



# ANNUAL RYEGRASS (*Lolium multiflorum*)

R. Sattell, R. Dick, R. Karow, D. McGrath, and E. Peachey

Annual ryegrass is an erect, robust cool-season bunch grass that reaches a height of 3 to 4 feet. Plants are yellowish-green at the base and have 12-inch long glossy leaves. This species has a heavy, extensive, fibrous root system.

Annual ryegrass has small seeds (approximately 190,000 seeds/lb) that germinate rapidly. Seedlings quickly establish a ground cover and are very competitive. Annual ryegrass flowers in late May to early June and matures seed by late June to early July.

## Environmental preferences and limitations

Annual ryegrass is tolerant of a wide range of soils and climates but is best adapted to valley and coastal areas with long seasons of cool, moist weather. It tolerates cold and can germinate in cooler soils than can most other cover crops. Annual ryegrass can grow on sandy soils but does best on heavier clay or silty soils with adequate drainage.

Although well-drained soils are preferred, annual ryegrass tolerates extended wet periods and temporary flooding. In a cover crop screening trial in the mid-Willamette Valley, 6-inch-tall annual ryegrass was observed flooded with 2 to 4 inches of water for 11 days with no ill effect.

Annual ryegrass tolerates pH from 5 to 8, with the optimum between 6.0 and 7.0.

Annual ryegrass is moderately shade-tolerant. It has been grown successfully in orchards during the winter when trees are bare; and when relay-interplanted into sweet corn, it survives intense shading from the corn canopy.

## Uses

Annual ryegrass can be used as a cover crop in annual or perennial cropping systems, or as forage, hay, or a nurse crop for legumes. It often can be grown under conditions where other cover crops fail. Because it establishes quickly and grows throughout the fall and winter, it is an excellent choice for soil protection and weed suppression.

Annual ryegrass is suitable as a cover crop in grass waterways or riparian areas subject to flooding because it tolerates wet soils and temporary flooding.

It also commonly is used on poor soils or on sandy or rocky soils, where it normally produces better growth than do cereal species. It is a good choice for fast, temporary cover on exposed areas with minimal seedbed preparation, such as construction and burned areas.

Annual ryegrass has been used successfully as a relay-planted cover crop in both short- and tall-statured summer crops. Compared to cereal grains, its smaller seed allows better seed-soil contact under marginal seedbed conditions, and it is better at emerging from thick harvest residue (e.g., sweet corn).

Annual ryegrass is a heavy N feeder

and can be used to scavenge N from the soil during the fall and winter, therefore reducing losses caused when rains leach nitrate below the root zone.

and can be used to scavenge N from the soil during the fall and winter, therefore reducing losses caused when rains leach nitrate below the root zone.

## Dry matter and N accumulation

In a mid-Willamette Valley replicated trial over 3 years, annual ryegrass planted in mid-September accumulated a maximum of 4.8, minimum of 1.3, and average of 2.7 tons dry biomass/acre and a maximum of 76, minimum of 21, and average of 40 lb N/acre by mid-April. Very little or none of the N is available to the following crop due to the high C:N ratio of residues.

## Management

Seeding rates vary depending on the intended use and the seeding technique. In general, relatively high rates of seeding are recommended, despite the relatively small seed size. When used as a cover crop, seeding

---

## Quick facts: Annual ryegrass

<b>Common names</b>	Annual ryegrass
<b>Hardiness zone</b>	6 (see Figure 1)
<b>pH tolerance</b>	5–8; optimum is 6.5
<b>Best soil type</b>	Clayey or silty soils with adequate drainage
<b>Flood tolerance</b>	High
<b>Drought tolerance</b>	Moderate
<b>Shade tolerance</b>	Moderate
<b>Mowing tolerance</b>	High
<b>Dry matter accumulation</b>	Kill at 2–3 tons/acre
<b>N accumulation</b>	45 lb/acre at 3 tons/acre
<b>N to following crop</b>	Very little or none
<b>Uses</b>	Winter cover crop. Use in areas prone to flooding, to scavenge N, as relay-interplanted cover in tall-statured crops.
<b>Cautions</b>	In annual rotations, manage to prevent volunteer reseeding. Can be serious weed in grass seed crops.

---

rates range from 9–40 lb/acre. Use higher rates when broadcasting and when soil protection is important. Seed is widely available.

Suggested fall planting dates are from mid-September to mid-October. Best stand establishment is obtained when annual ryegrass is drilled  $\frac{1}{2}$  to  $\frac{3}{4}$  inch deep into a firm, well prepared seedbed. Alternative seeding methods that can reduce seedbed preparation but require higher seeding rates are: drill into a rough seedbed prepared by disking, or broadcast over a rough or smooth seedbed and then disk lightly to cover the seed. If the soil is dry, irrigate or plant before a fall rain.

When relay interplanting, broadcast into a standing summer crop immediately before the final cultivation. Increase irrigation frequency while the annual ryegrass is germinating for more even establishment. Annual ryegrass will germinate on the soil surface if adequate moisture is maintained.

In annual rotations, kill or incorporate annual ryegrass in spring with sufficient time for decomposition to occur before planting the summer crop. Excessive dry matter production can interfere with residue management, spring planting, and N availability to the following crop, so annual ryegrass usually is killed or incorporated when still somewhat succulent.

Higher rates of herbicide are required to kill annual ryegrass than cereal grain cover crops. Consult your county agent of the OSU Extension Service for recommended rates. Always apply herbicides in accordance with label instructions and restrictions.

Annual ryegrass often is grown in mixtures with legumes. When seeded with legumes, annual ryegrass provides early protection of the soil, suppresses weeds, and acts as a nurse crop. However, due to its vigorous growth, annual ryegrass may smother companion legumes. Reduce annual ryegrass seeding rates to decrease annual ryegrass competition for light, water, and nutrients.

When used in perennial systems such as orchards and vineyards, annual ryegrass can reseed itself if mowing schedules permit seed production. If a temporary cover is desired, you should kill, incorporate, or mow annual ryegrass before seed is mature.

Annual ryegrass is likely to tolerate mowing unless flailed at ground level in very dry conditions, but even then it may survive.

### Pest interactions

Annual ryegrass is very vigorous and competes well with most weeds, especially when seeded with legumes. It harbors few aphids or beneficial insects.

Annual ryegrass can become a weed problem, especially in certified contaminant-free grass seed crops, when plants that escape herbicide and field treatments in spring produce seed. This problem can be minimized by careful field operations, especially at field edges.

### For more information

#### World Wide Web

Orchard floor management information—<http://www.orst.edu/dept/hort/weeds/floormgt.htm>

OSU Extension Service publications—[eesc.orst.edu](http://eesc.orst.edu)

The University of California, Davis cover crop information—<http://www.sarep.ucdavis.edu/sarep/ccrop/>

#### Oregon Cover Crop Handbook

This publication also is part of *Using Cover Crops in Oregon*, EM 8704, which contains an overview of cover crop usage and descriptions of 13 individual cover crops. To order copies of EM 8704, send your request and \$5.50 per copy to:

Publication Orders  
Extension & Station Communications  
Oregon State University  
422 Kerr Administration  
Corvallis, OR 97331-2119  
Fax: 541-737-0817



Figure 1.—Oregon plant hardiness zone map. Annual ryegrass normally will survive in **Zone 6** or any warmer zone. (Extracted from the USDA's national plant hardiness zone map, based on average annual minimum temperature in °F.)  
Zone 4 = -30 to -20; Zone 5 = -20 to -10  
Zone 6 = -10 to 0; Zone 7 = 0 to 10  
Zone 8 = 10 to 20; Zone 9 = 20 to 30

© 1998 Oregon State University. This publication may be photocopied or reprinted in its entirety for noncommercial purposes.

Robert Sattell, faculty research assistant in crop and soil science; Richard Dick, professor of soil science; Russ Karow, Extension cereals specialist; Dan McGrath, Extension agent, Willamette Valley; and Edward Peachey, research assistant in horticulture; Oregon State University.

Funding for this project was provided by the Oregon Department of Agriculture.

This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials—without regard to race, color, religion, sex, sexual orientation, national origin, age, marital status, disability, and disabled veteran or Vietnam-era veteran status—as required by Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973. Oregon State University Extension Service is an Equal Opportunity Employer.

