Zulu

Arrowleaf Clover

Trifolium vesiculosum

DOMESTIC

KEY FEATURES

- Mid-season maturing – approximately 130 days to flowering
- High hard seed level – good regeneration
- Deep rooted annual legume
- Extremely drought hardy variety benefits from grazing at approx. 6 inches
- Excellent spring and early summer growth
- Suited to loamy and acidic soil types
- Used for hay, silage or green manure
- Highly palatable, bloat safe legume

ZULU (Trifolium vesiculosum) is a mid-season maturing Arrowleaf Clover that demonstrates early prostate growth, becoming erect during the spring period. It is a deep-rooted clover extending its root system up to 1.5m below the soil, producing thick stems with many tillers and large leaves. Its ability to source moisture from this level enables the plant to produce herbage long after other pastures have dried off, making it a valuable pasture where rainfall is likely to be insufficient for the growth of other legumes.

ZULU is well suited to long term cropping rotations, due to its excellent seed production ability combined with a high level of hard seeds. Whilst it has excellent tolerance to acidic soils, it will not persevere under prolonged waterlogging conditions, thus heavy soils should be avoided.

Zulu Arrowleaf Clover is a multi-use specie (hay, silage or green manure), and its tall erect growth habit makes it suitable for grass and oaten hay mixtures. It produces high feed quality (18-22% crude protein), and is ideal for hay, with excellent spring and early summer production.

Growing Conditions

Soil Type:
Best suited to a wide range of sandy clay loam soils. Heavy clay soils should be avoided as should Alkaline and Saline soil types

Sowing Rate:
Mixes 2 - 3kg/ha
Pure 3 - 10kg/ha Dryland

Rainfall:
450mm+

pH:
4.5 to 7.0 ($CaCl_2$)

Inoculant:
Group C Rhizobium

Maturity

Late maturity flowering approximately 130 days after sowing.

Pest Resistance

Susceptible to attack from Red Legged Earth Mite (Halotydens destructor). For successful establishment, it is recommended that control measures be taken prior to sowing and soon after germination. Also susceptible to Root Knot Nematode (Meloidogyne spp.).

Disease Tolerance/Resistance

Clover Rot (Sclerotinia trifoliorum) can occur in dense swards (particularly in winter months), and the risk of Phytophthora Root Rot (Phytophthora spp.) following virus infections can be increased.

Management

Being a very hard seeded annual clover that is well suited to long term cropping rotations, Zulu will not require re-sowing should appropriate management be undertaken. Grazing during early establishment needs to be carefully monitored as plant growth is low during the colder and wet winter months. Stands should not be grazed during the flowering period to maximise seed set in the year of planting, ensuring seed regeneration and long-term persistence. During the flowering period in established stands, light grazing may be enacted but should be minimised to ensure persistence. Once plants are established, spring production is dynamic and thus grazing pressure can be increased as a result.

Arrowleaf Clover Agronomic Information

Scientific name *Trifolium vesiculosum*

Strengths

- Long growing season, extending into summer
- Excellent spring/summer dry matter production
- Responds well to summer rain
- Ability to suppress summer weed species
- Deep taproot
- Highly palatable, bloat safe legume

Limitations

- Intolerant of poorly drained or saline soils
- Poor winter dry matter production

Plant description

Plant: a self-regenerating temperate annual legume. Growth habit is erect to semi erect with a crown rosette of thick hollow stems reaching one metre in height.

Stems: smooth, hairless.

Leaves: trifoliate, with leaflets up to 6 cm long and 3 cm wide, pointed at the tip. Leaflets have a distinct white V-shaped marking.

Flowers: large up to 10 cm long and 3 cm across. White, developing a pink tinge as they mature.

Pod: membranous, 2 to 3 seeded.

Seed: reddish brown, ovoid, 1 - 1.2 mm, approximately 800,000 seeds per kilogram. Arrowleaf clover has a high level of hard seed > 80%.

Pasture type and use

Arrowleaf clover is suitable for sheep/beef grazing or hay/silage production. It can be used in permanent pastures, short term pastures or in 1:1 pasture crop rotations. Provides valuable feed over late spring/summer for weaning lambs. Arrowleaf clover can extend the grazing phase beyond traditional sub clover pastures by 4-8 weeks.

Where it grows

Rainfall

Temperate regions receiving greater than 350 mm of annual rainfall. Requires adequate moisture from October to January to perform to its full potential.

Soils

Adapted to a range of soil types, moderate to high fertility, pH 5.0 to 7.5 $Cacl_2$. Not suited to saline soils. Will not tolerate poorly drained, wet soils.

Temperature

Best adapted to a temperature range of 5 - 30°C. Tolerant of cold winter temperatures, but growth is suppressed.

Establishment

Companion species

Grasses: Compatible with all temperate grasses such as perennial ryegrass, cocksfoot, phalaris and tall fescue.
Legumes: sub clover, medics and serradella.
Grazing herbs: Compatible with both chicory and plantain.

Sowing/planting rates as single species

3-10 kg/ha*. *ensure seed is treated to reduce hard seed levels.

Sowing/planting rates in mixtures

2-3 kg/ha*. *ensure seed is treated to reduce hard seed levels.

Sowing time

Best sown in early autumn, when soil moisture is adequate. Can be sown in early to mid-spring in areas receiving reliable summer rainfall or under irrigation.

Inoculation

Group C (WSM 1325).

Fertiliser

New sowings will require fertiliser to promote early root development and enhance seedling vigour. Major nutrient requirements are phosphorous and potassium. Sulphur and molybdenum may be required in some areas.
Soil test results and local knowledge of soil type and fertiliser history should determine rates to be applied.

Management

Maintenance fertiliser

Arrowleaf clover is highly responsive to fertiliser, which should be applied regularly. For best performance maintain Olsen soil P level above 25.

Grazing/cutting

Commence grazing when the plants are securely anchored. For newly established pastures plants should not be grazed once flowering has commenced so maximum seed set can be achieved. Must be grazed heavily when seed is mature to remove any residual dry material to ensure optimal regeneration in autumn. Plants are tolerant to heavy grazing over winter. Ideally suited to silage and haymaking. Growth in spring and early summer should be sufficient for two cuts of hay or silage.

Ability to spread

Will regenerate from seed. When grazed by animals, in particular cattle, up to 30% percent of the seed eaten will pass through the digestive tract and still remain viable.

Weed potential

Not regarded as an environmental weed. Can easily be controlled with selective herbicides in cropping areas.

Major pests

Susceptible to attack from redlegged earth mites and lucerne flea particularly in the seedling stage. Bluegreen aphids have caused minor damage to crops in Western Australia.

Major diseases

Susceptible to Phytophthora root rot under waterlogged conditions. Several viruses can affect Arrowleaf clover, the most serious Bean Yellow Mosaic Virus. Resistant to clover scorch.

Herbicide susceptibility

Susceptible to herbicides or mixtures containing bromoxynil, terbutryn, diflufenican and 2,4-D amine. Will tolerate MCPA amine.

Animal production

Feeding value

High quality forage with protein levels as high as 30% measured. Feed nutritive value remains high through to maturity.

Palatability

Highly palatable legume.

Production potential

Annual production yields of over 10 t DM/ha have been recorded in Tasmania and 9 t DM/ha on the southern slopes of NSW.

Livestock disorders/toxicity

No problems have been reported for stock eating Arrowleaf clover. Considered a “bloat safe” legume.

Source: Pastures Australia

Australian Government
Rural Industries Research and Development Corporation
RIRDC
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Contact us:

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

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