

Medics – *Medicago spp.*

Medics are a winter annual or summer annual legume. They are generally adapted to dry conditions and prefer soils with a pH above 6. Perennial medics are self-reseeding with abundant “hard seed” that can take several years to germinate. Subsequently, making them ideal for long rotations of forages and cash crops and in cover crop mixtures in the drier areas.

Medics consist of several species which vary widely in plant habit, maturity date and cold tolerance. Most upright varieties have a single stalk and short taproot. Medics germinate and grow quickly when soil moisture is adequate, forming a thick ground cover that holds soil in place. The more prostrate species of annual medic provide better ground cover.



Strengths

- 8t DM/ha/season
Depending on environmental conditions and management
- Nitrogen management: Medics will fix atmospheric N when inoculated with Rhizobium
- Erosion control
- Soil improvement
- Weed suppression
- Feed source

Limitations

- High Nitrogen levels - decomposes easily providing little cover for soil
- Do not tolerate waterlogged soils



What can it be used for?

Inter-seed: Medics can be grown as companion crops or inter-seeded with a number of crops. It is best to seed them three to four weeks after planting the primary crop to allow the cash crop to dominate the early use of nutrients and water.

Cover Crop: Medics are used in cover crop mixtures in orchards and grow well with grasses and clovers

Forage: Plants are readily consumed by livestock, as either green or dry feed. Animals are likely to increase live weight gain and wool production on legumes, as a result of higher intake and more efficient utilisation of high protein, high energy feed.

Production potential: The average production range differs between cultivars used and can reach up to 8t DM/ha/season. This is also dependant on factors such as soil fertility, environmental conditions and cutting/grazing frequency and management.

Metabolic disturbances in animals on cultivated pastures:

Bloat: Annual medics may cause bloat in sheep and cattle, although sheep are less affected than cattle. Bloat can be avoided by proper management.

Establishment

Climate: Medics are autumn-to-spring growing annuals suited to areas with mild growing seasons. Annual temperature range between 15-25°C is preferred, however they can tolerate higher and lower temperatures.





Moisture: An annual rainfall of 300-700 mm is needed, with a growing season rainfall of 175-350 mm.

Soil: Most medic species prefer neutral to alkaline clay and clay-loam soils with a pH of 6.5-8.0, with a moderate to high fertility. Although some cultivars may tolerate moderately acidic soils.

Fertilization: Fertiliser is seldom applied, as medic species are adapted to fertile soils. The most important nutrients for medic species are Phosphorus, Sulphur and Calcium. Rates of 20-60 kg/ha of elemental Sulphur can be applied and will last for several years.

	N (kg/ha)	P (mg/kg soil)	K (mg/kg soil)
Requirement for establishment***	*		
Seasonal application (kg/ha)	**	Use removal rates	

*Fertilizer just after establishment (kg/ha)

**Selected rate should maximise profit

***Determined by production potential

Phosphorus (P) and Potassium (K) can be recycled back to pastures when grazed by animals. This is dependent on the grazing system and the type of animals used. Up to 40% of P and 90% of K can be recycled. It is however necessary to do annual soil analysis to determine the level to which recycling occurred. The difference should be fertilized.

Methods: Most medic species are very small-seeded and require shallow planting - about 1- 2 cm deep. They can either be broadcast followed by light soil coverage or drilled into tilled or untilled soil. Rolling is recommended before or after seeding to improve seed to soil contact and moisture in the seed zone.





Seeding rate:

Dry land

Rainfall/Irrigation

10-15kg/ha	15-20 kg/ha
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Planting time: Plant during the months of April-May in the Mediterranean type regions.

Management

Utilisation: Delay grazing during the first year of establishment, thereafter only graze lightly until flowering, if the stand is expected to regenerate. Remove stock until medics have finished flowering and produced pods, to maximise seed-set for subsequent regeneration. Medics can tolerate mowing or grazing and should be mowed/grazed frequently to a height of 7-12cm during their growing season to improve competitiveness against weeds and seed set. Stock moderately to heavily during the winter and early spring growth periods, then rest to allow flowering and seed maturation.





Resources

1. Department of Agriculture and Fisheries. 2013. Annual Medics.
<https://www.daf.qld.gov.au/businesspriorities/agriculture/plants/crop-pastures/pastures/annual-medics> (Access date 23 April 2020).
2. Pasture Genetics. 2020. Santiago Spineless Burr Medic.
http://pasturegenetics.com/int_seed/santiago-spineless-burr-medic/ (Access date 23 April 2020).
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https://keys.lucidcentral.org/keys/v3/pastures/Html/Barrel_medic.htm (Access date 23 April 2020).
4. Sustainable Agriculture Research & Education. 2012. Medics.
<https://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition/Text-Version/Legume-Cover-Crops/Medics> (Access date 23 April 2020).

