

Rye – *Secale cereale*

Rye is an annual temperate grass or cereal crop, grown as either a forage- or grain crop. It is categorized as a forage cereal together with Oats and Triticale. Forage cereals produce forage for autumn, winter and spring. As a forage crop it can be utilised as grazing, silage or hay (if cut at a vegetative stage). It is very drought tolerant and more cold tolerant than Oats and Triticale. Like all forage cereals, it is categorized according to its growth form, as a **Spring-**, **Intermediate-** or **Winter** type.

Spring types have no requirement for vernalization (prolonged cold period) and becomes reproductive at specific day lengths.

Winter types do have vernalization requirements, and will only become reproductive as soon as it was exposed to cold enough period, for long enough.

Intermediate types lie between Spring- and Winter types on a sliding scale.

Often produced under irrigation, but requires at least 400 mm rainfall per annum for Winter rainfall areas or 500 mm rainfall per annum for Summer rainfall areas.





Strengths

Limitations

<ul style="list-style-type: none"> • 13 t DM/ha/season under full irrigation • 2 - 7 t DM/ha/season under dry land or supplemental irrigation. <p>Depending on environmental conditions and management</p> <ul style="list-style-type: none"> • Relatively drought tolerant • Cold tolerant 	<ul style="list-style-type: none"> • Lower palatability and digestibility than Oats and Triticale • Low risk of causing bloat • Low risk of causing Nitrate poisoning
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What can it be used for?

Grazing: Grazing systems are usually practised under dry land conditions, but more success can be achieved under supplemental/full irrigation. Care should be taken to prevent bloat occurring in animals even though the risk is low. Cultivar selection will have an influence on production in different seasons.

Silage: Can be practiced when the double cropping is done with a summer crop. Spring types will give higher production.

Hay: Can be used to make palatable hay if cut at a vegetative stage.

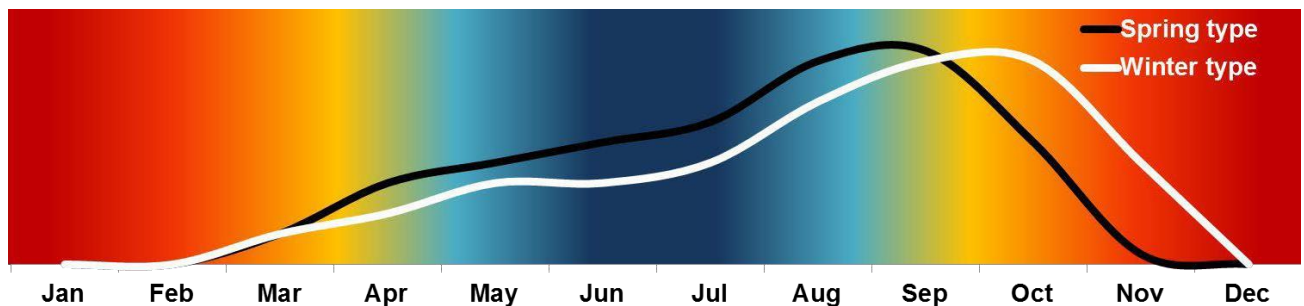
Cover Crop: The extensive root system protects soil against soil erosion. It improves the soil by stabilising soil aggregates, reducing compaction, improving water infiltration rate and builds organic material. It is also good at scavenging Nitrogen from the soil. Rye is relatively tolerant to saline soil conditions. The extensive root system is good at trapping nutrients and suppressing weeds, making it ideal as a cover crop.

Production potential: A possible yield of up to 13 t DM/ha/season under full irrigation can be reached. A more likely yield of 2 – 7 t DM/ha/season can be reached under dry land or supplemental irrigation. Yields are dependent on soil fertility, climatic





conditions and frequency of utilisation. Rye produces well in autumn and spring, and out performs Oats and Triticale in the coldest months. Its growth period is determined by the growth form and management. True spring types will give especially good winter production whereas true winter types can produce vegetative up to November if managed properly and climatic conditions allow it ^(1, 2).



Relative growth curve of Spring and Winter type Rye stands - one year cycle

Metabolic disturbances in animals on cultivated pastures:

Low risk of Frothy Bloat: Build-up of gas in the rumen due to stable foam forming, causing animals to suffocate.

Low risk of Nitrate poisoning: Nitrate build up in plants under periods of poor growth, especially after high N fertilization.

Establishment

Climate: Rye is widely adapted to various climatic conditions.

Moisture: Under dryland conditions it requires at least 400 mm per annum in Winter rainfall areas or 500 mm per annum in Summer rainfall areas. Moisture conservation will greatly improve production if low summer rainfall is expected. Production can be greatly increased under irrigation.

Soil: Soil with a good moisture retention capability will be beneficial





under dry land conditions, especially for the longer growers. It is very acid tolerant and can grow in soils with pH (KCl) levels of > 4.5. The ideal pH is however > 5.

Fertilization: Rye responds well to fertilization if moisture availability is not limiting. A soil analysis before establishment is essential ^(1, 2, 3).

	N (kg/ha)	P (mg/kg soil)	K (mg/kg soil)
Requirement for establishment***	20-40*	20	100
Seasonal application (kg/ha)	40-150	Use removal rates	
Production - Removal rates (kg/ton):			
Good quality fodder	30	2.8	30
Average quality fodder	16	2.2	18
Poor quality fodder	8	1.5	11

*Fertilizer 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 analysis 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 planting/sowing will ensure good seed-soil contact (especially for the bigger seeds) and subsequently better germination and establishment. Alternatively seed can be planted below the soil surface up to 5 cm deep.





COVER CROPS & FORAGES

Our prescribed seeding rate:

	Rows (1, 2)			Broadcast (1, 2)
	Low potential	Medium potential	High potential	
Irrigation	-	-	60-70 kg/ha	80-100 kg/ha
Dryland	25-30 kg/ha	40-50 kg/ha	-	-

Planting time: Plant in March – May (cooler areas) and April – August (warmer areas) if moisture availability is not limited.

Management

Utilisation: Rye does not make very good hay, due to its inflorescence being hard and it becomes unpalatable as soon as the inflorescence emerges. Oats will make better quality hay. It can however be cut for hay at a vegetative stage. Care should be taken to prevent bloat occurring in animals even though the risk is low. Cultivar selection will have an influence on production at different times of autumn, winter and spring.

Cultivars

Wintergrazer 70

Wintergrazer 70 is a Spring-type grain developed by the Pennington.



Resources

1. Pasture Handbook, Kejafa Knowledge Works, ISBN 0-620-31994-1
2. Gids tot die volhoubare produksie van weiding. Alles oor natuurlike veld en aangeplante weiding vir kleinvee, grootvee en wildboere. Prof Hennie Snyman, 2012.
3. Feedipedia, Animal Feed Resources Information System, Rye (*Secale cereale*) - <http://www.feedipedia.org/node/385>
4. Die invloed van verbouingspraktyke op die opbrengs en kwaliteit van Rog-, Korog-, en hawer- weidings in die Transvaalse middelveld. Johan van Bosch, 1999.
5. Dannhauser CS. 1991. Die bestuur van aangeplante weiding in die somerreënvaldele, vol. 1. Warmbad
6. Truter, WF. Dannhauser, CS, Smith, H. and Trytsman, G. 2014. *Secale cereale* (Stooling rye). Integrated Crop and Pasture-based livestock production systems. Conservation Agriculture – Part 19. SA Grain. ISSN 1814-1676. Page 62-64.

