NZ Forage Systems Fact Sheet

Selecting 'new' annual clovers

Key Points

1. All the aerially flowering new annual clovers are 'niche' plants.
2. None will perform in winter cold situations.
3. Arrowleaf clover is very suitable for winter warm and free draining soils and has the longest growing season of the annual clovers. It is suitable for grazing and/or hay making.
5. Balansa clover is suitable for winter wet situations. It can re-establish from seed if carefully managed.
6. Gland clover has been an inconsistent performer and is not recommended.
7. Persian clover tolerates winter wet and withstands rotational grazing.

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New annual clover species

Since the late 1990's several aerially flowering annual clovers have become available for use in New Zealand. These clovers are best suited to summer dry environments and from recent on-farm trials some recommendations can now be made. At this stage, the best fit for these annual legumes is as companion legumes, alongside perennial clovers in the first year of a plantain sward.

Arrowleaf clover (*Trifolium vesiculosum*) Originally from the Mediterranean, Arrowleaf clover has been used successfully in Hawkes Bay as a spring feed for ewes and lambs while also providing a late hay crop. As a single species during November and December it grew at 153kg DM/ha/day in a Lincoln University experiment. Cultivar 'Arrotas' produced 9,800 kg DM/ha compared with 3,370 kg DM/ha from subterranean and 1,790 kg DM/ha from white clover also sown as a pure species. Lamb growth rates of over 300 g/day on Arrowleaf pastures have been reported in New Zealand. Arrowleaf does not tolerate cold or wet conditions.

Balansa clover (*Trifolium michelianum*) Balansa clover has impressive winter and spring growth in warmer parts of the North Island. Spring growth rates of 90 kg DM/ha/day have been measured in the Hawkes Bay. Tolerates wet soils in winter. Is an aerial seeder so plants need to be spelled or lightly stocked in the first spring to allow enough seed to be set for future regeneration.

Persian clover (Trifolium resupinatum L. var. majus Boiss. (ssp. majus)) Persian clover is native to wider Persia (Turkey, Afghanistan, Iraq, Iran) and performs well in temperate dryland pastures of southern Australia. Very tolerant of waterlogged soils during winter. Often soft seeded and prone to false strikes but cultivars Lusa and Nitro Plus have acceptable levels of hard seed. In a recent trial in Marlborough Persian clover produced the most dry matter of eight clovers trialled, growing 19,300 kg DM /ha over 250 days. Very good lamb and ewe growth rates have been reported from Hawke's Bay. When grown as a pure stand phytotoxicity has been reported in ewes and lambs.

Gland clover (*Trifolium glanduliferum*) Very winter active and extremely early flowering. Has been a poor performer in New Zealand trial work and it is hard to see a role for this legume, other than in a South Island high country pasture mix.

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	Strengths	Limitations
Arrowleaf clover	• Long growing season. • Can be grazed then shut for hay. • Valuable feed over late spring/summer. • Responds well to summer rain. • Ability to suppress summer weeds. • Deep taproot able to exploit deep water . • Highly palatable and generally bloat safe.	• Very intolerant of poorly drained soils. • Very susceptible to competition from more vigorous species during establishment. • Poor winter dry matter production. • Requires moderate to high fertility. • Requires annual re-sowing. • Needs early grazing to maximise stems per plant.
Balansa clover	• Tolerates winter wet soils and range of pH. • Sets large amounts of hard seed and can re-establish from seed if well managed. • Can be grazed or used for hay.	• Not suited to infertile soils. • Slow establishment in cold conditions. • Not bloat safe.
Gland clover	• Moderate tolerance of waterlogging. • Suited for early grazing/hay .	• Early flowering and short growing season. • Poorest performing clover in all trials. • Requires moderate to high fertility. • Not bloat safe. • Extremely hard seeded.
Persian clover	• Tolerant of waterlogging. • High nutritive value. • Extremely high production potential. • Responds to rotational grazing.	• Very palatable to slugs during establishment. • Susceptible to competition at establishment. • Most available cultivars set little or no hard seed, but cv. Lusa and Nitro Plus may be useful exceptions. • Not bloat safe.

Recommendations

Arrowleaf clover - Suited to mild dry winters. Does not like wet feet. Produces hard seed and may not require annual re-sowing. Studies are ongoing—aiming to develop practical farm strategies for this promising annual clover.

Balansa clover - Suited to mild dry winters but can handle some winter waterlogging. Good production in late winter to early spring. If allowed to set seed can regenerate the following autumn.

Gland clover - Not recommended except for very special situations.

Persian clover - Best suited for mild winters. Withstands winter wet and produces quality feed from early spring until early summer. Well suited to rotational grazing. Normally soft seeded so requires annual re-sowing.

Arrrowleaf Balansa Persian Gland