



Ryegrass

There are two species of ryegrasses that are important as forage crops. Perennial ryegrass (*Lolium perenne* L.) is most well known as a pasture species, but can be harvested for stored feed. Italian or annual ryegrass (*Lolium multiflorum* L.) cultivars are more important as an emergency-type crop, and may be annual or perennial. In the Northeast “annual” ryegrass can survive the winter, particularly if there is consistent snow cover. There are diploid and tetraploid cultivars of perennial ryegrass available.

Description

Perennial ryegrass is native to Eurasia and North Africa, while Italian ryegrass is native to Italy. Ryegrass morphology can vary substantially under a range of environmental conditions, making *Lolium* species sometimes difficult to identify. In general, compared to perennial ryegrass, Italian ryegrass is taller, with wider and longer leaf blades, long auricles, and awns on the seed head. Ryegrasses will cross with both meadow fescue and tall fescue to produce festuloliums. There also are hybrids of perennial and Italian ryegrass available.

Establishment

Ryegrass performs best on well-drained, fertile soils with a pH between 6 and 7. If needed, lime should be applied and worked in well in advance of seeding. Although ryegrass is typically sown in pure stands around the world, a mixture of grass species in NY may be more advantageous, given the questionable persistence of ryegrass here. Ryegrass can be sown in mixture with alfalfa, but there is high risk of ryegrass dominating the stand, until it suffers from winter damage.

Perennial ryegrass is typically sown at a seeding rate of about 5-6 lbs/acre, when used in mixtures with alfalfa, clovers, or birdsfoot trefoil. The same seeding rate of perennial ryegrass is used when seeded with complex mixtures of grasses and legumes. Pure

seedings are not recommended, but require 20 to 30 lbs seed/acre. Italian ryegrass is usually seeded alone at high seeding rates (20-40 lbs/acre). Soil nitrogen level and harvest management will affect the balance of ryegrass and legume in mixtures. Perennial and Italian ryegrass in mixture with alfalfa will have similar grass yields in the spring, but Italian ryegrass will penetrate the alfalfa canopy in 2nd and 3rd cuts, with much higher grass yields compared to perennial ryegrass in alfalfa.

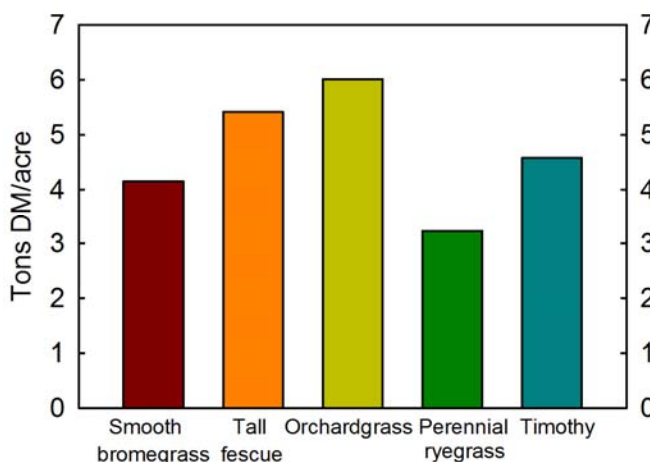


Figure 1. Penn State University cool-season grass variety trial at Rock Springs, PA. Four harvests per season with 220 lbs N/acre applied. Means of entries within each species, and means of 2009 and 2010.

Table 1. Cornell University Plant Breeding grass trials at Ithaca, NY. Four harvests per season with 200 lbs N/acre applied.

Grass	Years	Tons DM/acre
Tall Fescue	2006-10	6.7
Orchardgrass	2006-10	5.7
Smooth brome grass	2008-10	5.5
Timothy	2006-10	5.4
Reed canarygrass	2006	5.3
Perennial ryegrass	2006-10	4.4

Harvest Management

One or more harvests may be possible in the seedling year, due to rapid rate of establishment. Ryegrass is not tolerant of high temperatures or drought. Ryegrass can withstand a three- or four-cut management in NY. If growth in the fall is excessive and left standing, stand persistence can be negatively affected by snow molds.

Yield Potential as a Stored Feed

Cornell and Penn State cool-season grass trial results are shown in Table 1 and Figure 1. Five years of data from Cornell and two years of data from Penn State are consistent for perennial ryegrass. Ryegrass is significantly lower yielding than the other cool-season grasses. This is due in large part to the fact that ryegrass tends to suffer minor to severe damage to stands each winter.

Grazing

Ryegrass are better adapted to grazing than stored feed, and are the principal pasture grass in New Zealand and parts of Europe. Ryegrass pastures can be grazed with only 2-3 inches of growth in the spring, if the soil is not excessively wet. Ryegrass has good persistence under continual grazing, but a more sustainable system rotational grazing with 7 to 10 inches of regrowth between grazings. Ryegrass is better adapted to a range in grazing managements than any of the other cool-season grasses.



Figure 2. Ryegrass is very rapid growing and aggressive, with very high forage quality.

Forage Quality

Ryegrass has the highest forage quality of any cool-season grasses. Crude protein content is similar to orchardgrass or reed canarygrass with similar N fertilization. Ryegrass

accumulates soluble carbohydrates in the spring and in the fall, resulting not only in rapid plant growth, but also high quality forage for both grazing or silage. Soluble carbohydrate levels are low in the summer, resulting in ryegrass forage that does not ensile as well as in the spring or fall.

Tetraploid perennial ryegrass tends to accumulate more soluble carbohydrates than diploid types, resulting in higher palatability and DM intake. Italian ryegrass typically has very high soluble carbohydrate levels.

Summary

Italian or annual ryegrass can be used where a rapidly growing emergency crop is needed. The crop may persist over the winter if desired or not. Perennial ryegrass is best suited to planting in mixture with other grasses for grazing in NY. Although there have been improvements in cultivars for increased persistence, they continue to have lower persistence than other cool-season grasses.

Additional Resources

- 2011 Cornell Guide for Integrated Field Crops Management. Electronically accessible at: <http://ipmguidelines.org/Fieldcrops/>.
- Species selection NY: <http://forages.org>
- Jung, G.A. et al. 1996. Chapter 19. Ryegrasses. In (L.E. Moser et al., ed.) Cool-Season Forage Grasses. Agronomy Series No. 34. ASA, CSSA, ASSA, Madison, WI.

Disclaimer

This information sheet reflects the current (and past) authors' best effort to interpret a complex body of scientific research, and to translate this into practical management options. Following the guidance provided in this information sheet does not assure compliance with any applicable law, rule, regulation or standard, or the achievement of particular discharge levels from agricultural land.

For more information



Cornell University
Cooperative Extension

Grass Management Manual
<http://forages.org>

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