



Fact Sheet: Your Levy at Work

Achieving successful pasture establishment

The basics of growing a profitable crop

Tips for successful pasture establishment

The success of the establishment phase is critical to profit. Research demonstrates that the closer to the target establishment density, the better the yield. Dense pastures also provide more competition against potential weed invasion. For successful establishment the following factors need to be considered and managed:

- Sow into a fine, weed-free seed bed (this is ideal but not always practical or most profitable).
- Sow at the right time for the variety selected (a trade-off between bonus of early growth and risk of failure due to effect of temperature on seed germination).
- Sow at the right depth (consider seed size).
- Sow with appropriate moisture (which may mean use of irrigation water).
- Sow at appropriate soil temperature (see below).
- Select the right crop for the right paddock.
- Sow with appropriate soil fertility.
- Control competing weeds and pests.
- Graze at the right time, to the right residual.

Sow at appropriate soil temperature

With early establishment, the effect of temperature must be considered. High temperatures limit the germination of many crops and pastures even if soil water is available. The following table provides guidelines for some common crops:

Crop type	Cow
Ryegrass	Germination reduced at soil temperature over 25°C.
Annual clovers such as subterranean, Balansa and Berseem	Germination percentage greatly reduced at soil surface temperatures above 25°C.
Persian clover cultivar 'Maral' (or shaftal clover)	Germination is not affected by soil surface temperatures up to 35°C.
Oats	Normally satisfactory within a surface soil temperature range of 10°C to 25°C (some varieties can germinate at higher soil surface temperatures).

An indication of maximum daily soil temperature can be determined by placing a thermometer at the planting depth from mid to late afternoon.

Selecting the right crop for the right paddock

What is the most profitable way to use each parcel of land? Most pastures and crops perform best in paddocks with:

- better soil types (e.g. loams rather than clays)
- better base soil fertility
- good irrigation and drainage infrastructure.

In general, better paddocks should be used for pastures intended to be irrigated to provide grazing for the longest period of the year. Paddocks targeted for early start-up should also be carefully chosen. These often require good irrigation and drainage to manage the risk of establishment while temperatures are hot. Without good drainage, scolding may occur in low areas, leaving a patchy crop and increasing the risk of weed invasion. Paddocks further from the dairy with poorer fertility, irrigation and drainage infrastructure might be best for annual crops such as annual rye or cereal.

Choosing a pasture or crop

Tips to help identify the appropriate pasture or crop for your situation:

- Extensive trials through Project 3030 shows perennial ryegrass is still the preferred species in Victoria because of its all-round performance, including quality, yield, ability to achieve a high percentage direct grazed, growth generally matching herd demand, forgiving of some poor management, ability to retain quality for longer over the season (especially in spring) and overall cost per tonne/DM.
- The weakness is the risk of poor persistence and yield over a hot summer.
- If a perennial pasture survives the summer, overhead costs are reduced (sowing costs spread over two to three years) and the paddock returns to production quicker than a paddock requiring re-establishment.

Other perennial options and key considerations:

- Lucerne prefers lighter soils and good drainage, and doesn't like waterlogging. It has a relatively expensive establishment cost. Early weed control is important.
- Tall fescue faces challenges with establishment, grazing management and maintaining its quality through spring. It is more tolerant of hotter conditions than ryegrass.
- Herbs (Chicory/Plantain): carefully consider the requirements and role of these specialist crops.

Annual options:

- Late-season grazing oats into fallowed ground (lower risk of early sowing failure).
- Persian (Shaftal) clover with Italian or long-rotation ryegrass.
- Italian ryegrasses/long-rotation ryegrasses are longer season options to utilise late spring/summer rainfall.
- Annual ryegrass has good early growth but finishes with a 'bang' in spring (quality drops).
- Brassicas are water-use efficient and can tolerate heat. The recommended limit is 3-4 kg/cow/day.

If you intend to try a different crop type, discuss this with an experienced neighbour or local advisor.

Some tips for mitigating the risks associated with potential crop failures

- Summer fallow and use summer weed control to conserve moisture and nutrients.
- Power harrow to create a fine, firm seed bed for best soil/seed contact.
- Utilise press wheels/roller to improve soil/seed contact.
- Focus on autumn weed control to reduce competition (barley grass and broadleaf weeds).
- Sow seed at an appropriate depth. Normally seed size relates to the recommended sowing depth, e.g. oats and larger seed sown deeper into moisture.

Crop types and tips:

- Don't always look for the cheapest seed option. Look for the most profitable overall feed source.
- Ryegrasses: annuals generally have larger seed and are cheaper compared with perennials but need a higher sowing rate to achieve the same density (plants/sqm). There are fewer seeds per kilogram.
- Perennials: more expensive seed that requires more care when establishing (e.g. sow later when temperature and moisture risk is lower).
- Brassicas: small seed that tolerates heat and some moisture stress, but does not like poor drainage during establishment.
- Cereals: sow into a seed bed from late February. Fallowed ground is best. Deeper sowing minimises moisture stress but do not go too deep.
- Oats can provide early feed if moisture available.
- Oats and ryegrass: 50 kg/ha for oats and 20 kg/ha for ryegrass. Sow from early to mid-March to provide early winter feed and late season quality (if oats are grazed out). The sowing depth can be challenging.
- Ryegrass and Brassica: sow from mid-March using 1 kg of Brassica added to ryegrass at the drill. It establishes best on a prepared seed bed but can be drilled.

- To mitigate risk, time sowing to occur before rain events if irrigation is not available. Dry sowing is safe. Problems may occur when there is enough moisture to strike but not sustain. Sow one to two days after significant rain (over 25 mm) but reconsider if there is no further rain forecast for three to seven days after.

Doing the job – renovation or oversowing

Renovating a pasture can involve a complete resow or oversowing. To decide on the appropriate technique, pastures should be assessed and the cause of the poor performance identified and rectified first. Pastures may have deteriorated due to poor irrigation and drainage infrastructure or practices, poor grazing management or the impact of the long, hot summer. If the underlying cause is not identified and corrected, it is highly likely the paddock will quickly revert to poor performance and the renovation cost will be wasted.

Oversowing is the appropriate renovation option in a well-managed pasture with a low content of ryegrass and a low content of difficult weeds such as couch grass. Oversowing involves sowing seed into an established pasture to thicken ryegrass. Oversowing will not remove weeds but increased ryegrass content will limit weed impact on pasture performance.

Resowing is the appropriate renovation option for a well-managed perennial pasture when a high content of difficult weeds exists. The best approach is to remove weeds using herbicides and rectify the underlying cause of their invasion before resowing. If summer weeds are the problem (e.g. couch, Umbrella Sedge), chemical control should be used while those plants are still growing. Please consult an agronomist to tailor herbicide advice to the specific situation. Be aware of plant-back periods if relevant.

For more information on pasture renovation in the irrigation region, including costings based on extensive DPI research, visit www.dpi.vic.gov.au/agriculture/dairy/pastures-management/irrigated/renovating-irrigated-perennial-pasture.

More information

<http://www.dairyaustralia.com.au/Animals-feed-and-environment/Feeding-and-nutrition/Pastures-forages-and-crops.aspx>

www.dpi.vic.gov.au/agriculture/dairy/pastures-management/irrigated.

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