

PRODUCTIVE LEGUME PASTURES

FACTSHEET # 3

PREPARING FOR SUCCESS: SUMMER AND AUTUMN MANAGEMENT GUIDE



KEY GOALS

- Maintain adequate ground cover
- Minimise weed burden.
- Test soil nutrition and correct deficiencies.

WHY DOES SUMMER MATTER?

Good summer management is critical for annual pasture legumes in South Australia because the actions taken during this period directly affect the success of regeneration, soil health, and feed production in the coming growing season. In SA's dry Mediterranean climate, summers are harsh and unforgiving, so careful management is essential to protect the investment in pastures. Once the season breaks, pastures often compete with other farm tasks, so assessing pasture health and determining what needs to be done ahead of time is critical to ensure pasture performance.

SEED SOFTENING AND GROUND COVER

Annual legumes (like sub-clover, medics, serradella, balansa clover, arrowleaf clover, and biserulla) rely on soil seed banks to regenerate each year. Most of these species produce at least some 'hard' seed which protects plants from false breaks and improves persistence and resilience over several years.

Hard-seeded legumes need a period of fluctuating soil temperatures to soften the seed coating and break dormancy. This commonly occurs in autumn as nights start getting cooler, but days remain warm. Ground cover, from either live perennial plants or dry litter, benefits the soil by retaining soil moisture, preventing wind and water erosion, and maintaining topsoil fertility.

Ground cover is your natural insurance during hot SA summers

Ground cover should be maintained at >70% on flat or gently undulating ground, and >90% on slopes. Overgrazing or excessive trampling during summer can also damage the soil surface, bury or expose seeds, or reduce seed numbers, leading to poor autumn emergence. Excessively hot or dry soils may also lose soil microbial activity, preventing good nodulation and nitrogen fixation

However, dry material also has an insulating effect on soil, reducing fluctuation of soil temperature. Optimal ground cover levels in autumn are a balancing act between retaining sufficient material to protect the soil and removing enough that legume seed will soften. The ideal amount is roughly 1500kg/ha dry matter. This correlates with being able to collect 1-2 handfuls of dry litter from a 0.1m² quadrat (Fig 1)

WEED MANAGEMENT

Weeds that grow over summer use stored soil water and compete with legumes at germination. Controlling summer weeds early reduces weed seedbanks, prevents moisture loss and helps ensure a clean seedbed when the break arrives. Keep in mind:

- Monitoring & Timing**
- Begin paddock monitoring in early summer (Dec-Jan).
 - Look for weeds after storms or out-of-season rain

Consider Herbicides

- Apply a broad-spectrum herbicide if weeds have emerged.
- For persistent summer weeds, consider residual products with long activity
- Carefully check plant-back periods to avoid harming legumes

Physical Weed Reduction

- In some cases, slashing or crash grazing may reduce bulk ahead of spraying.

SOIL NUTRITION

Careful nutrient management and soil monitoring helps ensure effective establishment, nitrogen fixation, and long-term pasture persistence. Summer and autumn are the most strategic times to assess soil fertility and correct any deficiencies before the season break.

Nutrient	Role	Key Considerations
Phosphorus (P)	Root growth, energy transfer, nodulation	Often deficient in sandy/older soils; essential at sowing
Sulphur (S)	Protein synthesis, nodulation	May be deficient in sandy soils or leached zones
Molybdenum (Mo)	Required for nitrogen fixation	Low pH limits Mo availability; apply if pH <5.5
Cobalt (Co)	Required by Rhizobium bacteria	Often overlooked; needed in very small amounts
Potassium (K)	Water regulation, disease resistance	Important on sandy soils, especially for medics
Calcium & Lime	pH correction; root development	Legumes prefer pH (CaCl ₂) 5.0-7.0 depending on species

Test soil by collecting 10-20 samples at 0-10cm depth across the paddock and combine, take separate samples if soil type is noticeably different.



Less than one handful of loose litter



More than two handfuls of loose litter (loose litter still on ground)

Figure 1: Amount of dry material covering the ground
Source: Pasture Paramedic program by MLA and SFS

SUMMER WEEDS

- Common summer weeds that impact pasture legumes include:
- Skeleton weed
- Fleabane
- Wireweed
- Volunteer cereals
- Melons and heliotrope
- Broadleaf weeds like capeweed and radish (early germinating)

CHECKLIST FOR SUMMER AND AUTUMN

Task	Timing	Notes
☐ Soil testing	Jan-March	pH, P, K, S, Mo, Co
☐ Summer weed control	Feb-April	Use knockdown sprays
☐ Assess ground cover	Ongoing/fortnightly	Maintain >70% cover
☐ Manage grazing	Late summer	Avoid overgrazing; maintain cover
☐ Prepare seedbed	March-May	Light harrowing, no-till preferred
☐ Apply fertiliser	At or before sowing	Based on test results

FREQUENTLY ASKED QUESTIONS

My pasture didn't regenerate well last year. Do I need to resow? Not always. Poor regeneration may be due to: low seedbank (e.g. grazed too hard in spring), unfavourable conditions during seedling establishment, thick summer weed or stubble cover. Use a pasture assessment tool (like Pasture Paramedic) to check ground cover, species balance, and legume content before deciding. In many cases, oversowing or soil correction (e.g. lime or P) may be more effective than full resowing.

Is soil testing really necessary if the pasture looks okay? Yes.

Legumes often fail or underperform due to: Low P, S, Mo or Co levels, or soil acidity. These issues aren't visible until establishment fails or nodulation is poor. A summer soil test helps catch problems early and target fertiliser or lime effectively.

Note: lime needs 6mths or more to effectively buffer soil pH

Can I still graze in summer if I plan to sow legumes in autumn? Yes—but graze strategically: Avoid overgrazing that exposes bare soil, cease grazing a few weeks before sowing to allow weeds to germinate and be sprayed, consider crash grazing to reduce bulk if there's a heavy grass carryover

Can legume pastures regenerate after a crop? Yes—especially hard-seeded annuals like medics, biserrula, and serradella. These species build a persistent soil seedbank and can regenerate after one or more years of cropping, provided residual herbicides haven't damaged seed or seedlings and there was a good seed set in the last pasture phase

What pests should I be concerned about in summer/autumn? Most pests are often more active post-break, some species can cause early damage eg Crickets, slugs, redlegged earth mite eggs that survive in soil and stubble, lucerne fleas emerge early after rain. Dry litter can harbour residual populations, monitor paddocks at the first sign of green growth. Use seed treatment or border sprays where needed

Can I sow in summer and rely on rain to germinate it? Yes—for hard-seeded legumes like serradella, bladder clover, and biserrula, summer sowing is a proven option. The heat helps soften seed coats (break dormancy), so germination occurs with the autumn break. This does not work well for scarified seed or soft-seeded legumes like sub-clover or medics, they may germinate early and fail without follow-up rain

SUPPORTING RESOURCES

- MLA and SFS: Pasture Paramedic, <https://www.mla.com.au/globalassets/mla-corporate/extensions-training-and-tools/documents/pasture-paramedic.pdf>
- SFS: More Sub Clover, <https://sfs.org.au/project/more-sub-clover>
- Pasture Legumes: A New Era for Pastures in Southern Australian Farming Systems: Second Generation Hardseeded Legumes (G2HSLs), https://grdc.com.au/__data/assets/pdf_file/0038/595865/GRDC_Pasture-Legumes-Growers-Manual_2023_FINAL.pdf
- Pastures Australia: Fact Sheet Index, <https://keys.lucidcentral.org/keys/v3/pastures/Html/index.htm>
- MLA: Weed Fast Facts, https://www.mla.com.au/contentassets/53f6fe889f50427a8c58b33b497f8cc0/0272_sfs_mla-weed-fast-facts_jan-2022_active-links_lr.pdf
- MLA: how do I know if my perennial grasses need rescuing? <https://www.mla.com.au/globalassets/mla-corporate/extensions-training-and-tools/documents/feedbase-hub/mla-how-do-i-know-if-my-perennial-grasses-need-rescuing.pdf>

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