



AGT Foods Africa Pty Ltd.
 8 Jacobs St., Chamdor, Krugersdorp 1739
 P.O. Box 414, Krugersdorp, South Africa 1740
 Reg. No. 1994/001269/07
 VAT Reg. No. 484 014 1495

Tel: +27 11 762 5261
 Fax: +27 11 762 4111
 0861 AgriCote (247426)
 sales@advanceseed.com
 www.agtfoods.com/za

Perennial Ryegrass – *Lolium perenne*

Perennial Ryegrass is the most widely grown cool-season grass in the world. It is theoretically a strong perennial grass when grown in cool, temperate areas. However, in South Africa, with hot summers and (in some areas) low soil fertility, it is considered as a weak perennial. It grows strongly during spring and autumn, with limited growth during winter (better than Tall Fescue) and poor growth in summer. Leaves are nutritious, soft and highly digestible resulting in good animal production. This grass is best adapted to areas where the annual rainfall exceeds 1500 mm and distribution correlates with the crop's production curve. In South Africa, it is normally planted under irrigation.



Strengths

- Production of up to 18 – 22 t DM/ha/season
Depending on environmental conditions and management
- Quick to establish
- Top quality grass species
- Short grazing cycles
- Diploid and tetraploid types are available
- Valuable in certain kikuyu overseeding grazing systems (Dairy)

Limitations

- Weak perennial under SA conditions
- Poor summer production
- Does not do well on low fertility soil
- Sensitive to poor management

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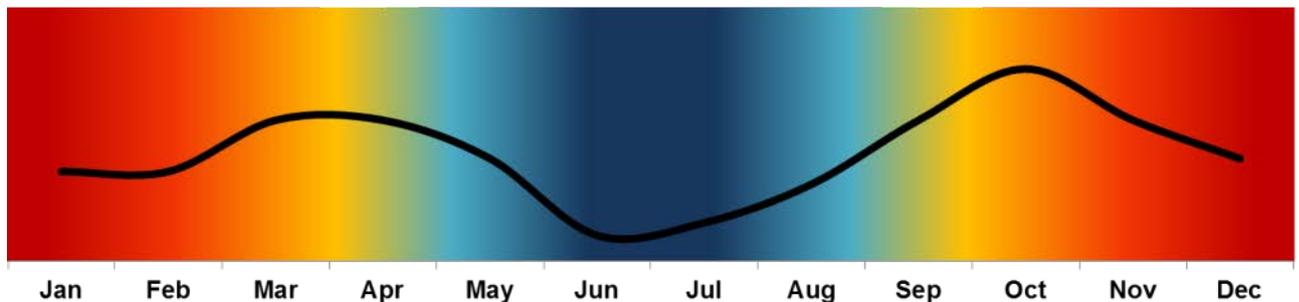
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What can it be used for?

Grazing: Utilise with production animals like dairy cows. Rotational, high-pressure grazing ensures optimal utilisation. Perennial Ryegrass is often used in mixed pastures with Clovers or Kikuyu.

Silage: Surplus production can be ensiled to use during times of low production.

Production potential: Up to 18 - 22 t DM/ha/season can be achieved. Yields depend on environmental conditions, soil fertility and the frequency of utilisation ^(1, 2).



Relative growth curve of an established Perennial Ryegrass stand - one year cycle

Metabolic disturbances in animals on cultivated pastures:

Perennial Ryegrass Staggers caused by alkaloids produced by wild-type Endophytic fungi. This is however not very common in South Africa.

Establishment

Climate: Perennial Ryegrass is a cool season grass, best adapted to temperate areas. Seedlings exposed to extreme heat or -cold can be damaged and stand loss will occur.

Moisture: Under dryland conditions, Perennial Ryegrass requires at least 1500 mm per annum, if distribution correlates with its production curve. Best production is achieved under irrigation.

Soil: It can survive in soil with pH (KCl) levels as low as 4.5 as long as acid saturation < 10%. Optimal production is however achieved on well-drained fertile soils with the pH (KCl) > 5, and 0 % acid saturation.



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Fertilization: Perennial Ryegrass responds very well to high Nitrogen fertilisation (> 250 kg/ha/season), however, this rate does not necessarily make economic sense. 35 – 50 kg N/ha can be fertilized after every grazing. A soil analysis before establishment is essential ^(1, 2, 3).

	N (kg/ha)	P (mg/kg soil)	K (mg/kg soil)
Requirement for establishment***	30-50*	30	150
Seasonal application (kg/ha)	250-500**	Use removal rates	
Production - Removal rates (kg/ton):			
Good quality fodder	43	4	36
Average quality fodder	30	3.2	30
Poor quality fodder	18	2.4	24

*Fertilizer with/just after establishment (kg/ha)

**Selected rate should maximise profit

***Determined by production potential

Phosphorus (P) and Potassium (K) can be recycled back to pastures when grazed by animals. This is dependent on the grazing system and the type of animals used. Up to 40% of P and 90% of K can be recycled ⁽⁵⁾. It is however necessary to do annual soil analyses to determine the level to which recycling occurred. The difference should be fertilized.

Methods: Establish on a firm, fine, weed free seed bed. Consolidating (rolling) the seedbed after sowing/planting will ensure good seed-soil contact and subsequently better germination and establishment.

Our prescribed seeding rate:	Rows ⁽¹⁾		Broadcast ⁽¹⁾	
	Diploid	Tetraploid	Diploid	Tetraploid
	20 kg/ha	25-30 kg/ha	25 kg/ha	35 kg/ha

Planting time: Best establishment months are February-April, however a spring planting (July to early August) can be successful.

Management

Utilisation: Due to its quick establishment, Perennial Ryegrass can be utilised from 5 – 6 weeks after planting (depending on the planting date). It is however necessary to do a pull-test (pull on leaves as if to simulate grazing) to determine if plant roots are developed well enough to



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prevent uprooting of plants. It has the lowest summer production potential among the temperate perennial species, but winter production is acceptable, depending on the variety planted. The production lifetime is determined by management and climate, but under South African conditions, it may be reseeded or renovated to improve the stand annually. Every Perennial Ryegrass plant can only maintain three leaves. As soon as the fourth leaf appears, the first leaf dies off. It is therefore required to have very accurate grazing management. Grazing cycles can vary from 14 – 55 days at different times of the year. At least 8 grazing cycles per season can be expected.

Cultivars

Nui

Nui is a common diploid cultivar first certified in 1975. It is considered as the benchmark cultivar with lower yield, persistence, palatability and rust resistance than other new cultivars.

Bealey

Bealey is a tetraploid cultivar with superior winter and summer production. It is very late flowering (+25 days) with high Metabolisable Energy (ME), palatability, good persistence and clover compatibility. It is further resistant to rust and plant pulling.

Alto

Alto is a diploid, late flowering (+14 days), high producing perennial ryegrass. It has a high tiller density with good persistence. Alto is high producing, particularly through early spring, summer and autumn.

Resources

1. Pasture Handbook, Kejafa Knowledge Works, ISBN 0-620-31994-1
2. FAO - <http://www.fao.org/ag/agp/AGPC/doc/Gbase/data/pf000199.htm>
3. Nutrient Requirements of Beef Cattle, 1984
4. Penn State Extension, Agronomy Facts 19, Ryegrass
5. Dannhauser CS. 1991. Die bestuur van aangeplante weiding in die somerreëval-dele, vol. 1. Warmbad



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