



Irrigated Winter Forages in Northern Victoria

Managing Short-lived Ryegrass

Irrigated Winter Forages: Managing Short-lived Ryegrass

Short-lived ryegrasses are used in irrigated annual pastures in northern Victoria. They are typically grown in mixtures with annual clovers, however, they can also be grown alone.

The key principles for the management of short-lived ryegrass based annual pastures relate to:

- achieving a high plant density at establishment
- optimising management of grazing, water, and soils and fertilisers.

When short-lived ryegrasses are grown without a clover, there is often a need for substantial inputs of nitrogen fertiliser to optimise production. For the management of short-lived ryegrass/annual clover mixes, refer to the brochure on the relevant annual clover.

Short-lived ryegrasses comprise a range of species including Italian, hybrid and westerwold ryegrasses. For more details on the different species, see section 6.

1. Establishment

1.1. Time of establishment

The germination of short-lived ryegrass is reduced at high temperatures and, while it can be started anytime from mid February onwards, start-ups from mid March onwards are most reliable.

1.2. Seedbed conditions

Short-lived ryegrass can be sown into a cultivated, weed-free seedbed by either broadcasting onto the surface and lightly covering with a roller (the preferred option), or sown at no more than 10 mm depth, and irrigated up.

Following the initial irrigation, subsequent irrigations should be at the same interval as for perennial pasture, ie. a cumulative evaporation less rainfall interval (E-R) of 50 mm.

Good surface drainage and slope are essential for areas established early in order to avoid scalding.

1.3. Sowing rates

Sowing short-lived ryegrass alone:

- short-lived ryegrass seed @ 20 kg/ha

Sowing short-lived ryegrass with an annual clover:

- short-lived ryegrass seed @ 10–15 kg/ha
- annual clover seed – depends on the species used (refer to the relevant clover brochure).

1.4. Early season growth

The early season growth of short-lived ryegrass pastures depends on:

- high establishment density. This can have large impacts on autumn-winter production.
- use of best management practices (BMPs) for grazing, water, and soils and fertilisers (see sections 2, 3 and 4).
- control of pests and diseases (see section 8).
- nitrogen fertiliser. The use of nitrogen fertiliser is often essential in pastures with a low clover content to optimise production.

2. BMPs - grazing

The first grazing of a short-lived ryegrass pasture is often associated with controlling summer weeds. For the first grazing, the pasture should be grazed:

- when 10–12 cm in height (or at least at the 2½ leaf stage).
- when the root system is sufficiently developed to minimise pulling. Pluck a new seedling, if it pulls out it is not ready to graze; if it breaks it can handle grazing.
- to a residual pasture height of 5–6 cm. This will minimise damage and encourage ryegrass tillering.

Subsequent grazings should be:

- when the ryegrass is at the 2½–3 leaf stage.
- to a residual height of 4–5 cm. Grazing to a lower residual height will reduce regrowth rates and annual production.

Do not graze new regrowth (ie. a maximum of 3 days on the one area) as this will reduce regrowth rates.

3. BMPs - water

The keys to good water management are to irrigate the pasture before it is moisture stressed and to minimise waterlogging. This is particularly important for areas established early and involves attention to:

- **irrigation frequency.** Following the initial irrigation, subsequent irrigations should be at the same interval as for perennial pasture, ie. a cumulative evaporation less rainfall interval (E-R) of 50 mm.
- **speed of irrigation.** Water should flow onto bays for a maximum of 4 to 6 hours. This requires good channel structure, good flow rates and well laid out bays. (The first irrigation in autumn is usually slower than this due to the large volume of water required).
- **quick drainage.** Surface water needs to drain off the bays quickly to minimise the period of water logging (ie. no standing water 18 hours after starting to irrigate). This requires well laid out bays with good slope for water flow over the pasture, well sealed channel plugs to avoid seepage, the use of spinner cuts (except on very short bays) to enhance surface drainage, clean drains so that water is able to drain off the end of the bays, and drains that run into a reuse system.
- **water quality.**
 - ◆ Short-lived ryegrass is *moderately tolerant* of salt. This means that with good management, there will be little impact on its growth through the use of irrigation water with a salinity content of over 1,500 µS/cm (1,000 ppm), but some yield loss will occur when the salinity content of the irrigation water approaches 3,000 µS/cm (2,000 ppm). This is provided there is deep drainage of approximately 10% of applied water (irrigation plus rainfall) and no saline water table.
 - ◆ The quality of the water can be tested with an EC meter. Water from alternative water sources such as a drain, bore or spear should also be tested regularly.

4. BMPs – soils and fertilisers

A program to ensure adequate soil fertility includes:

- soil testing representative areas.
- setting nutrient targets.
- developing a fertiliser plan. This needs to take into account nutrient imports and exports, so that the required nutrients are applied in the most economical way.
- implementing BMPs for fertiliser applications.
- planning a nitrogen use approach.

Phosphorus (P) targets for perennial pastures used for dairy production are in the range of 18–22 ppm of Olsen P. However, P targets for irrigated annual pastures are not known, but are likely to be marginally lower than that for perennial pastures. Typically, maintenance applications of P for short-lived ryegrass pastures are in the order of 20–30 kg P/ha.year.

Nitrogen fertilisers are often required to optimise the production of pastures comprising predominantly ryegrass. A possible exception is when a clover dominant pasture has been grown on the paddock in the last 1 or 2 years. The best responses to nitrogen are achieved when the pasture is ryegrass dominant and during winter and spring. Nitrogen fertilisers should be applied as soon as possible after grazing to allow the pasture sufficient time to respond prior to the next grazing. Urea needs to be washed into the soil within 24 hours of application to minimise losses.

Surface crusting is a common problem on sodic or newly land-graded soils and can be a major concern when establishing a new pasture as it can prevent seedling emergence. In this situation, the use of gypsum can be beneficial.

Soil salinity can affect pasture growth with the effect more pronounced in some species than others. Approaches to reduce impacts include ensuring use of low EC water, applications of gypsum or lime (containing calcium) to displace sodium, using salt tolerant species or lowering the water table.

5. Fodder conservation

The supply of pasture during spring usually exceeds herd requirements on most dairy farms. To maximise the benefits of the surplus pasture, feed surpluses need to be identified and conserved.

During spring when there is a feed surplus, the first priority for conservation are annual pastures. (Note that BMPs are required to maintain the density of perennial pastures and hence the priority for the conservation of annual pastures).

During their vegetative stages, the metabolisable energy (ME) content of ryegrasses and clovers are similar. During their reproductive stages, however, the ME of ryegrass declines more than that of clover. This means that clover dominant pastures have a higher ME than ryegrass dominant pastures in mid and late spring.

The protein content of conserved forages is very dependant on the pasture's clover content.

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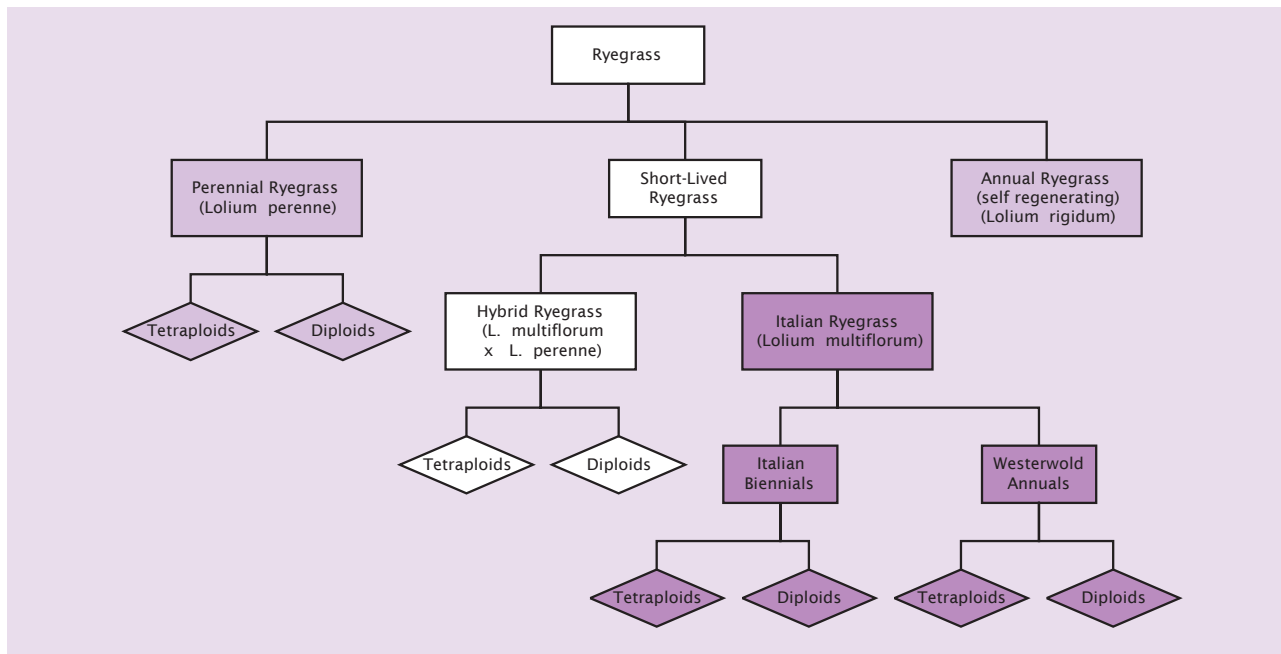


Figure 1. Ryegrass species used in pastures. The short-lived ryegrasses are the preferred choice for irrigated annual pastures.

(Note: diploids and tetraploids differ in the number of pairs of chromosomes. Typically, tetraploids have larger leaves, fewer tillers and higher digestibility but are less persistent than diploids.)

6. Cultivars

There are a number of ryegrass species used in pastures (see Figure 1). They can be grouped into perennial, short-lived or annual types on the basis of their lifespan.

Perennial ryegrass

Perennial ryegrass cultivars will survive for more than 2 years with greater persistence and grazing tolerance. They are usually sown with other perennial pasture species in order to provide feed over a longer period.

Short lived ryegrasses

Short-lived ryegrass cultivars are the preferred choice for use in irrigated **annual pastures** as they:

- have quicker establishment and higher growth rates than perennial ryegrasses.
- have a longer growing season than annual ryegrasses (they can supply feed from March to late December depending on the start and finish time for irrigations and the cultivar used).

The short-lived ryegrass species are:

- **Italian ryegrass** is a biennial, and will normally grow for 2 years. The first year is the most productive.
- **Westerwold ryegrass** is an annual. There is almost no growth in the second year unless there is some seedling regeneration from seeds set in year 1.
- **Hybrid ryegrass** is the result of a cross between perennial and Italian ryegrasses. Their lifespan is affected by the proportion of their genotype derived from each of their parents. Some cultivars may have up to 90% perennial ryegrass parentage and, therefore, behave very similarly to true perennial ryegrasses while other behave more like biennials.

Annual ryegrasses

Annual ryegrasses live for only one growing season. Some annuals regenerate in the second year from seed set in the previous year. They are usually used in dryland situations.

When sowing an annual pasture containing annual clovers and short-lived ryegrasses, it is important to match them on the basis their maturity times ie both the grass and clover grow until a similar time.

Finding information on cultivars

Grassland Society of Victoria – Pasture species database. Go to www.grasslands.org.au, and click on the link to the pasture species database.

Sales brochures – pay attention to where trials were located.

Seed merchants – should be more tailored to the local region than sales brochures.

7. Weeds

In mixed ryegrass/clover pastures, the clover component is most sensitive to competition from weeds, particularly during the early growth stages. Common weeds include:

- **Barnyard grass** (*Echinochloa sp.*) which is often a problem in early irrigated paddocks. Barnyard grass is best controlled by grazing once the pasture is established.
- **Winter broadleaf weeds.** These can be controlled using herbicides but some plant damage is likely in mixed ryegrass/clover pastures as clovers may be sensitive to some commonly used broad-leaf weed control herbicides.

Always consult the label before applying herbicides.

8. Pests and Diseases

The major pests and diseases of ryegrass are:

- **redlegged earth mites (RLEM) and lucerne flea.** These pests can impact upon ryegrass during the seedling stage, although damage is usually less severe than for clovers. Control is often required within a week of germination. Effective management relies upon early identification of the problem and spraying if required.
- Ryegrass is affected by **leaf rust**, particularly during warm, humid periods. If rust is present, grazing will reduce the source of further infection.

Published by the Victorian Government Department of Primary Industries
Melbourne, February 2004

Also published on www.dpi.vic.gov.au

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Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.
Printed by Prominent Group, 57-61 Drummond Rd., Shepparton.

ISBN 1 74146 032 8

For more information contact:
DPI Dairy extension officers at Cobram on (03) 58 710 600, Echuca on (03) 54 821 922 or Kyabram on (03) 58 520 500. Alternatively, contact Alister Lawson at DPI, Kyabram or Kaye Hildebrand at DPI, Cobram.

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