Cavalier

SPINELESS BURR MEDIC
Medicago polymorpha var brevispina

Seeding Rate	kg/ha
Dryland	10 - 15
High Rainfall/Irrigation	15 - 20

Seed Treatment Goldstrike LongLife®

Description
Highly adaptable annual medic with versatile uses

Market Segment/Target
Regenerating annual pastures

Features
vigourous dry matter production
Spineless burr shaped seed pod
Highly adaptable across a wide variety of soil types

Benefits
Excellent all-round variety with rapid winter growth
Tolerant to mild soil pH, grows well on all soil types
High total forage yield potential

Range

Low Bloat™	N
Super N Fixer™	N
XtraLeaf®	N

SEED AGRONOMY TABLE

Maturity	N
Hard Seed Level (description)	N
Waterlogging Tolerance	Good
Flowering	90 days

Hard Seed Level 1 = Least Hard 10 = Most Hard
Burr Burial Strength 1 = Very Weak 10 = Very Strong

ESTABLISHMENT GUARANTEE™
At S&W Seed Company Australia we're so confident about our seed genetics and seed quality, we will replace seed at half the original purchase price if it fails to establish satisfactorily in the first thirty days*

STRENGTHS
Annual pasture legume, palatable at all growth stages including senesced dry matter and seedpods over summer
High nutritive value with high protein content
Fixes atmospheric nitrogen when effectively nodulated, benefiting cereal crops grown in rotation
More acid tolerant than barrel and strand medics. Optimal pH Ca range is 4.8 to 8.5 (pH water 5.6 to 9)
Greater tolerance of acidity in loamy soils
As a grass-free pasture in rotation with cereals it is a disease break for various cereal pathogens including cereal cyst nematode (Heterodera avenae), take-all (Gaeumannomyces graminis vartritici) and crown rot (Fusarium pseudograminearum)
Provides non-selective weed control options for reducing risk of herbicide resistant weeds in cropping phases (eg. grazing, green manuring, hay production, spraytopping)
Hard seeded and once established will maintain a bank of seed reserves in the soil and will selfregenerate from that soil-seed bank. Some tolerance of false breaks of season as seed softening tends to occur later in the summer/autumn period
Hard-seeded cultivars will perform well in intensive (year in, year out) cropping systems
More productive and persistent in low rainfall areas than sub clover
Relatively tolerant of transient waterlogging and moderate salinity compared to other medic species
Outstanding complementary legume component for summer growing grass pastures in the subtropics

LIMITATIONS
Relatively small seeded and so must be sown quite shallow (1 to 2 centimetres) in year of establishment
Winter production can be slow if autumn rains are late and insufficient leaf area is produced before soil and air temperatures fall
Not productive on deep sandy soils with pHwater greater than 5.6 (pHCa greater than 4.8)
Sensitive as seedlings to redlegged earth mite (Halotydeus destructor)
Sensitive as mature plants to lucerne flea (Sminthurus viridus), spotted alfalfa aphid (Therioaphis trifolii) and cowpea aphid (Aphis craccivora)
Sensitive to boron toxicity
Herbicide options for broadleaf weed control are limited

*Terms and conditions apply.

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PASTURE TYPE AND USE

Used as a self-regenerating autumn to-spring growing annual pasture, germinating after autumn rains, flowering in spring and setting seed in late spring. Typically used in dryland cereal/livestock zones in southern Australia in rotation with winter cereals, grain legumes and canola, and in association with grass in permanent pastures in the subtropical grain and pastoral zone. Once established its hard seededness allows it to regenerate from a soil-seed bank after short cropping phases of typically one to three years.

WHERE IT GROWS

Rainfall: Adapted to Mediterranean and Temperate Zones of southern Australia to the subtropics in northern New South Wales and southern Queensland. Annual rainfall of 300 to 700 millimetres (growing season rainfall 175 350 millimetres). Maturity of cultivar should match rainfall.

Temperature: Medics are autumn to- spring growing annuals suited to areas with mild growing seasons (15 to 25°C.) but will tolerate higher and lower temperatures.

PLANT DESCRIPTION

Plant: Semi-prostrate annual, 15 to 40 centimetres high, with multiple lateral branching from near the base.

Stems: Prostrate to ascending, hairless, mostly green, sometimes partially tinged red.

Leaves: (trifoliate) wedge to heart-shaped, green, hairless and slightly toothed on the end margin. The central leaflet stalk is longest (a feature distinguishing medics from most Trifolium spp).

Flowers: Yellow, pea-like and typically in clusters of two to five.

Pods: Discoid to barrel shaped, 3 to 7 millimetres long, hardening at maturity, 2 to 5 coils, anti-clockwise, spines very short or absent in commercial varieties (nb naturalised ecotypes can have long, thin slightly hooked spines) and four to ten seeds (typically five to six) per pod.

ESTABLISHMENT

Sowing/Planting rates in mixtures: 3 to 5 kilograms per hectare in southern Australia; 2 to 3 kilograms per hectare in the subtropics (3 to 4 kilograms per hectare if undersown with crops).

Sowing/Planting rates as single species: 10 to 15 kilograms per hectare in southern Australia; 4 to 6 kilograms per hectare in the subtropics. Ensure seed is Goldstrike LongLife® treated.

Sowing time: Sown April to June. Typically dry sown into the previous year's cereal stubble before the opening rains or into a moist, weedfree seedbed soon after the break. Shallow sowing (1 to 2 centimetres) is essential with press wheels, harrows or prickle chains to improve soil-seed contact and establishment. Under sowing with cereal grain or forage crops, is an excellent management option for establishing medic as a component of grass/legume pastures in the subtropics where the grass is sown after the medic sets seed. Low sowing rates of the cereal grain crop (e.g. 15 kilograms per hectare) are essential for success with undersowing.

Inoculation: Goldstrike LongLife® treated. The use of Goldstrike LongLife® seed treatment is recommended to reduce damage from insects at seedling stages.

Fertiliser: Phosphorous is generally the single most limiting macronutrient for burr medics; sulphur and/or potassium may be required on some soils (especially sandy loams and/or in the subtropics). Some soils, particularly infertile sands, may also be deficient in important trace elements (eg. Cu, Zn, Mo and Co), some of which are directly involved in nitrogen fixation.

MANAGEMENT

Maintenance fertiliser: Generally medics are grown in fairly close rotation with other crops which, if adequately fertilised, provide enough residual nutrients to maintain general soil fertility and medic growth. How ever, when medics are used in extended pasture phases on infertile soils in both southern Australia and the subtropics, they are likely to require topdressing with superphosphate and potassium. Soil testing is required to determine the need, timing and appropriate application rates. The trend towards high analysis fertilisers (eg. DAP, MAP) in broadacre farming has also resulted in zinc deficiencies becoming more common on some soil types. Plant tissue testing is a more sensitive test for micro-nutrient deficiencies, some of which can be addressed in the short term with foliar sprays.

Grazing/Cutting: Defer grazing in the first year until plants are well established and then only graze lightly until flowering. Remove stock until medic has finished flowering and producing pods, to maximise seed-set for subsequent regeneration. Paddocks should not be "crash" grazed or cut for hay in the first year if the stand is expected to regenerate.

Ability to Spread: Colonises well from seed reserves. Some spread by seed in livestock faeces, pods adhering to sheep/wool or by movement of hay.

Weed Potential: Low environmental weed potential due to its preference for moderately fertile soils, and because of its specific rhizobial requirements, high palatability and grazing preference by livestock. More prevalent in disturbed sites. As a selfregenerating plant it can be a weed of crops in crop/pasture rotations but easily controlled in cereals with a range of inexpensive broadleaf weed herbicides. Fewer options in grain legumes crops.

Major Pests: Red legged earth mite, lucerne flea, blue green aphid, spotted alfalfa aphid, cowpea aphid, spotted alfalfa aphid (Therioaphis trifolii) and sitona weevil (Sitona discoideus).

Major Diseases: Phoma black-stem (Phoma medicaginis), rhizoctonia bare-patch (Rhizoctonia solani) and powdery mildew (Erysiphe trifolii). Pratylenchus neglectus root lesion nematode (nb may not build up nematode numbers significantly but productivity is reduced in their presence).

Herbicide Susceptibility: Tolerant of Group A grass-selective herbicides. Some herbicides available for selective control of certain broadleaf weeds. Spray-grazing and spray-topping techniques using less selective herbicides also useful. Intolerant of some herbicide residues from cropping phase, particularly sulfonylurea herbicide residues in low rainfall areas with alkaline soils.

ANIMAL PRODUCTION

Feeding value: Has high levels of crude protein and digestibility. Digestibility ranges from 55 to 75 per cent DMD, (equates to ME energy of 8 to 10 megajoules per kilogram DM) and crude protein from 17 to 23 per cent depending on growth stage.

Palatability: Readily consumed by livestock, either as green or dry feed.

Production Potential: Excellent green seed for growing and finishing livestock. Dry residues and seed pods provide useful adjunct for maintenance of sheep grazing crop stubbles. In general animals can be expected to make better live weight gain and wool production on legumes than grasses, as a result of higher intake and more efficient utilisation of high protein, high energy feed.

Livestock Disorders/Toxicity: Photosensitisation in horses, occasionally red gut in sheep, bloat in cattle. Phytoestrogens/coumestrols potentially can have negative effects on the reproduction of grazing livestock but this is rarely reported (levels tend to be higher under phosphorus deficiency and Phoma Infection).

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