

Russian Wildrye Lengthens the Grazing Season

S. Smoliak and A. Johnston

An introduced grass has extended the grazing season in the Northern Great Plains. Russian wildrye (*Elymus junceus*) was first tested over 50 years ago, but was not recognized as a potential pasture grass until 20 years later. Introduced from Siberia in 1926 by the University of Saskatchewan and tested at Manyberries, Alberta, in 1931, it received further testing at other research establishments. In 1949, the Research Station at Swift Current, Sask., distributed seed to growers in Western Canada.

However, somehow seed had been brought into the United States earlier because a plant specimen of Russian wildrye was sent to the National Herbarium from the experiment station at Dickinson, North Dakota, in 1913. The seed must have come either in a mixture with other grasses or under the name of some other species. Fourteen years later, in 1927, the United States Department of Agriculture introduced the same grass from Omsk, Siberia, and sent it to several experimental stations for testing. For several years, the grass was grown at Mandan, North Dakota, and in 1935 the Soil Conservation Service grew several acres of the grass. A breeding program was initiated in 1936 at the Mandan station, and in 1941, small lots of seed were sent to farmers in North and South Dakota for general use.

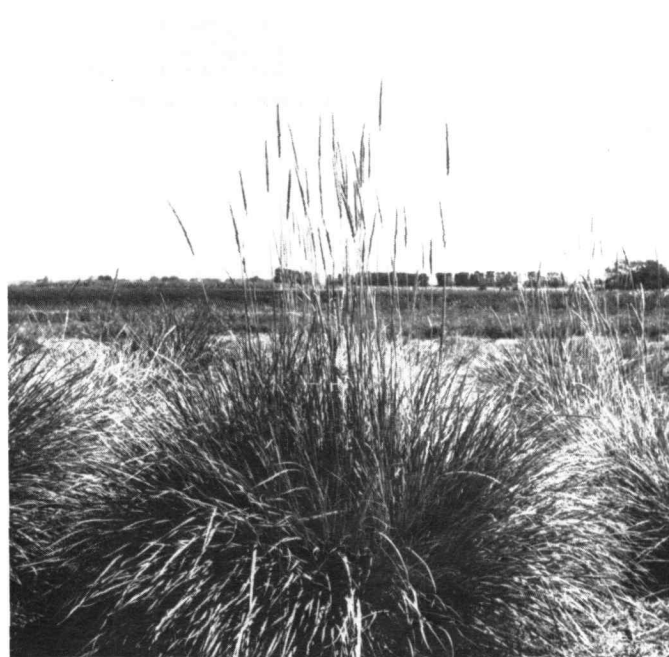
The use was restricted initially because production of seed was very erratic. In the 1950's, techniques for stabilizing the production of seed were worked out by research stations in Western Canada and the United States. Since then, it is estimated that about 250,000 acres (100,000 ha) have been seeded to Russian wildrye in the Prairie Provinces of Canada and over 750,000 acres (300,000 ha) in the U.S.A.

The native distribution is extremely wide. It grows naturally on dry, saline, and solonetz soils of the steppes and steppe slopes from Iran northward to the lower Volga River and lower Don River regions of the U.S.S.R., eastward into western Siberia, and across Asia to Outer Mongolia, where hot summers, cold winters, and low precipitation are common. It is found in areas having only 4 inches (100 mm) of rain per year. Crested wheatgrass grows in many of the same regions.

Russian wildrye is unique among grasses because of its high digestibility and long season of use. It is generally palatable through the grazing season to all classes of livestock, although its palatability is below that of smooth brome grass or crested wheatgrass in early spring.

Plant Characteristics

The grass is a cool-season, large bunchgrass with erect naked stems 24–48 inches (60–120 cm) tall, with leaves mostly basal and 6–18 inches (15–45 cm) long. The head is a dense spike with seeds that shatter readily at maturity. Plant



Russian wildrye produces nutritious, leafy growth.

color varies from light to dark green, with many shades of blue.

It is a long-lived perennial with extensive fibrous roots that may penetrate to a depth of 10 feet (3 m). The roots have a wide horizontal spread and may draw on moisture up to 5 feet (1.5 m) away. About 75% of the roots are in the upper 6 inches (15 cm) of the soil.

Adaptation

This grass is adapted to a fairly wide range of soil types in the Northern and Central Great Plains area and the Inter-mountain Region. It grows best on fine-textured soils and requires relatively fertile soils to be productive, but tolerates considerable salinity and is fairly tolerant of alkalinity.

Exceptionally tolerant of cold and drought, established it is an excellent competitor with weeds because of its vigorous soil-feeding habit and its long season of growth.

Establishment

Special attention is required when seeding Russian wildrye. Germination and emergence are slow compared to most other introduced grasses. Seedlings are slow growing and weak and require considerable time to become established. Under certain conditions, 3–5 years may be needed to establish a stand. Weeds provide great competition to the grass seedlings, which may succumb because of deep seeding, lack of soil moisture, blowing soil, and other undesirable conditions.

Authors are range ecologists, Agriculture Canada Research Station, Lethbridge, Alberta T1J 4B1.

The newly seeded stand should be allowed to develop and mature physiologically before being grazed. This stage of maturity is reached when the plants produce seed heads. Initial grazing before this stage of development may greatly reduce vigor and productivity of the plants.

Thin stands normally do not thicken because of the bunch growth form and lack of volunteering as the plants become older. Although normally seeded alone, Russian wildrye remains more productive when sown with alfalfa or other adapted dryland legumes. Lack of available nitrogen in older stands generally results in a decline in forage productivity, but this can be avoided by seeding the grass in widely spaced rows, especially in the drier areas.

Season of Use

In most areas, growth begins in spring generally a few days earlier than that of crested wheatgrass. The plants continue growth throughout the summer if moisture is available and respond quickly to fall rains. They recover rapidly after grazing when moisture is adequate.

Nutritive qualities are excellent throughout the season because of high digestibility. Protein content remains at a higher level from midsummer to winter than for other grasses grown in its area of adaptation. Digestible protein and total digestible nutrients are adequate and meet the requirements of lactating animals exceedingly well until about August. The phosphorus content is more than adequate until the flowering stage of growth. During late fall and winter, protein content remains at a much higher level than that in native grasses and is sufficient to maintain livestock.

Its early growth habit provides early spring grazing, or season-long grazing, particularly if moisture is available. However, because of its excellent curing qualities, Russian wildrye can be grazed into late fall and winter. During open winters and in areas of light snow or Chinook winds, it may furnish considerable winter grazing. In the winter, the base of the dense plant tuft often contains green leaves that increase nutritive quality.

Grazing can start in the spring whenever the new growth is 4-5 inches (10-12 cm) tall. Earlier use should be only on pastures that have considerable old growth left over from the previous year. If the area of Russian wildrye is limited, early spring use will give the greatest benefits. If not used at this time, grazing in the fall and winter is the second choice. Stands planted in wide-spaced rows are most productive. For fall and winter use, the grass should be sown in 2- to 3-foot (60-90 cm) row spacings, depending upon available moisture.

Productivity

Russian wildrye generally produces about twice as much forage as adjacent native range in good or excellent condition, depending on row spacing and the inclusion of alfalfa. As about 70% of the grass can be harvested, leaving a 3-inch (8-cm) stubble or 30% carryover, it can be grazed three to four times as heavily as adjacent native range. However, some studies have shown that when sown in widely spaced rows the pastures can be stocked up to six times as heavily as native range.

In southeastern Alberta, yearling ewes grazing Russian wildrye gained over three times as much weight per acre as on native range during a 6.5-month grazing season. The highest daily gains during the fall grazing period were obtained on Russian wildrye pastures. Yearling steer gains



Widely spaced rows increase forage production.

per acre on Russian wildrye were about six times those on native range over a 6-month grazing season.

Seasonal beef production on Russian wildrye-alfalfa pasture in southwestern Saskatchewan was highest when grazed by yearling steers for 28 days starting in early June. Beef production was lower when the pasture was grazed in early May, mid-May, or June to September. Cattle maintained their weight while heavily grazing Russian wildrye pasture over a 5-week fall-winter period. The most productive pasture was seeded in 2-foot (60-cm) rows.

In Wyoming, grazing cows and calves gained three times as much weight as those on native range, while cow-days of grazing was double that on native range. During late fall, yearling steer gains per acre and grazing capacity were two to three times as great from a combination of seeded pastures containing Russian wildrye as from native range.

Season-long grazing of Russian wildrye in North Dakota carried 44% more steers per acre and provided 47% more steer-days of grazing than native range. Beef production was 54% and dry matter production was 52% greater than from native range. When compared with native range, fall grazing of Russian wildrye increased beef production by 238% and dry matter production by 111%.

This grass initiates regrowth 5 to 20 days earlier than crested wheatgrass in Colorado. It extends the green period on either side of the summer ranges, reduces feeding costs, and provides a longer period of high nutrition for livestock. It is also recommended in Montana, Nebraska, and Utah for spring grazing, where it provides green, succulent forage.

Recommendation

In general, Russian wildrye is best when grazed during late summer, fall, or early winter because of its higher nutrient content. The uniformly high quality of the forage makes it an ideal pasture to complement native range during the late grazing season. Thus, the winter feeding period can be shortened considerably, resulting in savings in labor and overall production costs.

Land that is marginal for farming purposes, or land formerly abandoned from cultivation, can be diverted to seeded pasture. These seeded pastures lengthen the grazing season, provide for deferment and improvement of native range, supply grazing needs for special purposes and increase grazing capacity. ●