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WINTERFAT

Packed with protein for fall and winter grazing

Introduction

Winterfat is a native rangeland shrub that grows in the mixed grassland ecoregion of the Canadian Prairies. It is valuable for its high quality nutritional components that both domestic livestock and wild animals find very palatable. As a result, winterfat is preferentially grazed and can potentially be eliminated from a pasture. Overgrazing and range management strategies such as fire suppression that limit natural disturbances have resulted in decreased winterfat populations over the last couple of centuries.

Besides being a valuable forage, winterfat also functions as a deep-rooted, long-lived, drought-tolerant perennial plant, contributing to plant community structure, nutrient cycling, snow accumulation, erosion control and water infiltration

For producers interested in (re)establishing winterfat in their pasture, the following is Prairie-specific information on seed source, seed mixes and seeding recommendations based on research by Agriculture and Agri-Food Canada (AAFC) research scientist, Dr. Mike Schellenberg, at the Semi-Arid Prairie Agricultural Research Centre (AAFC-SPARC) in Swift Current, SK.

K ConnicK-Todd,
Saskatchewan Ministry of Agriculture

Latin name:
Krascheninnikovia lanata (Pursh) A. Meeuse & Smit. [syn. *Eurotia lanata* (Pursh) Moq., *Ceratoides lanata* (Pursh) J.P.Howell]

Common names:
Winterfat, white sage, winter-sage, feather-sage, sweet sage, lambs tail

Historical Use

Historically, winterfat played an important role for the livestock industry. Cattle drives from Texas to Saskatchewan in the 1800s followed the winterfat stands for forage. Early ranchers planned their winter pastures and grazing rotations based on the presence of this valuable plant.

As well as using winterfat as a winter forage for their horses, some First Nations used it to heal burns, sores, rashes and boils; treat fever; relieve sore muscles; and prevent grey hair.

At first glance, winterfat may be mistaken for sagebrush (hence its other common names) but it lacks the distinct "sage" odour when its leaves are rubbed.

Government of Saskatchewan

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Nutritional Information

Winterfat is considered a protein powerhouse for fall and winter grazing! Winterfat delivers more than enough protein and phosphorous to satisfy livestock needs throughout the fall and winter, even lactating cows, offsetting the lower nutrient levels of the dominant grasses in the mixed grassland prairie. Protein levels peak at 15% in the spring, holds steady at 14% into the fall and varies between 8% and 11% through the winter months (Figure 1). The organic matter digestibility (OMD) stays relatively constant throughout the year, between 55% and 65%.

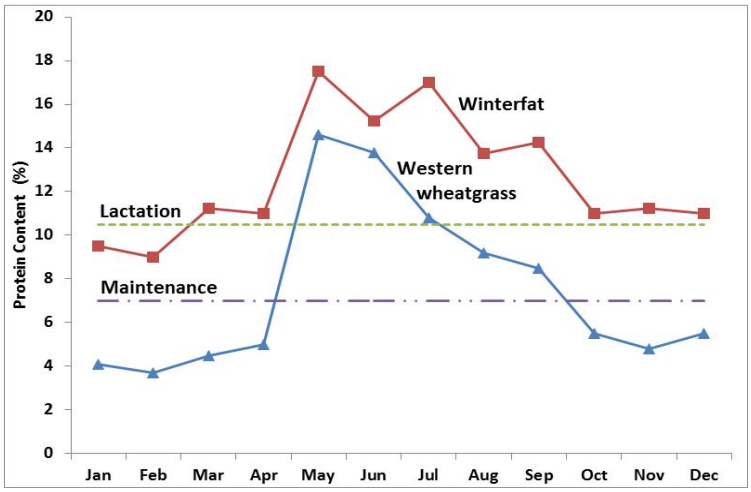


Figure 1. Protein content (%) of winterfat and western wheatgrass in relation to cattle requirements (adapted from Abouguendia 1998)

Why winterfat?

- *Excellent protein source for fall and winter forage*
- *Reduce your winter feeding costs*
- *Naturally adapted to our climate: can survive severe drought conditions and extreme cold*
- *Provides structure and snow-catch potential to your pastures*
- *Individual plants can live more than 100 years*
- *Cattle love it!*

Grazing Management

Winterfat thrives under rotational grazing systems. It has greatest productivity if grazed as a winter or early spring forage. When grazed before June, winterfat can regrow to pre-grazing size by the end of summer. If winterfat is grazed from June to August, recovery is delayed and may require a full year of rest (i.e. not grazed) to recover its full annual productivity potential. Under continual grazing, abundance and productivity declines.

Plant Description

Leaves: long (up to 4 cm), thin with rolled edge; covered with dense red or white hairs giving plant grey-green or rust-green appearance. Leaves remain on the plant overwinter, falling off in spring with the onset of new growth.

Stems: twigs are predominantly upright, grey to reddish-brown. Main branch (trunk) is grey-brown.

Inflorescence: flowers are clustered at the top of floral spikes beginning in July. The spikes are held above rest of plant. The lower female flowers are distinguished from the upper male flowers having long-hairy bracts.

Fruit ('seed'): oval, up to 5 mm long; enclosed by silky haired bracts. Approximately 1,000,000 seeds/kg. Ripens in September

Plant size: 15 – 40 cm tall; 20 – 50 cm diameter

Root system: deep taproot

Growth habit: begins in mid- to late April, peaking in late July or early August.

Natural habitat: most abundant on north slopes and dry sites. Predominantly found in wheatgrass-June grass (*Pascopyrum-Koleria*) or blue grama-wheatgrass (*Bouteloua-Pascopyrum*) plant communities, often in clay soil. Tolerates salinity.

Establishment

Seed source

Winterfat grown from locally sourced seed from the Canadian Prairies or Northern Great Plains has a better chance of establishing and surviving in Western Canada than plants grown from seed sourced from farther south. Plants grown from northern seed have high survival rates, good forage yields and produce potentially commercial quantities of seed. Securing a northern source of type winterfat seed may be a challenge however. Start by contacting seed growers specializing in native plants. The Prairie Conservation Action Plan has a list of native plant and seed vendors (www.pcap-sk.org).

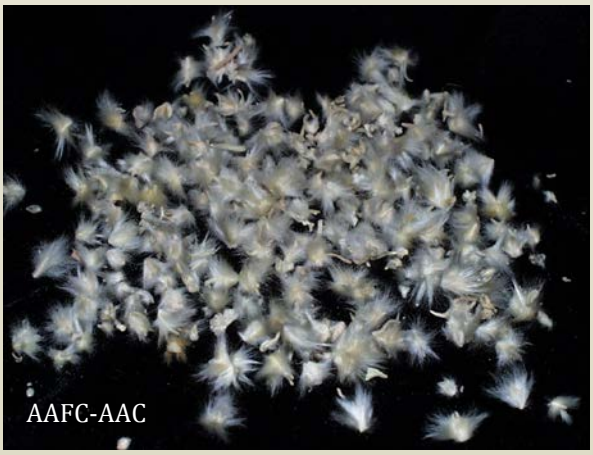
Just as important as source is freshness: winterfat seed viability can decline by as much as 50% after just one year of storage.

Note: Winterfat seed weight varies greatly among seed sources. Expect northern sourced winterfat seed to be around 1,000,000 seeds/kg (454,000 seeds/lb.).

Seed mixes

Winterfat for forage production should not be seeded as a monoculture but in a mix along with a nitrogen fixing legume and a non-aggressive grass. Research has shown that seeding a diverse plant species mixture can increase forage productivity, potentially extend the grazing season and improve stand resilience to stress caused by disease, pests, heat, drought, etc.

Seed ratios can be adjusted in the mix to suit individual needs or desired results. For best results, winterfat should make up 20 to 35% of the seeded pasture.



Winterfat seed with bracts intact

Seeding

Broadcast the seed-mix at the recommended rate of 300 pure live seed (PLS)/m^2 = ~30 PLS/ft^2. The seed should have bracts intact to improve the overall germination and higher plant establishment numbers. After broadcasting, harrow lightly to just cover the seeds. Seed should be no deeper than 6 mm (0.25 in.).

Using a seed drill is not recommended as the hairy seeds do not flow well through the drill. Removing the hairy bracts to improve flow may result in lower viability with lower germination rates and reduced plant stand establishment.

Late fall seeding is best, when the soil temperature is below freezing, to prevent germination. Sowing in late fall also reduces the loss of seed viability that occurs under storage conditions. Spring seeding is possible but must be done very early to take advantage of the early spring moisture.

For more information on recommended pasture establishment guidelines (such as seedbed preparation and weed control), refer to the Saskatchewan Forage Council's 'Successful Forage Crop Establishment' bulletin (www.saskforage.ca).

The cost of beef production can be reduced by more than 50% by wintering cattle on pasture rather than feeding them with hay. Economically, it is beneficial to have high-quality, late season forage available to extend the grazing season.

Further reading

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Romo, J.T., D.T. Booth., Y. Bai, J. Hou and C. Zabek. 1997. Seedbed requirements and cold tolerance of winterfat seedlings: an adapted forage for the Canadian Prairies. ADF Project Number 19940116. Final Report. 105 pp. (http://www.agriculture.gov.sk.ca/apps/adf/ADFAdminReport/19940116.pdf, accessed Sept. 17, 2014)

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Winterfat is considered an 'ice cream' plant: highly palatable and sought out by livestock.

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