RIVERINA

SUB CLOVER

Subterranean/Sub clover (ssp. yanninicum)

DOMESTIC

KEY FEATURES

- Early – Mid Season 119 days to flowering
- Comparative flowering dates at Perth are:
  Riverina 119 days
  Trikkala 112 days
  Gosse 126 days
- Has increased early mid winter production compared to Gosse
- Riverina is resistant to Race 1 and at least moderately resistant to Race 2 of clover scorch
- Higher hard seed content than Trikkala and Gosse
- Suited to early watering programs
- Lower levels of the oestrogenic isoflavone, (formononetin), than Trikkala
- Higher tolerances to leaf rust and leaf spot
- Riverina has good tolerance to water logging
- Riverina is more resistant to powdery mildew than Gosse

Riverina is mid season (119 days to flower) variety, it belongs to the water logging tolerant “white-seeded” subspecies yanninicum of sub clover, and is derived from the same cross as Gosse, (Meteora/Trikkala). and was bred by Dr J S Gladstones from the University of WA.

Riverina can be sown across a wide range of soil types in the 450mm plus rainfall zones with a pH of 4.5 and above.

The variety Riverina has some distinct advantages over Gosse and Trikkala.

- Comparative flowering dates at Perth are:
  Riverina 119 days, Trikkala 112 days, Gosse 126 days.
- Lower levels of the oestrogenic isoflavone, (formononetin), than Trikkala.
- Riverina is more resistant to powdery mildew than Gosse.

Growing Conditions

Soil Type:
Riverina prefers sandy loams to clays of moderate acidity and good water holding capacity. Highly tolerant of winter waterloggin.

Sowing Rate:
Pure 5 - 10kg/ha Dryland
Pure 11 - 15kg/ha Irrigated

Rainfall:
450mm+

pH:
4.5 - 6.5 ($CaCl_2$)

Inoculant:
Group C Rhizobium

Cultivar Agronomic Guide	
Maturity	Mid
Days To Flower	119
Burr Burial Strength	6
Hard Seed Level	5
Waterlogging Tolerance	Good
Hard Seed Level	1 = Least Hard 10 = Most Hard
Burr Burial Strength	1 = Very Weak 10 = Very Strong

Subteranean/Sub Clover Agronomic Information

Scientific name(s)

Trifolium subterraneum ssp. yanninicum

Strengths

- Tolerant of heavy grazing under set stocking
- Vigorous seedlings provide good winter feed
- Adapted to soils prone to winter waterlogging
- Very persistent in high rainfall areas

Limitations

- Poor persistence on well-drained sandy soils
- Insufficient hard seededness for persistence in tight cropping rotations (1 year crop:1 year pasture)
- Susceptible to germination following 'false breaks'
- Shallow-rooted, so unable to capture deeper soil moisture and susceptible to premature death in dry springs
- Some older cultivars have high oestrogen levels contributing to ewe infertility

Plant characteristics

A prostrate self-regenerating annual pasture legume tolerant of waterlogging and heavy grazing that grows from autumn through to spring and buries its burrs.

Pasture type and use

Suited to permanent and semi-permanent pastures and to crop rotations where cropping is infrequent. Other subspecies (subterraneum and brachycalycinum) are better suited to soils not prone to waterlogging.

Where it grows

Rainfall

Adapted to winter-dominant rainfall area of southern Australia with annual rainfall 425 -1200 mm. Midseason varieties suited to medium rainfall zone, later flowering varieties suited to higher rainfall zone. Can also be grown under irrigation.

Soils

Prefers sandy loams to clays of moderate acidity (pH $CaCl_2$ 4.5-6.5) and good water holding capacity. Highly tolerant of winter waterlogging.

Temperature

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

Establishment

Companion species
A range of perennial and annual grasses, balansa clover, gland clover, persian clover, purple clover, burr medic. On paddocks with patches of well-drained soils it can also be sown with subterranean clover ssp. subterraneum (black-seeded sub clover) and lucerne.

Sowing/planting rates as single species
5- 15 kg/ha.

Sowing/planting rates in mixtures
3-8 kg/ha, depending on the number of mixture components.

Sowing time
Sow April-June, into moist soil following good weed control. Shallow sowing (<40 mm) is essential.

Inoculation
Commercial Group C (subterranean clover).
Granular clay inoculants can also be used. Can biologically fix 25 kg nitrogen/tonne of herbage dry matter.

Fertiliser
Phosphorus (with potassium on deficient soils) at sowing – levels dependent on soil tests. Trace elements (Cu, Mo, Zn) may be required on very infertile soils.

Management

Maintenance fertiliser
Annual applications of superphosphate (with potassium or sulphur on deficient soils) are required to achieve maximum productivity. Levels are dependent on soil tests.

Grazing/cutting
Thrives under set stocking and can be grazed moderately hard while flowering. Likely to be shaded out from more erect plants under lax grazing. Can be cut for hay.

Ability to spread
Slow spread from site of sowing. Can spread by burrs attaching to wool.

Weed potential
Its slow rate of spread, its preference for moderate-high fertility soils and specific rhizobia requirement gives it low potential as an environmental weed. It is readily controlled by a range of broadleaf herbicides within crop.

Major pests
Red-legged earth mite is a major pest, particularly at plant establishment, where it can kill emerging seedlings, but also causes damage in spring. Timerite® has proved an effective means of control. Lucerne flea and blue- green aphids can also cause damage in spring. Refer to chemical labels for suitability and recommended rates for insecticides.

Major diseases
Some cultivars are susceptible to the foliar disease clover scorch (Kabatiella caulivora), found in high rainfall, humid areas. Other foliar diseases in higher rainfall areas include leaf rust (Uromyces trifolii-repentis), powdery mildew (Erysiphe polygonii) and cercospora leafspot (Cercospora zebrina). Several root rots can attack subterranean clover, causing most damage to emerging seedlings and young plants. They include Phytophthora clandestina, Fusarium avenaceum, Pythium irregulare and Rhizoctonia solani.

Herbicide susceptibility
Refer to chemical labels for suitability and recommended rates for herbicides registered for use on subterranean clover.

Animal production

Feeding value
Excellent as green feed with in vitro digestibility in the order of 70% and crude protein over 20% until mid-flowering. Quality reduces once plants hay off. Dry herbage feeding value over summer is less than maintenance value (often < 50% in vitro digestibility) although animals may be able to obtain sufficient energy and protein by digging up seed burrs.

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

Production potential
Vigorous seedlings provide good early season production. Later flowering varieties capable of more than 10 t/ha annual production in long-season environments.

Livestock disorders/toxicity

Some older varieties of subterranean clover contain high levels of phyto-oestrogens, which can affect the sheep reproductive system. The most active isoflavone is formononetin, which can cause a decline in ewe fertility. Two other isoflavones, genistein and biochanin A, are also present in all subterranean clover varieties, but these have less impact. If ewes are mated when they are grazing green, potent subterranean clover their reproductive performance can be temporarily impaired. Continued exposure over several years to high levels of formononetin, can lead to permanent infertility. Ram fertility is not affected.

Formononetin is present in subterranean clover only while the pasture is green. However, hay produced from oestrogenic varieties can be almost as potent as green pastures. Formononetin levels drop away during late flowering. Generally, dry subterranean clover pastures that result from normal haying-off are not oestrogenic. However, if there is a very early finish to the season, it is possible for oestrogenic varieties to retain some potency in the dry state. All recently released varieties have low formononetin levels. There have been isolated reports of cattle bloat on very clover-dominant, subterranean clover pastures.

Source: Pastures Australia

Australian Government
Rural Industries Research and Development Corporation
RIRDC
www.rirdc.gov.au

Contact us:

Adam Davies National Forage Sales and Marketing Manager adam@synergyseeds.com.au 0498 632 496

SYNERGY SEEDS

44a Magill Road, Norwood, South Australia 5067
info@synergyseeds.com.au

synergyseeds.com.au