



Rose clover

Agfact P2.5.38, second edition 2002
B.S. Dear, Principal Research Scientist,
Agricultural Institute, Wagga Wagga
R.R. Young, Senior Research Agronomist,
Tamworth Centre for Crop Improvement,
Tamworth

Rose clover (*Trifolium hirtum*), is a winter growing, self regenerating annual legume which originated in the Mediterranean region. It is used as a pasture species and for stabilising degraded areas associated with mining or road building. Typically, it is grown in areas that support either subterranean clover or annual medics and is often sown in a mixture with either or both of these species.

ORIGIN

Rose clover is a native of Eurasia and is found throughout countries within the Mediterranean region. It was first used commercially in pastures in the United States in the 1940s but subsequently cultivars were developed for Australian conditions, commencing in the 1950s.

Hykon rose clover in experimental plots at Wagga Wagga.



VARIETIES

Four cultivars of rose clover have been released in Australia which vary in their maturity and the amount of rainfall required for their successful persistence, but only one cultivar, Hykon, is readily available in New South Wales.

Sirint

This very early flowering cultivar was selected in 1959 from plots sown from seed imported from California. It commences flowering in early September and hence is suited to lower rainfall regions. It is the most erect of the cultivars.

Olympus

Selected from plants collected in Cyprus it was first certified in 1960 and flowers about 10 days later than Sirint. It is the most prostrate of the cultivars.

Kondinin

This cultivar was selected in 1956 and flowers about 10 days later than Olympus. Compared with other cultivars it has a less prostrate growth habit.

Hykon

The cultivar Hykon was selected in 1961 by E. T. Bailey from CSIRO's Division of Plant Industry in Western Australia from a natural cross that occurred within the cultivar Kondinin. It flowers from mid September to early October and is about 7–10 days earlier than Kondinin. Being earlier flowering, it is more suited to lower rainfall areas than Kondinin. The most readily available cultivar in New South Wales, it is broadly adapted to areas that receive between 400–750 mm annual rainfall.

DESCRIPTION

Rose clover is a herbaceous annual legume with branching stems and semi erect growth habit. Leaves are hairy and leaflets have a pale crescent bordered by a red-brown leaf mark. The inflorescence is a globular terminal head approximately 20 mm in diameter containing 20–40 flowers. The calyx is hairy and the petals (corolla) vary from light to dark pink in colour.

Seeds are smooth, slightly compressed, cream coloured, approximately 2 mm long and weigh 3–4 mg with about 250,000 seeds/kg.



Flowers of Hykon rose clover.

SOILS AND CLIMATE

Although suited to the mostly winter rainfall pattern of Mediterranean climates of southern and central New South Wales, rose clover can also be grown in lower rainfall areas of the North West Slopes.

It is adapted to the neutral to slightly acid duplex and gradational soils of the Riverina and Central West with an annual rainfall of between 400 and 600 mm. It is also suited to the light granite and sedimentary soils of the North West Slopes with rainfall of between 650–750 mm at altitudes of 500–700 m.

Although mostly grown on lighter soils, where it has a competitive advantage over other species such as subterranean clover and annual medics, it has also grown well on heavier clay soils in the Riverina and in Western Australia. It tolerates short periods of waterlogging and has performed well on neutral sodic soils in the Bland region of New South Wales.

FEEDING VALUE AND PALATABILITY

Rose clover has palatability similar to subterranean clover until flowering. Sheep may find stressed plants and those with mature flower heads less palatable which may be a useful attribute for reducing overgrazing of flowers. Trials conducted at Condobolin found Hykon rose clover had similar digestibility as Dalkeith subterranean clover. Organic matter digestibility is typically around 70% until full flower after which it declines to around 54% in dry residues. Protein levels in the herbage of rose clover are lower than in Dalkeith or Sephi barrel medic. In the late vegetative stage, rose

clover will typically have a protein level of about 20% compared to 24–27% in subterranean clover.

ANIMAL HEALTH

Studies of rose clover herbage indicate it has very low (<0.02 %) to undetectable levels of the isoflavones associated with infertility in sheep. Grazing studies on rose clover have not detected any infertility in sheep.

Seed heads do not appear to be a significant contaminant of wool but there is some evidence that the wool of late dropped lambs may become contaminated.

Ingestion of old flowers has been associated with development of marble size fibre balls (phytobezoars) in the gut. To avoid this, do not graze newly germinated pastures until 5–7 cm of green pasture is available.

GRAZING MANAGEMENT

Studies in Western Australia suggest the species does not perform well under set stocking and prefers periods of rest. Because of its erect growth habit, rose clover can be overgrazed reducing seed set in spring. Heavy grazing in spring once flowering commences should therefore be avoided. The preference of livestock for rose clover varies with the species being grown as part of the mixture.

When used as part of grass pastures in the North West Slopes, studies suggest that grazing must be sufficient to prevent the grasses becoming rank and out-competing the clover. Rose clover has performed well on the North West Slopes when grazed only by cattle in situations where subterranean clover would not have survived due to excess grass growth in late summer and autumn.

SEED YIELD AND REGENERATION

Potential seed yields of rose clover are similar to that of subterranean clover but in lower rainfall areas, seed yields of rose clover are likely to be higher than subterranean clover. Seed yields of up to 1000 kg/ha are possible but are typically in the range of 250–700 kg/ha.

Seed is typically hard (will not germinate) at maturity but softens with time to ensure a proportion of soft and germinable seed by autumn. Significant germinations of rose clover can occur with late summer rains in February indicating that a proportion of seed has softened by this time. Large seedlings of rose clover have demonstrated a superior ability to survive these early germinations, despite extended periods of hot dry weather, compared to species such as subterranean clover.

SEED HARVESTING

Rose clover can be harvested for seed with a conventional header. Drum speed needs to be high with the concave closed down and airflow under 20%. Dust is a problem which can cause overheating and the risk of fire.

Cream coloured seed of Hykon rose clover compared to subterranean clover.



SOWING

Rose clover can be sown alone or in mixtures. Sowing in mixtures is preferred as mixtures are more adaptable to variable seasonal conditions and paddock variability. It may be sown in mixtures with subterranean clover, lucerne, or annual medics. It can also be direct drilled or oversown into grass pastures. It must be sown in autumn to allow the plant to set seed. It should be sown at a depth of between 0.5–1.0 cm into a well prepared seed bed although it can be direct drilled.

If established under a cereal covercrop, the sowing rate of the crop must be reduced to 15–20 kg/ha. Sowing the crop in wide row spacings will also aid the establishment of the clover. Using cover crops can decrease the reliability of establishment in low rainfall areas.

Table 1. Examples of pasture mixes and sowing rates*

Environment	Sowing rate kg/ha
Higher rainfall (550–600 mm)	
Hykon	2
June or Goulburn sub clover	2
Lucerne	2
Medium rainfall (450–550 mm)	
Hykon	1
Seaton Park or York sub clover	2
Lucerne	1
Low rainfall (400–450 mm)	
Hykon	1
Dalkeith sub clover	1
Sephi barrel medic (neutral soils)	1
Caliph barrel medic	1
North West Slopes	
-direct drilled into pasture	
Hykon	1–2
Sub clover	2–3

* Actual sowing rates will vary with the fineness of the seed bed and sowing equipment used.

INOCULATION

Rose clover should be inoculated with group C inoculum immediately prior to sowing. The seed should also be lime pelleted when sown into acid soil or when mixed with fertilizer.

FERTILIZER

Rose clover has similar nutrient requirements as other annual legumes. Particular care needs to be taken that phosphorus, sulphur and molybdenum levels are adequate. Other micronutrients can be important in some soil types.

ACKNOWLEDGEMENTS

This agfact has drawn on information in the superseded Agfact P2.5.38 (first edition) prepared by R. Young and A. Storrle and on information provided by Dr D. Fitzgerald.

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NSW Agriculture 2002

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Editing and layout: Bill Noad
Information Delivery Program
Dubbo, September 2002
Job No. 3554

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Pasture improvement

Pasture improvement may be associated with an increase in the incidence of certain livestock health disorders. Livestock and production losses from some disorders is possible. Management may need to be modified to minimise risk. Consult your veterinarian or adviser when planning pasture improvement.

The Native Vegetation Conservation Act (1997) restricts some pasture improvement practices where existing pasture contains native species. Inquire through your office of the Department of Land and Water Conservation for further details.