

REED CANARYGRASS FOR WASTEWATER IRRIGATION SYSTEMS

Agronomy Facts Series: AF-09

Reed canarygrass (*Phalaris arundinacea* L.) is a tall, perennial, cool-season grass with a reputation as a wetland grass that makes poor-quality livestock feed. While the reputation of poor palatability and poor quality was accurate in the past, new low alkaloid varieties of reed canarygrass are now available that make this grass an acceptable animal feed. As with all grasses, care must be taken to harvest at the proper time to ensure good-quality forage.

Reed canarygrass is a native of Asia and Europe. It was introduced as a forage grass in the United States in the early 19th century. Since it tolerates wet, poorly drained soils, it has generally been used for grass waterways. More recently, it has been used as a hay crop under wastewater irrigation systems using treatment effluent. Reed canarygrass is unusual in that it also has excellent drought tolerance and is an outstanding competitor and yielder under high nitrogen (N) conditions.

Reed canarygrass has the potential to respond to heavy applications of fertilizer, manure, or wastewater. This grass can remove N from the soil even at soil temperatures that are too low for plant growth. For these reasons, reed canarygrass is an ideal choice when N removal (wastewater or manure management/ disposal) is of primary concern.

Since removal of the forage as hay is desired to remove N from the soil system, only low-alkaloid varieties should be used. Reed canarygrass varieties that are low in alkaloid concentration are Palatin, Rival, and Venture. Common reed canarygrass seed and varieties that do not specify low alkaloids should be considered high in alkaloid concentration. Low-alkaloid reed canarygrass has forage quality at similar growth stages very much like other cool-season perennial grasses.

Reed canarygrass has a number of advantages over other perennial cool-season grasses, including the following:

- Persists longer if properly managed.
- Persists with either frequent or infrequent cutting if adequate N levels are maintained.
- Tolerates pH of 5.0 to 8.0.
- Tolerates spring flooding.
- Tolerates drought conditions.
- Fits in well in mixture with alfalfa.

Although advantages outweigh disadvantages, the crop's disadvantages must be considered during the decision-making process. Reed canarygrass' disadvantages include:

- Very weak seedlings--fall seedings require six weeks of growth to allow sufficient seedling growth to resist drought and winter injury.
- Very slow to establish--Spring seedings may not reach full stand for two years due to heavy weed competition.
- Very expensive seed--since the seed shatters as it ripens, seed harvest is difficult and costly.
- Seed is usually in short supply.
- Cannot use companion crops during establishment.

ESTABLISHMENT

Under dryland planting conditions, reed canarygrass should be seeded between Aug. 1 and Sept. 20 whenever soil moisture levels are favorable. If irrigation is available at planting time, the crop should be seeded between Aug. 20 and Sept. 20. Spring seedings are usually not very successful or are slow to establish due to competition with spring and early summer emerging annual weeds.

A fine, firm and level, weed-free seedbed should be prepared to ensure good soil-seed contact and shallow seed placement (¼ to ½ inches deep). Any required fertilizer should be worked into the soil before the final seedbed preparation. For a properly prepared seedbed, your shoes should sink no more than one inch into the prepared seedbed.

For pure stands seed a minimum of 12 to 14 pounds of pure live seed (PLS) per acre. For mixtures with legumes seed at 6 to 8 pounds PLS per acre.

$$\begin{aligned} \% \text{ PLS} &= \% \text{ Purity} \times \% \text{ Germination} \\ \text{Lbs PLS} &= \text{Lbs bulk seed} \times \% \text{ PLS} \end{aligned}$$

Seed at ¼ to ½ inch soil depth. The deeper seeding is advantageous on sandy soils and late summer seedings when surface soil moisture may be limiting. Seed sown on the soil surface or greater than ½ inch deep have little chance of developing into seedlings. Be certain to carefully test your planter depth of seeding.

Late-summer seeding usually results in relatively less weed competition with new grass and broadleaf seedlings than does spring seedings. For pure reed canarygrass stands, weeds should be clipped or harvested when they shade the seedlings. For mixtures with alfalfa, annual weeds may be controlled by a timely first harvest when alfalfa is at the bud stage.

FORAGE HARVESTING

Forage quality and percent crude protein in cool-season grasses decrease with increasing plant maturity. Forage yield increases with increasing plant maturity. For the best

compromise between quality and yield, the first crop should be cut in the late boot (the young, forming seedhead can be found and felt within the leaf sheath of the last emerged leaf) or early head emergence (the seedhead is visible above the last leaf sheath but pollen has not yet been shed). This should occur between mid- to late-May. Reed canarygrass does not produce seed heads after the first spring cut, although the stem may elongate producing a pseudostem. When moisture is provided by irrigation, subsequent harvests can be taken at 4 to 6 week intervals when sufficient yield has accumulated to justify haying costs.

Low alkaloid varieties do not guarantee high-quality forage. Proper forage management is needed to ensure high quality hay. Also, since reed canarygrass will survive in very wet fields, problems can occur with the spring harvest if field conditions do not support machinery.

AUTHORS:

Richard W. Taylor, Ph.D.
Extension Specialist III
Soil Fertility and Crop Production
Department of Plant & Soil Sciences
University of Delaware

Richard Barczewski, Ph.D.
Animal Scientist
Department of Agriculture & Natural Resources
Delaware State University

AF-9-9/98

Commercial companies or products are mentioned in this publication solely for the purpose of providing specific information. Mention of a company or product does not constitute a guarantee or warranty of products by the Agricultural Experiment station or Delaware Cooperative Extension or an endorsement over products of other companies not mentioned.