

Reed Canarygrass (*Phalaris arundinacea*)

Description:

Reed canary grass is a large, coarse, perennial grass that reaches 2 to 9 feet in height. It has an erect, hairless stem with gradually tapering leaf blades 3 1/2 to 10 inches long and 1/4 to 3/4 inch in width. Blades are flat and have a rough texture on both surfaces. The leaf color is variable, but most often is a light, bluish green. The compact flower clusters are erect or slightly spreading (opening up as they mature), and range from 3 to 16 inches long with branches 2 to 12 inches in length. Single flowers occur in dense clusters in May to mid-June. They are green to purple at first and change to beige over time. This grass is one of the first to sprout in spring, and forms a thick rhizome system that dominates the subsurface soil. Reed canarygrass spreads by both seed and rhizomes.



John Cardina, The Ohio State University, Bugwood.org

Background

Reed canarygrass is a cool-season, sod-forming, wetland grass native to the northern temperate regions of Europe, Asia and North America. Reed canarygrass has been widely used in northern states and Canada for many years. No other forage plant is as well adapted to wet, marshy areas as is reed canarygrass. It can withstand flooding, and can tolerate continuous inundation for as long as 60-70 days without permanent injury (possibly longer depending on temperature, current and silt content of the water). It is typically found along stream banks, wet meadows and pastures, wetlands, roadside ditches, river levees and dikes, drainages and floodplains. Although wet areas in full sun are preferred, reed canary grass is also very drought tolerant and able to withstand high degrees of variability in soil type, pH levels, fertility, temperature and exposure.

Use of reed canarygrass in the Pacific Northwest began in the late 1800's. Farming followed logging operations and reed canarygrass was often used as the "breaking in" crop. Stumps, logging debris and clearing operations left the land unsuitable for planting crops such as small grains. Reed canarygrass was planted in these areas to allow time for the stumps and debris to degrade and be more easily removed at a later date. Reed canarygrass popularity in the Pacific Northwest was a combination of several factors. It was extremely productive, easy to establish and persisted very well.

Reed canarygrass has unjustly gained a reputation as a low quality forage grass. Animals grazing reed canarygrass during spring and summer perform similarly to those grazing orchardgrass, timothy or brome, and better than those grazing fescue. The poor reputation is largely due to the alkaloid content in native eco-types, and to the frequent practice of delayed mid-summer harvest of very mature reed canary grass from wetlands which were flooded during the spring. Improved palatability is accomplished through earlier harvested hay and by grazing followed by mowing to keep the grass from becoming tall and coarse.



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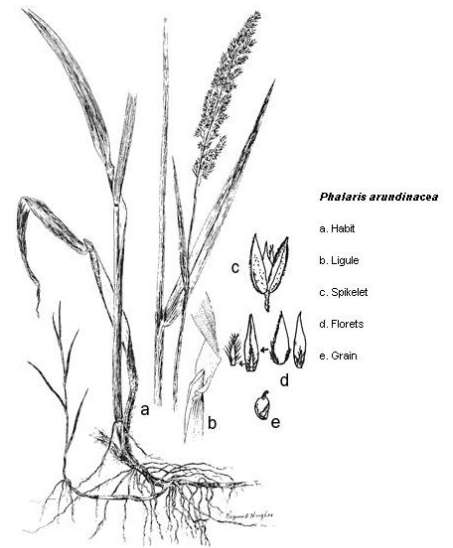
A second wave of interest in reed canarygrass occurred when wastewater management became an important issue. Reed canarygrass has the ability to utilize nitrogen from wastewater at very high levels without causing damage to the plants. Zeiders (1976) reported, "reed canarygrass is the most popular species for irrigation with wastewater from municipal and industrial sources as a pollution control measure".

Unfortunately, reed canarygrass has proven to be too aggressive in the Pacific Northwest. It moves out of pastureland and into stream bottoms, wetlands, and canal banks and persists where it is not desirable. Other forage species such as orchardgrass, timothy and tall fescue are native to Europe. Perennial ryegrass is native to Europe, Asia and North Africa. Orchardgrass and tall fescue are also considered to be invasive in some areas. There are no grasses native to Western Washington suitable for hay or pasture use.

Impacts:

Detrimental

- Reed canarygrass can out-compete most native species, threatening natural wetlands by forming large, single-species stands.
- Limited value to wildlife. While some animals such as deer and elk do take advantage of it while it is young, tender, and rapidly growing, they do not continue to graze it after it grows tall and coarse. Because it grows so dense, it reduces cover for small mammals and waterfowl.
- Very difficult to eliminate, presents a serious challenge in wetland mitigation efforts.
- A serious weed in irrigation ditches due to increased siltation.
- Produces large amounts of pollen. Like other grasses, pollen from reed canary grass is easily airborne and moderately allergenic.



Source: Crow and Hellquist 2000.

Beneficial

- Reed canarygrass can be used for pasture, hay and silage. It thrives in saturated soils where no other forage can be grown.
- Used for erosion control in ditches and gullies, especially adapted to use as sod in areas where establishing stands by seeding is difficult. Small pieces of sod are embedded at 1 -to- 2- foot intervals across gullies in early spring or fall when the soil is wet. Shoots can emerge through 6 to 8 inches of sediment should it be deposited on top of them
- Reduces pollutants when used as part of the filtration system by irrigating with water from municipal waste water treatment.
- Used in northern Europe as an alternative energy source, Finland currently has 50,000 acres in reed canarygrass production, with 30 CHP (combined heat and power) plants using the dry material mixed with peat and assorted wood waste products.

Comparisons to other forage grasses

Feed component yield, nitrogen uptake and stand persistence (percent ground cover) of perennial grasses cut three times and treated with municipal wastewater.¹

Grass	Yield (tons/acre) ²		Nitrogen Uptake (lbs/acre)	Stands (%) ³
	Forage	Digestible nutrients		
Reed Canarygrass	5.0	3.7	363	46
Orchardgrass	3.6	2.7	234	55
Tall Fescue	5.1	3.5	308	12
Timothy	3.1	2.3	213	6

¹Marten et al., 1979. Agronomy Journal 71:650-658

²Yield of dry matter and digestible nutrients are those of a one-year-old stand

³Stands after five years of treatment. Timothy stands declined beginning in the second year.

Characteristics of perennial cool season grasses that are adapted to Western Washington

Grass	Heat/drought Tolerance	Flooding Tolerance	Winter Hardiness	Frequent cutting Tolerance	Seedling Vigor	Sod-forming Capacity
Reed Canarygrass	E	E	E	E	F	E
Orchardgrass	G	P	F	E	E	P
Tall Fescue	E	P	F	E	E	F
Timothy	P	P	E	P	F	P
Perennial Ryegrass	P	P	P	E	E	P

E = excellent, G = good, F = Fair, P = poor

Control Options:

Thurston County's Integrated Pest Management emphasizes cultural, biological, and manual control methods to keep pests and vegetation problems low enough to prevent damage. The goal of Thurston County's IPM is to minimize the use of pesticides by utilizing and providing information about the most effective control options that are available and practical.

► Managing for Hay and Pasture

- Start spring grazing after plants reach a height of 10 to 12 inches.
- Palatability decreases rapidly after maturity, so maintain grass height at or below 12 inches during this rapid spring growth period.
- To maintain plant vigor and promote rapid regrowth, leave a stubble of 3 to 4 inches after mowing or grazing.
- Harvest hay when the first seedheads appear.
- Vigorously discing and harrowing the field will rejuvenate sod-bound stands.
- Trenching to improve drainage can aid in earlier harvest timing.
- Its persistence under close, heavy use makes it well suited for calving, lambing, holding areas or other special-use pastures. Yield will be reduced, but the sod formed by reed canarygrass is very durable.
- To maintain good yields, an annual application of fertilizer may be needed, depending on soil test results.
- ***Because reed canarygrass is so invasive, do not introduce it into fields where it is not already present.***

Please refer to Washington State University Extension Bulletin #1870 "Pasture and Hayland Renovation for Western Washington and Oregon" for more information.

► Biological

There are currently no biological control methods available for reed canarygrass.

► Cultural / Habitat

Clipping back plants at ground level and covering them with opaque black plastic tarps can reduce but not eliminate populations. However, this method is rarely effective because reed canarygrass shoots can grow up through most materials, and seasonal inundation may displace covering materials.

Revegetation with native broadleaf trees such as willows and alders has shown some degree of control, as reed canarygrass is not especially shade tolerant. The reed canarygrass should be controlled before planting, and must be maintained by mowing, mulching, or chemical treatment until trees are tall enough to compete on their own. Tree protectors may help, and saplings should be planted close to allow for a substantial number that will not establish. Overall success and the number of years a site must be maintained after planting is dependent on tree density.

Desirable vegetation should be incorporated as soon as possible after any control done. Reed canarygrass will rapidly move back into areas from root fragments and seeds that remain in the soil afterward.

Be careful to clean equipment and tools after working in a reed canarygrass infested area in order to prevent spreading seed or root fragments to new areas.

► Manual / Mechanical

Removal of reed canarygrass by hand-pulling is practical only for small stands and requires a large investment of time and energy.

Mowing can be effective for prevention of seed production if done a minimum of twice a year. This method can increase the occurrence of native species by increasing the amount of light that reaches the soil. It also helps to keep the area accessible and maintains the forage in a condition that livestock will graze. Mowing will not reduce populations, but can be part of a containment program.

Heavy equipment has been used unsuccessfully in reed canarygrass removal. Rapid regrowth occurs from rhizomes and seeds that remain in the soil even after mechanical removal.

Cultivation will not significantly reduce reed canarygrass infestations. There are too few days that are hot and dry enough for cultivation to effectively kill plants that have been tilled. Cultivation will actually rejuvenate stands of reed canarygrass and may cause inadvertent spread into previously uninfested areas.



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► Chemical

Reed canarygrass is a perennial that produces new plants from underground rhizomes, so it is important to use a systemic herbicide such as [glyphosate](#) that will move into the root system and kill the entire plant. Applications using a hand-held or backpack sprayer with a 2% glyphosate concentration are effective in reed canarygrass control. Spray the grass until it is wet but not dripping and follow label directions to mix herbicide to the desired concentration. Currently, products containing the active ingredient glyphosate are the only systemic herbicides for the control of reed canary grass that are considered “low in hazard” by Thurston County’s pesticide review process. However, glyphosate is non-selective and will injure any plant that it comes in contact with.

Many glyphosate products have an initial concentration of 41% (example: Roundup Pro®, Glyphos®, etc.), they are recommended to be diluted to a 2% solution for spraying reed canary grass. *Thurston County has observed that most ready-to-use, pre-mixed products do not contain sufficient active ingredients to be as effective as concentrated products that are then mixed with water to create a specific finished concentration. The following instructions are for products containing 41% glyphosate which will be mixed down to a specified dilution rate. Be sure to read your label carefully, and make adjustments to rates accordingly.*

Herbicides containing the active ingredient [imazapyr](#), (Habitat® or Arsenal®) are also effective. Imazapyr is considered “moderate in hazard” by Thurston County due to its persistence and mobility and is the County’s second choice for herbicide control. Imazapyr products are non-selective (can damage all plants) and requires a licensed applicators to use.

Herbicide spraying within 50 feet of a water body requires the use of an herbicide formulated for aquatic settings. Reed canarygrass is often found growing near water bodies, and aquatic formulations of glyphosate (Aquamaster®, Rodeo®) and imazapyr (Habitat®) are recommended. **However, Aquatic herbicides are restricted for use in Washington State to licensed applicators only.**



John M. Randall, The Nature Conservancy, Bugwood.org

Timing: Both glyphosate and imazapyr products can be used any time the plants are actively growing. Young, tender plants are treated most effectively, and mowing with a regrowth period before application can help the treatment to be more effective.

Applications should allow enough time for newly planted replacement vegetation to become established. Late treatments with no live vegetation in place could lead to increased erosion.

READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS. Obey all label precautions, safety measures, and wear all recommended personal protective equipment. Use of brand names does not connote endorsement and is for reference only; other products with the same active ingredients may be available under other names. Pesticide product registration is renewed annually and product names and formulations may vary from year to year.

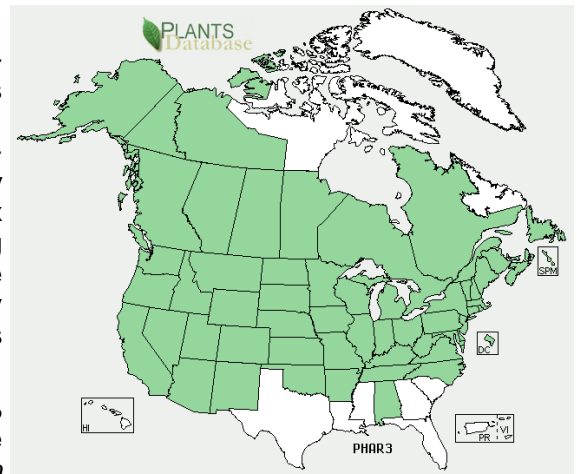
REFERENCES:

- Weed Technology 2008 22:507–513, Managing Reed Canarygrass (*Phalaris arundinacea*) to Aid in Revegetation of Riparian Buffers, Timothy W. Miller, Laura Potash Martin, and Craig B. MacConnell
- 2009 Pacific Northwest Weed Management Handbook, pg. 464. ISBN 978-1-931979-19-1
- Coastal Pastures in Oregon and Washington, Pasture Management Guide, Oregon State University, EM 8645 August 1996
- USDA Natural Resources Conservation Service Plant Guide, Reed Canarygrass (*Phalaris arundinacea*) Pullman Plant Material Center, Pullman, Washington
- Agronomy Facts 26, Reed Canarygrass, College of Agricultural Sciences • Agricultural Research and Cooperative Extension Pennsylvania State University, 2008
- University of Missouri Extension, Reed Canarygrass, Ryegrass and Garrison Creeping Foxtail, Howell N. Wheaton, Dept. of Agronomy, 1993
- Pasture and Hayland Renovation for Western Washington and Oregon, Steven C. Fransen and Marty Chaney, Washington State University Extension Bulletin EB1870, 2002.



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USDA Natural Resources Conservation Service Plants Database