Frontier

Balansa Clover

Trifolium michelianum

INTERNATIONAL

KEY FEATURES

- Early maturing approx. 100 days to flowering
- Flowers 20 days earlier than Paradana and 30-35 days earlier than Bolta
- Suited to long term pasture phases
- Tolerates water logging and mild soil salinity
- Tolerates a wide range of broadleaf herbicides
- High winter/spring dry matter production and nitrogen fixation
- Excellent regeneration from hard seed
- Recovers strongly from heavy grazing

Frontier is an annual temperate pasture legume that grows during the autumn, winter and vigorously during spring. Frontier is an early maturing hard seeded annual clover, that is well suited for low to medium rainfall zones. It demonstrates semi-erect growth when grown in a mixed sward, but the plant will remain prostrate if grown as a pure sward or grazed. Leaf size, shape and markings vary significantly with some having strong leaf marks ranging in colour from white to silver, pink or green.

Frontier can provide excellent early herbage production in medium rainfall zones. It was selected for its early flowering attribute and increased forage production. Frontier has excellent seed yielding ability that ensures good regeneration and pasture density suited to heavy grazing. It is highly digestible (14-18% crude protein) and can be used on its own or in pasture blends that may consist of persian clover, sub clover, grasses or lucerne. Frontier provides added benefits as a disease break while fixing nitrogen which is available in the soil for the subsequent crops.

Growing Conditions

Soil Type:
Suited to medium to heavy soil types. Unsuited to poorly drained alkaline clay soils or deep infertile sands or soils with a high free lime content. Frontier is tolerant of waterlogging and moderate soil salinity.

Rainfall:
350mm+

Sowing Rate:
Mixes 2 - 4kg/ha
Pure 4 - 6kg/ha Dryland
Pure 6 - 10kg/ha Irrigated

pH:
4.6 - 8.0 ($CaCl^2$)

Inoculant:
Group C Rhizobium

Pest Resistance

Susceptible to attack from Red Legged Earth Mite (Halotydens destructor) and Lucerne Flea (Sminthurus viridis), particularly during the establishment period. Frontier has good tolerance to Cowpea Aphid (Aphis craccivora), Blue-Green Aphid (Acyrthosiphon kondoi) and Spotted Alfalfa Aphid (Therioaphis trifoli). Moderate aphid damage may occur, and control may be required to minimise damage

Disease Tolerance/ Resistance

Tolerant of Clover Scorch (Kabatiella caulivora). No other significant diseases have been recorded in Frontier.

Management

During the first year of establishment, newly sown stands can be lightly grazed. Hay cuts and heavy grazing should be avoided if regeneration is targeted. At the first sign of budding, stock should be removed in order to increase the levels of seed set to improve regeneration in the following year. Like all pure legume stands, Frontier can cause bloat in livestock however this is not commonly observed.

Frontier is very hard seeded and will regenerate once established. Improved production should occur when grazing regenerating pastures after the autumn break. They may then be grazed hard from early winter through to flowering. Once seed set has completed, plants may be grazed heavily, however it is recommended to remove as much residual dry matter as possible prior to autumn rainfall to enhance regeneration levels.

Balansa Clover Agronomic Information

Scientific name *Trifolium michelianum*

Strengths

- Sets large amounts of seed
- Hard seeded 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 characteristics

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 4.6 - 8.0 $CaCl_2$) although performs best where pH is below 8.0. 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.

Sowing/planting rates in mixtures

Sown at 2 - 4 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 (e.g., 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 hard seed 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.

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 red legged earth mite, particularly at establishment. Lucerne flea can damage stands, 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, metabolizable energy may drop from around 11.5 to 10 MJ/kg DM.

Palatability

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

Livestock disorders/toxicity

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

Source: Pastures Australia and Barenbrug

Australian Government
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RIRDC www.rirdc.gov.au

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