



## Annual, irrigated high density ryegrass pastures Technical Note F19

|                      |        |
|----------------------|--------|
| Management level     | ★★★    |
| Yield                | ★★★★★  |
| Quality              | ★★★★★★ |
| Water use efficiency | ★★★★★  |
| Reliability          | ★★     |
| Versatility          | ★★★★★★ |

Where ★★★★★ is the highest rating.

### Purpose

Reliable, high carrying capacity and nutritious pasture for the period June to October in southern Queensland. Can carry up to 7 milking cows/ha during this period.

### Establishment

Ryegrass can be sown from late March to early June. Fully prepared seedbed - seed spread on the surface at 40 kg/ha and rolled. Ideal for early planting. Heavier seeding rates 80 to 100 kg/ha will increase the amount of pasture on offer by 1 t DM/ha at first and maybe second grazing. Recommend using this technique sparingly on several paddocks to increase pasture on offer at the commencement of the ryegrass grazing rotation.

When oversowing ryegrass into kikuyu, we recommend mechanical disturbance or chemicals to suppress the grass. Mechanical disturbance involves slashing and two passes with a disc cultivator. Or mulch 1 month prior to planting and mulch again at planting. Objective is to break up runners and expose soil. Suited to late April or May plantings.



Spread seed on surface, mulch, then irrigate. Increase seeding rate to 50 kg/ha to compensate for losses associated from competition with kikuyu. Alternatively, direct drill into very short stubble using a disc plant. Press wheels are an advantage. Herbicide is usually Glyphosate, and tropical grasses differ in sensitivity.

- Kikuyu very sensitive, 0.6 L/ha (at 36% concentration).
- Paspalum and Rhodes grasses intermediate, 1.5 -2.5 L/ha.

Desiccant can also be used e.g. Sprayseed® at 1.5 L/ha. With continued use of herbicides, summer pasture can become dominated by naturalised couch or crows foot.

Sowings in late March to early April are more productive in early winter but risk heat damage to seedlings, and tropical grasses may still be too competitive, unless grazed every 7-10 days to reduce shading of summer grasses. The yield from late plantings is lower in winter, and have a shorter growing season.

|                                 | 40 kg/ha | 50 kg/ha | 88 kg/ha        |
|---------------------------------|----------|----------|-----------------|
| Seed cost @ \$5.10/kg           | 204      | 255      | 449             |
| Utilised ryegrass (t DM/ha)     | 2.05     | 2.11     | 3.39            |
| Milk return (50cpl @ 1:1)       | \$1,002  | \$1,055  | \$1,695         |
| <b>BENEFIT (40 vs 88 kg/ha)</b> |          |          | <b>\$448/ha</b> |

*Expected return from increased ryegrass seeding rate.*

## Water use

Amount of irrigation available is a primary consideration. Need approximately 4 ML/ha for the season and preferably be able to apply water every 3 days for 4 weeks following planting to ensure establishment, then often enough to avoid wilting (7 to 20 days, depending on location and soil type). Frequency and volume of application increases as temperatures rise in spring.

| Location   | ML/ha |
|------------|-------|
| Beaudesert | 4.9   |
| Gatton     | 5.4   |
| Gympie     | 4.3   |
| Malanda    | 4.7   |
| Monto      | 5.8   |

*Irrigation requirements for short-rotation ryegrass based on average evapotranspiration rates less rainfall from 1 April to 30 November (1970 to 2007).*

## Nutrient requirements

Very tolerant of soil types ranging from sand to heavy clay. Fertiliser inputs for P, K and S should be based on soil tests but is not a good indication of N with application being essential for adequate growth of ryegrass.

Apply N following each grazing equivalent to 100 kg Urea/ha/month, which equates to a total of 600 to 800 kg urea/ha/season.

| Nutrient requirement | N   | P    | K   |
|----------------------|-----|------|-----|
| Nutrient (% DM)      | 4.2 | 0.35 | 2.3 |
| kg applied (/ha)     | 420 | 35   | 230 |

*Typical mineral content of short-rotation ryegrass when vegetative and requirements to produce on 10 t DM/ha.*

## Diseases and pests

Army worm invasion is probably the main pest in newly established ryegrass. More common if established in tropical grass where moths prefer to lay eggs. If infestation is high, treatment is via the application of an insecticide e.g. Lorsban® at recommended rates.

## Growth and grazing

Grazing commences in 6 weeks for early planting in oversowed swards, in this case graze every 10 – 12 days. Generally later 8 - 10 weeks for late plantings and full seed bed cultivation when adequately anchored. Normal practice is to graze in a rotational system, using a front and back fence. Ideally grazing occurs when the plant has three fully expanded leaves/tiller (Figure 5.3) and ceases when stubble is 5 to 16 cm high. In practice the rotation varies from 25 days in winter to 12 – 14 days in spring. N fertiliser does not affect rate of leaf appearance, it increases the size of the leaf stimulates tillering and increases crude protein content.

Novel grazing management strategies have been applied to ryegrass to increase DM production and quality, but few have demonstrated any long-term benefits. For instance, only grazing the newly expanded leaf, in practice this is difficult to achieve as animals tend to graze to multiple leaves at once, and green leaves 2 and 3 that are not grazed will senesce and decay. On the other hand, delaying grazing to 6 leaves rather than 3 will increase the net production of green leaf because each new leaf produced is bigger than its predecessor.

Pasture yield from grazing 6 to 8 times is typically in the range 8 - 16 t DM/ha. Conserved (per cut) ranges from 3 - 8 t DM/ha. Often higher yields are the result of grazing earlier and later in the season.

## Nutrient quality

| Quality (% DM) | Average | Min  | Max  |
|----------------|---------|------|------|
| Crude protein  | 28.6    | 15.3 | 33.6 |
| Starch         | 3.2     | 0.1  | 7.3  |
| Sugar          | 15.1    | 10.8 | 18.4 |
| NDF            | 40.0    | 29.4 | 53.8 |
| Fat            | 5.8     | 3.7  | 7    |
| ME (MJ/kg DM)  | 11.4    | 9.8  | 12.9 |
| DM (%)         | 17      | 10.6 | 27.6 |

*Range in quality for short-rotation ryegrass when grazed*

## Weeds

A high seeding rate and rapid establishment aim to prevent weed invasion. Grazing often inhibits the regrowth of weeds, and broad leaf weeds can be sprayed if persistent.

## Animal health

As with other green, lush forage cows can exhibit signs of nitrate poisoning or hypomagnesaemia. Loose faeces, nutritional scours, often occurs during winter when grass is very digestible, but rarely has any negative effects on production.

Cool weather, stressed plants and young growth have been associated with nitrate poisoning. Another important factor is excess nitrogen in the soil, particularly with fully prepared seedbeds, where nitrogen inputs from previous years are released by cultivation and additional nitrogen is applied in the current year. Reduce initial nitrogen inputs with a prepared seedbed if residual nitrogen from the previous crop is expected to be high.

### Further information

Contact the DAFF Customer Service Centre by Phone 13 25 23, or  
Email [callweb@daff.qld.gov.au](mailto:callweb@daff.qld.gov.au)

More technical notes can be found at:  
[www.dairyinfo.biz](http://www.dairyinfo.biz)

Callow et al. (2005) Response of herbage regrowth and water-soluble carbohydrate concentration of ryegrass species to defoliation practices when grown in a Mediterranean environment.

Lake (1995). Dairying Technical handbook.

Launders et al. (2010). Annual, Italian and short rotation ryegrass varieties 2010.

Callow et al. (2013) Successful Dairy Production in the Sub-Tropics

The project is funded and supported by the Department of Agriculture, Fisheries and Forestry and Dairy Australia.

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