



Reed Canarygrass

Reed canarygrass (*Phalaris arundinacea* L.) is a tall, leafy, high-yielding perennial. It is a cool-season grass that is greater in winter hardiness and more resistant to foliar diseases than other cool-season grasses grown in Pennsylvania. The plants spread and thicken from short rhizomes, creating a dense sod. If not grazed or clipped, plants will reach heights exceeding 6 feet under high-fertility conditions.

Reed canarygrass does well on most Pennsylvania soils except droughty sands. It is a “natural” for poorly drained soils because of its tolerance to flooding and standing water (Table 1). In addition to its adaptation to wet sites, reed canarygrass is one of the most drought tolerant of the cool-season grasses. Thus, under proper management this species does well on upland sites.

ADAPTED VARIETIES

Older varieties (Common, Rise, Vantage) contain high levels of alkaloids which make these reed canarygrasses less palatable than other grasses. Newer varieties (developed since 1976) contain lower levels of alkaloids and are more palatable. Low-alkaloid varieties that have performed well in Pennsylvania are Palaton and Venture. Both varieties are high yielding, have good winter hardiness, and can be used for pasture or in mixture with a legume for hay and silage.

ESTABLISHMENT

Spring seedings are most common. However, late-summer seedings are often more successful because weeds are less of a problem. Reed canarygrass can be slow to establish and may fail when weed competition is severe during establishment. Grass weeds are especially harmful. Companion crops can be used for spring seedings but should not be used for late-summer seedings. Oats are the most common companion crop, but early removal for silage or by grazing is necessary to reduce competition for light and moisture.

If a late-summer seeding is planned, prepare the seedbed 2 to 4 weeks ahead of seeding, if possible. This will allow the soil to become firm and provide an opportunity to accumulate moisture in the seedbed. Best seeding time is before August 15 in northern Pennsylvania and September 1 in southern Pennsylvania.

Best stands of reed canarygrass are obtained when sown not deeper than ½ inch in a well-prepared, firm seedbed. This is best accomplished with band seeders equipped with press wheels. Other seeding methods can be used, but chances of obtaining thick stands and vigorous growth in the seeding year are reduced. Cultipacker seeders and grain drills work well if the seedbed is firm and the seed is covered to a depth not exceeding ½ inch. Roll or cultipack after seeding with grain drills not equipped with press

Table 1. Characteristics of perennial cool-season grasses in Pennsylvania.

Grass	Seedling vigor ^a	Tolerance to soil limitations			Persistence	Tolerance to frequent harvest	Relative maturity ^c
		Droughty	Wet	Low pH ^b			
Kentucky bluegrass	M	L	M	M	H	H	Early
Orchardgrass	H	M	M	M	M	H	Early-medium
Perennial ryegrass	H	L	M	M	L	H	Early-medium
Reed canarygrass	L	H	H	H	H	H	Medium-late
Smooth bromegrass	H	H	M	M	H	L	Medium-late
Tall fescue	H	M	M	H	M	H	Medium-late
Timothy	M	L	L	M	H	L	Late

a. L = low, M = moderate, H = high.

b. pH below 6.0.

c. Maturity characteristic refers to relative time of seed head appearance in the spring. This will depend not only on the species but also on the variety.

wheels or after broadcast seeding. Caution must be used not to bury the seed after broadcast seeding.

Reed canarygrass should be seeded at 14 pounds per acre when seeded alone. This is a relatively high seeding rate compared to orchardgrass or timothy; however, reed canarygrass seed tends to have a low percentage of germination which necessitates a high seeding rate. Legume mixtures are recommended especially for hay or silage production. When seeding reed canarygrass in a mixture, decrease the seeding rate to 6 to 8 pounds per acre for reed canarygrass (Table 2).

Table 2. Seeding rates for reed canarygrass and a single legume in mixture.

Species	lbs/A
Reed canarygrass	6-8
With any one of these legumes	
Alfalfa	8-10
Birdsfoot trefoil	6-8
Red clover	6-8
White clover	2-4

HARVEST MANAGEMENT

Reed canarygrass can be used for pasture, hay, or silage. Recovery following defoliation is excellent in the spring and early summer and is fair to good in late summer and early fall. However, it is frost sensitive and will turn brown quickly after early fall frosts.

Reed canarygrass is high yielding when cut for hay or silage (Table 3). Highest yield is obtained when harvested at heading. In contrast, highest quality is obtained before seed heads begin to appear and declines rapidly thereafter (Table 4). This change in quality is primarily due to increases in portions of the stem relative to the leaf. There is not a close relationship between time of first harvest and stand persistence (Table 3). Regrowth after harvesting reed canarygrass will be leafy with stem elongation, but no seed heads will be produced.

When using reed canarygrass for pasture, excessive forage growth must be avoided to maintain quality and palatability. Animals that have a choice will often choose grasses other than reed canarygrass. This is accentuated if the reed canarygrass is a high-alkaloid variety or is allowed to become mature before grazing. Growth starts early in the spring with grazing generally available by the third or fourth week in April. Approximately 60 percent of the total yield of reed canarygrass is produced by July. Maintain the grass below 12 inches tall during the rapid spring growth of May and June. Short-duration rotational grazing with a heavy grazing pressure will allow the best utilization and greatest animal gains per acre. In addition,

rotational grazing is recommended to allow hay harvesting of the ungrazed pastures during the spring. Reed canarygrass should not be grazed closer than 3 to 4 inches above the ground. A recovery period following grazing will also improve productivity.

FERTILITY

Fertilization is important to take advantage of the high-yielding characteristics of reed canarygrass. Determine the lime and fertilizer needs by soil testing before seeding. If pH is below 6.0, apply lime. In the absence of a soil test, assuming medium-fertility soil, plow down 0-45-135 pounds per acre and apply 20-20-20 pounds per acre at seeding. When seeding with a legume, apply none or less than 20 pounds per acre of nitrogen at seeding. Nitrogen application in excess of 20 pounds per acre will stimulate reed canarygrass development and inhibit legume establishment.

A soil test is the best guide for proper fertilization of established reed canarygrass. In pure reed canarygrass stands, apply nitrogen annually. Reed canarygrass responds more to nitrogen fertilization than the other cool-season grasses. Annual rates of N application may range from 80 to 240 pounds per acre depending on soil condition and type and, consequently, yield potential. Generally, about 40 pounds of nitrogen is required per ton of forage produced. Nitrogen rates in excess of 120 pounds per acre should be applied in split applications. Fertilization systems that apply at least one-half of the annual N in August can be utilized to take advantage of the high-yielding characteristics of reed canarygrass in the fall.

A productive stand of reed canarygrass will require about 30 pounds per acre of phosphorus annually for stand maintenance. Potassium fertilization of reed canarygrass for maintenance is more variable than phosphorus. Depending on the soil type and cropping history, potassium rates may range from none to 160 pounds per acre per year. On higher organic matter soils, higher rates would be necessary.

SUMMARY

Reed canarygrass is a tall-growing, perennial grass that is widely adapted to Pennsylvania conditions. It is particularly well adapted to wet soils and soils with a pH below 6.0. Reed canarygrass has unjustly gained a reputation as a low-quality, undesirable forage. This misconception is in part due to the high alkaloid content of native varieties and the practice of delaying harvest until reed canarygrass is mature. However, newer varieties of reed canarygrass are equal in quality to other cool-season grasses when harvested at similar stages of maturity. Yield of reed canarygrass is closely related to the rate of N fertilization.

Table 3. Yield and persistence of perennial cool-season grasses when the first harvest was taken at different stages of grass development and fertilized at two rates of N, averaged over three production years.

Stage at first harvest	N ^a	Dry matter yield				Persistence after three years			
		OG ^b	RC ^b	SB ^b	Tim ^b	OG	RC	SB	Tim
		tons/acre				% ground cover			
Prejoint	High	3.2	3.3	3.0	3.3	54	100	22	32
	Low	2.2	2.1	2.3	2.5	58	100	30	47
Early head	High	3.5	3.5	3.9	3.4	49	100	23	32
	Low	2.0	1.9	2.9	2.4	57	100	30	32
Early bloom	High	3.6	3.7	4.9	3.9	51	100	25	14
	Low	2.4	2.0	3.7	2.8	55	100	35	35
Late bloom	High	3.6	3.8	5.1	4.0	42	100	30	13
	Low	2.5	2.0	4.0	3.6	53	100	38	40
Means of harvest schedules									
Prejoint		2.7	2.6	2.7	2.9	56	100	26	39
Early head		2.8	2.7	3.4	2.8	57	100	27	32
Early bloom		3.0	2.9	4.3	3.3	52	100	30	24
Late bloom		3.0	2.9	4.6	3.4	48	100	34	26
Means of N rates									
High		3.5	3.6	4.3	3.6	48	100	25	22
Low		2.3	2.0	3.2	2.7	56	100	33	38

a. High N treatments received 200 to 250 lb N per acre per year, low N treatment received 100 to 125 lbs N per acre per year.

b. OG = 'Pennlate' orchardgrass, RC = common reed canarygrass, SB = 'Saratoga' smooth brome grass, Tim = 'Climax' timothy.

Adapted from Northeast Regional Publications 550, 554, 557, and 570. *Management and Productivity of Perennial Grasses in the Northeast*. West Virginia Agric. Exp. Stn.

Table 4. Nutritional value of perennial cool-season grasses at first harvest during spring and summer.

Stage at first harvest ^a	Crude protein				Digestible dry matter			
	OG ^b	RC	SB	Tim	OG	RC	SB	Tim
%								
Prejoint	28.3	24.5	31.9	32.3	82	79	84	76
Early head	16.8	17.0	18.0	16.1	66	72	72	62
Early bloom	14.7	15.4	14.1	11.3	63	71	67	59
Late bloom	12.5	11.1	8.6	8.8	57	60	54	55

a. Grasses were fertilized with 200 to 250 lbs N the previous year.

b. OG = orchardgrass, RC = reed canarygrass, SB = smooth brome grass, Tim = timothy.

Adapted from Northeast Regional Publications 550, 554, 557, and 570. *Management and Productivity of Perennial Grasses in the Northeast*. West Virginia Agric. Exp. Stn.

Prepared by Marvin H. Hall, professor of forage management.

Visit Penn State's College of Agricultural Sciences on the Web: www.cas.psu.edu

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Cooperative Extension is implied.

Penn State College of Agricultural Sciences research, extension, and resident education programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

This publication is available from the Publications Distribution Center, The Pennsylvania State University, 112 Agricultural Administration Building, University Park, PA 16802. For information telephone 814-865-6713.

This publication is available in alternative media on request.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901; Tel 814-865-4700/V, 814-863-1150/TTY.

Produced by Ag Communications and Marketing

© The Pennsylvania State University 2008

Code # UC089 R2M08.08mpc3141