



A collaboration between AWI, GRDC, MLA, RIRDC and Dairy Australia

## Arrowleaf clover

### Scientific name(s)

*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 moist 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.

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.

### **Seed production**

Prolific seed producer with seed yields of up to 1,400 kg/ha recorded in Western Australia.

### **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.

## Cultivars

Cultivar	Seed source/Information
Arrotas 	Tasglobal Seeds
Cefalu 	Plant Tech
Zulu II	Plant Tech
Seelu	-
Zulu	Pasture species database - University of Melbourne
ZuluMax	Seed Distributors

 Denotes that this variety is protected by Plant Breeder's Rights Australia

## Further information

NSW Department of Primary Industries - Arrowleaf clover Primefact 102

University of Melbourne - Pasture species database

Victoria DPI - Arrowleaf clover Agriculture notes AG0576

Plant Breeders Rights - plant database search

WA Department of Agriculture - Cefalu Arrowleaf clover Farmnote 38/2005

Tasglobal Seeds - Arrotas Arrowleaf clover fact sheet

## Acknowledgements

R. B. Thompson NSW DPI

Contributions from Andrea Hurst (TIAR)

**Author and date**

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