazed and is very tolerant of regular defoliation while young. Left ungrazed it will grow up to 1 metre tall in spring, the stems collapsing and growing horizontally. It does not recover well from a late cut or grazing when stems are large and the plants tall and flowering. Very little seed will be produced if mature flowering stands are hard-grazed.

### Seed production

Balansa clover flowers spring to summer. Seed crops are generally windrowed when 70% of the seed in the flower head is mature, and then harvested using a conventional header. Seed can be direct-header harvested, but significant quantities can be lost through shattering. Seed yields of 300 - 500 kg/ha (dryland) and up to 800 kg/ha (irrigated) are frequently achieved on suitable soils and under good management.

### Ability to spread

Spreads by seed either by livestock or by movement of hay.

## Weed potential

Despite its ability to spread from seed, there is little evidence of it becoming an environmental weed. This is likely to be due to its preference for moderate-high fertility soils and specific rhizobial requirements.

## Major pests

Balansa clover is very susceptible to redlegged earth mite, particularly at establishment. Lucerne flea can damage stands, mainly during the warmer months. Aphids, particularly blue green aphids, can cause damage in warmer regions where they are more active.

## Major diseases

It is susceptible to root rots during establishment, particularly if sown late under cold, wet conditions. It is tolerant of clover scorch.

## Herbicide susceptibility

Refer to chemical labels for suitability and recommended rates for herbicides registered for use on balansa clover.

## Animal production

### Feeding value

Balansa clover provides excellent as green feed, and although quality reduces after maturity, but remains sufficient to ensure satisfactory animal production over summer e.g. crude protein levels in the dry matter at the very early bud stage may be over 20% and digestibility about 80%; within 4 weeks, these values may drop to about 15% and 70% respectively. In the same period, metabolisable energy may drop from around 11.5 to 10 MJ/kg DM.

### Palatability

Readily consumed by livestock, either as green or dry feed.

### Production potential

Capable of excellent productivity. Later-flowering varieties capable of higher total annual production in long-season environments.

### Livestock disorders/toxicity

Bloat can occur in cattle grazing lush balansa clover dominant pastures.

## Cultivars

Group	Cultivar	Seed source/Information
Early maturing	Frontier 	Seedmark/PlantTech
	Enduro	Seed Distributors
Mid-season maturity	Paradana	Australian Herbage Plant Cultivars
	Taipan 	Pristine Forage Technologies
Late maturing	Bolta 	Seedmark/PlantTech
	Viper 	Pristine Forage Technologies

 Denotes that this variety is protected by Plant Breeder's Rights Australia

## Further information

AG0714 "Balansa Clover" by Pedro Evans, Department of Primary Industries, Hamilton, Victoria. Updated: March 2006

## Author and date

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