

Urana[Ⓛ] subterranean clover

Dr Brian Dear

Principal Research Scientist, Pasture Genetics and Improvement Unit, Wagga Wagga

Belinda Hackney

Research Agronomist, Pasture Genetics and Improvement Unit, Wagga Wagga

Graeme Sandral

Senior Research Officer, Pasture Genetics and Improvement Unit, Wagga Wagga



Pasture type and use

Urana[Ⓛ] is an early flowering cultivar of subterranean clover (*Trifolium subterraneum*). This self-regenerating winter growing annual legume is a useful pasture species over large parts of southern Australia. It provides a high quality feed for livestock from autumn through to spring. It is very tolerant of grazing and buries the burr containing the seed. It can also be used for forage conservation and increases soil nitrogen.

Origin

Urana[Ⓛ] is a crossbred line selected by the National Annual Pasture Legume Improvement Program (NAPLIP) and released as a cultivar in 2000. It was selected because of its superior winter and spring herbage production.

Area of adaptation

Urana[Ⓛ] is suitable for regions with a short growing season (5–7 months), including lower rainfall areas of the slopes and plains of NSW.

It has a slightly longer growing season than Dalkeith but shorter than Seaton Park and York. Urana[Ⓛ] is most suited to the drier wheat belt.

Minimum average annual rainfall

For good persistence, Urana requires an average annual rainfall of 400 mm in southern NSW and 500 mm in northern NSW. Later maturing cultivars would be more productive and preferred when average annual rainfall exceeds 500 mm in southern NSW and 600 mm in northern NSW.

Advantages

- Low formononetin (oestrogen) content.
- Slightly higher hard seed levels than Dalkeith.
- Similar maturity to the cultivar Daliak but more erect growth habit.
- Increased levels of hard seed allow it to better resist false seasonal breaks and poor seasons.
- Increased hard seed levels also improve its persistence in short rotations with crops.
- Urana[Ⓛ] produces up to 25% more herbage than Dalkeith in NSW due to its longer growing season.
- Urana[Ⓛ] has a more erect growth habit than other cultivars of similar maturity, producing larger seedlings with larger leaves and longer thicker petioles.

Leaf and flower markings

Urana[Ⓛ] is distinct from other cultivars in that its leaves are plain (no central crescent) and have no leaf marking. Leaflets can develop a brown anthocyanin flush along the mid rib under cold conditions.

Leaves are larger than any other early flowering cultivar.

Flowers are white and have red pigmentation (a red band) along half the calyx.



Stems and peduncles are moderately hairy but petioles and upper leaf surfaces have few hairs.

Stipule pigmentation (red markings) under closed canopies is weak with some red veins visible.

See Agfact P2.5.16 *Sub clover in NSW – identification and use* for descriptions of leaf markings.

Seed

Seed is black and moderately large at about 9 mg/seed (105,000 seeds/kg) which is similar in size to the cultivar Seaton Park but much larger than Daliak and York.

Sowing

Seed can be sown from April through to June into moist soil. Shallow sowing (<40 mm) is essential.

Sowing rates of 4–7 kg/ha are recommended when sown alone and 3–5 kg/ha when sown as part of a mixture of other pasture species. Higher rates are used for irrigated pastures or when sown as a single year forage crop.

Maturity

With a mid May sowing, Urana[Ⓛ] flowers in about 104 days at Perth and about 110 days at Wagga Wagga which is about 7 days later than Dalkeith and about 8 days earlier than Seaton Park.

Hard seed

The level of hard seed (seed coat impermeable to water) in autumn following seed set in the previous spring is about 31%. Hard seed levels are higher than found in other earlier cultivars such as Nungarin, Dalkeith and Seaton Park.

Disease

Urana[Ⓛ] is susceptible to race 1 and moderately susceptible to race 2 of clover scorch disease (*Kabatiella caulivora*) and highly susceptible to cercospora leafspot (*Cercospora zebrina*). These diseases should not be a problem as Urana[Ⓛ] is recommended for growing in drier regions where these diseases are not common.

Urana[Ⓛ] is susceptible to both race 001 and 173 of *Phytophthora clandestina* (tap root rot), the two most widespread races. It is also moderately susceptible to root rot caused by *Pythium irregulare* and *Fusarium avenaceum*. Root diseases are not common in low rainfall areas where this cultivar is best suited but could affect performance if Urana[Ⓛ] is grown in higher rainfall areas for seed production. Urana[Ⓛ] is not suited to growing in irrigation areas where swards are watered earlier in the season when soils are warm, as this can promote the activity of root diseases. Urana[Ⓛ] is also not suited to soils prone to extended waterlogging in winter.

Soil requirements

Urana[Ⓛ] like most black-seeded sub clovers prefers well drained soils with a pH (CaCl₂)>4.5 but less than 6.5. Sub clover is moderately tolerant of soil aluminium (<15% of CEC).

Inoculation and nitrogen fixation

Urana requires inoculation with Group C inoculant in common with all sub clovers. Inoculation is important in acid soils or where sub clover has not been grown for several years.

As with all sub clovers, Urana[Ⓛ] biologically fixes about 25 kg N/tonne of herbage dry matter. This can increase soil nitrogen by 125–175 kg N/ha/yr.

Companion species

Urana[Ⓛ] can be sown in mixtures with other sub clover cultivars such as Dalkeith, Seaton Park or York. It is compatible for sowing in mixtures with balansa, gland or rose clover. It can also be sown in mixtures with lucerne or perennial grasses.

Seed production

Urana[Ⓛ] is protected under Plant Breeders Rights.

Further reading

Nichols *et al.* (2006) 'Urana sub clover (*Trifolium subterraneum* L. var *subterraneum*)'. *Australian Journal of Experimental Agriculture* 46, 1105-1107.

Agfact *Subterranean clover in NSW – identification and use*. www.agric.nsw.gov.au/reader/past-varieties/p2516a.htm

Acknowledgements

Urana[Ⓛ] was developed by the National Annual Pasture Legume Improvement Program (NAPLIP) with financial support from the Grains Research and Development Corporation and Australian Wool Innovation. Information for this Primerote was drawn from trials in NSW and a report prepared by G. Sandral *et al.* for NAPLIP and from Nichols *et al.* (2006)

© State of New South Wales through NSW Department of Primary Industries 2008. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute NSW Department of Primary Industries as the owner.

ISSN 1832-6668

Check for updates of this Primerote at:
www.dpi.nsw.gov.au/primefacts

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (May 2008). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

Job number 8008