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FACT SHEET

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Gosse - *a waterlogging tolerant subclover*

Suggested use

Gosse is a highly productive winter-active subclover for use in permanent pastures in 500 to 650 mm rainfall areas where intermittent winter waterlogging occurs.

Gosse has demonstrated better herbage production and persistence than Trikkala in intermittently or laxly grazed pastures. Trikkala and Gosse have performed equally well in set stocked sheep pastures. Gosse has better winter growth than Larisa, and is a better choice than Larisa in all but the highest rainfall districts.

Gosse is not suited to soils with a pH (water) exceeding 7.0.

Origin

Gosse was bred by Dr P E Beale during studies at the University of Western Australia by combining vigour, low formononetin content and *Kabatiella* resistance and then backcrossing to Trikkala.

It was registered in 1992 following testing across southern Australia. In South Australia trails were conducted in the Mid North, Mount Lofty Ranges, Kangaroo Island and South East districts.

Description

Gosse belongs to the "*yanninicum"* or waterlogging tolerant group of subclovers, which includes Trikkala, Riverina, Larisa and Yarloop. Gosse produces hairless stems (runners) and cream coloured seeds.

It has an erect growth habit, making it ideally suited to cattle grazing and /or hay production.

The leaf mark of Gosse consists of a light green crescent extending to the edge of the leaflet. Stipules possess red veins, but the flower tubes have no red pigmentation. Gosse flowers up to two weeks later than Triikkala and requires a longer growing season.

Oestrogen levels

Some old subclovers, such as Yarloop, can cause infertility problems in sheep. Gosse contains extremely low levels of formononetin, the oestrogenic compound associated with infertility, and therefore infertility problems should not occur.

Pest and disease resistance

Gosse's tolerance to insect and mite pests is similar to other subclovers. Redlegged earth mite (RLEM) is the most important pest of subclover in SA, and can cause severe damage to

seedlings in autumn and early winter. Control of RLEM with pesticides is essential when resowing pasture land to Gosse subclover.

Clover scorch is a fungal disease that can cause wilting of subclover foliage under mild, wet conditions. Gosse possesses high levels of clover scorch tolerance, sufficient to ensure that significant losses should only occur in extreme situations. Clover scorch is more prevalent in very wet areas and in lush pasture swards eg. pastures locked up for hay.

Root rots are a less obvious disease of subclover, but have been known to cause serious production losses. A range of fungi can be responsible, but the *Phytophthora* fungus has been associated with serious cases of root rot in SA. Laboratory tests suggest that Gosse is one of the subclovers more tolerant of *Phytophthora.* It has tolerance at least equal to Trikkala. However, new potent strains of root rots are being identified, and it is difficult to predict the future impact of these strains on new and existing subclovers.

Seed production

The seed production of Gosse is slightly less than for Trikkala in the first season. In one trial on Kangaroo Island, Trikkala built up significantly greater seed reserves than Gosse over a three year period. Nonetheless, the seed production of Gosse appears quite satisfactory for good persistence in long term pastures.

Laboratory tests indicate that Gosse produces a higher level of hardseeds than Trikkala and Larisa. Its hardseededness is similar to the subclovers Goulburn and Riverina. Goose should be inoculated with Group C rhizobial inoculant before sowing.

Field performance

Gosse has better seedling vigour than Trikkala, Larisa and Meteora and consistently yields more dry matter than Trikkala in the year of sowing.

Gosse has consistently produced better winter herbage yields than Larisa and is a better choice in all but the highest rainfall districts. In very late season districts (above 650mm p.a.) the later-maturing Larisa has the potential to produce more feed during late spring than Gosse. The relative performance of Gosse and Trikkala appears related to the way pastures are managed.

In intermittently grazed or laxly grazed pastures, Gosse provides superior herbage production and persistence and is a better choice than Trikkala. Gosse produced more than twice as much herbage as Trikkala and Larisa in three-year-old dairy pastures in the Adelaide Hills *(see Table 1).* The good seedling vigour and erect growth of Gosse allow it to be more competitive and persistent in these situations. Clover scorch is also likely to be a problem under this form of management, and may also contribute to Gosse's superior performance.

Table 1: Annual herbage production (kg DM/ha) of subclovers in three year old dairy pastures in the Adelaide Hills.

Cultivar	Flaxley	Willunga
Gosse	2513	2444
Larisa	343	1190
Trikkala	1078	770
Karridale	3042	590
Mt. Barker	408	131

Data collected from a second year pasture at Kybybolite Research Centre has been presented in Table 2 below. This trial was rotationally grazed with sheep and again shows the superior productivity of Gosse over Trikkala. Should this site become waterlogged over winter, the

performance of the three "*yanninicum*" cultivars (Gosse, Trikkala and Riverina) could be expected to improve relative to the other cultivars.

Table 2: Total annual production (kg DM/ha) of subclover cultivars at Kybybolite Research Centre.

Cultivar	Annual Production
Gosse	6902
Trikkala	6159
Riverina	5492
Mt Barker	6050
Seaton Park	6259
Junee	6756
Goulburn	7377

Under moderate to heavy, continuous grazing with sheep, Gosse and Trikkala appear to perform equally well. In set stocked sheep pastures in the South East and on Kangaroo Island, plots sown to Trikkala contained at least as much subclover as the Gosse plots in the third year *(see Table 3).* Continuous sheep grazing reduces competition between pasture plants by keeping swards short during winter and early spring. This may negate Gosse's erect competitive growth advantage.

Table 3: Subclover content (%) in three year old sheep pastures (in September) in SA.

Cultivar	Mingbool	Keith	Parndana
Gosse	40	38	30
Larisa	13	Ni	21
Trikkala	39	37	48
Karridale	19	Ni	24
Mt. Barker	20	Ni	23
Ni = not included			

Producers should be aware that Gosse is protected by Plant Breeders Rights legislation.

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