

Foxtail Barley in Hay and Pasture



Introduction

Foxtail barley (*Hordeum jubatum* L.) is a densely tufted perennial bunchgrass native to western North America. Its primary means of spread is by seed, which are easily dispersed by the wind.

Foxtail barley has a shallow fibrous root system. Individual plants reproduce vegetatively by forming new tillers. Foxtail barley does not have rootstocks, rhizomes or root buds. Foxtail barley is adapted to a wide range of environmental conditions, being found from Newfoundland to the Yukon. It is also established throughout most of the continental United States and has been reported in South America, Europe and Asia.

Foxtail barley is a reasonably nutritious feed (Table 1) with adequate levels of protein and phosphorous and low crude fibre levels.

Foxtail barley is not grazed by livestock after seed heads appear. The stiffly awned heads break easily at maturity and the sharp pointed fragments can lodge in the mouth, nose and eyes of livestock when the plant is consumed and can result in formation of abscesses, lumpy jaw and calf diphtheria.



Identification

Foxtail barley is a short-lived perennial weed that grows between 30 and 60 cm in height. Leaf blades are flat or rolled, six mm wide and five to 15 cm long, greenish-grey in colour with hairs on the leaf surface. The most distinctive characteristic is the seed head, which is five to 12 cm long, somewhat narrow on emergence, but nearly as broad as it is long when mature.

The awns are up to eight cm long and the colour of the seed head varies from green to slightly red when immature, to a shiny cream colour when mature. The mature seed head breaks into seven-bristled clusters, providing effective dispersal by wind or on the coats of animals.

Adaptation

Foxtail barley is adapted to a wide range of growing conditions, but is best suited to wet, fertile, non-

alkaline soils. Foxtail barley has good salt tolerance, growing on soils with 0.2-1.5 per cent salinity and conductivity ranging from six to 26 millimhos. It can be found on a wide variety of soil types (from clay to sandy loam), water tables, and from moist to arid conditions. Foxtail barley is the dominant species found in naturally occurring vegetation on saline soils in Saskatchewan. The seed has the ability to germinate in late summer, fall or spring, giving it a competitive advantage over other species. Seed viability varies from two to seven years.

Prevention

An effective way to reduce foxtail barley populations is to tailor management to favour other desirable forage species. Appropriate stocking rates and rest periods following defoliation, along with uniform animal distribution allow for vigorous forages that compete more successfully with undesirable plants, such as foxtail barley.

Cultural Control

Good management should reduce the amount of seed produced by foxtail barley and minimize recruitment of new foxtail barley plants. Mowing or grazing should occur in spring prior to seed set to maximize palatability of foxtail barley and reduce seed set of foxtail barley. A second cutting may be required in moist years to prevent seed set later in the season. To prevent the formation of viable seed, mowing should be conducted within 10 days of head emergence.

Field research has indicated that early grazing can reduce the level of foxtail barley infestation. Alternatively, badly infested areas can also be broken and seeded to a well-adapted, competitive forage species or mixture. When selecting a forage, flooding and salt tolerance characteristics should be the primary consideration (see *The Nature and Management of Salt-Affected Land in Saskatchewan* or *Saskatchewan Forage Crop Production Guide*) for details on forage mixtures for saline soils). To minimize the impact of foxtail barley:

- cultivate to kill established plants,
- seed a competitive annual crop,
- seed a competitive forage crop.

Foxtail barley often grows in low-lying and wet areas. These areas can be difficult to access for spring seeding. This problem can be addressed by planting the forages in late fall, shortly before freeze-up. Germination will occur in the spring when available moisture is favourable and salt concentrations in the soil are lower. When fall seeding, seeding rates should be increased by 20 per cent to allow for winter seed mortality.

Chemical Control

If the forage stand is heavily infested, glyphosate can be used to control foxtail barley to allow forage re-establishment. Applying 1.25-1.9 L product/ha prior to the initiation of seed-heads or senescence (aging) of the lower leaves will provide control of the weed. Do not graze treated forage for three to

five days after application, to allow for translocation of herbicide to all areas of the plant.

Some herbicides are mixed with granular ammonium sulphate (21:0:0:24) to improve results under poor growing conditions or with late application. The use of ammonium sulphate has been used with glyphosate and may prove useful when water used for application is high in Calcium or magnesium ions. See the current Guide to Crop Protection for rates of ammonium sulphate. Spray application must take place later in the spring to allow new green tissue to emerge from the clump of dead material from last season and prior to the initiation of seed head formation or senescence of the lower leaves. Always add the glyphosate after the ammonium sulphate has completely dissolved.

Kerb 50-W is registered for control of foxtail barley in established grasses, alfalfa and birdsfoot trefoil. Applying Kerb at rates of 0.9 to 1.1 kg product/ha (0.36-0.45 kg product/ac.) on established pastures will control foxtail barley. Crops should be established for at least two years before application. Application on forage grasses should occur between October 1 and freeze up. Refer to the Saskatchewan Ministry of Agriculture publication Guide to Crop Protection for further recommendations and grazing restrictions.

Stage of Growth	Av. Date Collected	Chemical Composition (%)			
		Crude Protein	Crude Fibre	Calcium	Phosphorus
Leaf	May 24	23.98	26.74	0.42	0.34
Flower	June 26	10.40	32.24	0.23	0.21