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Technical Info

Grasses

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Forage Grasses

TAME GRASSES	Hay Use	Hay Palatability	Pasture Use	Rotational Grazing	Soil Zone	Longevity	Growth Habit	Yield Production	Pasture Regrowth	Winter Hardiness	Drought Tolerance	Flood Tolerance	Salinity Tolerance	Alkalinity Tolerance	Acid Tolerance
Meadow Bromegrass	Yes	Exc.	Yes	Good	All	Long	Bunch	Apr-Oct	Good	Exc.	High	Low	Low	Mod.	Mod.
Smooth Bromegrass	Yes	Good	Yes	Fair	All	Long	Sod	Jun-Jul		Exc.	Mod.	Mod.	Low-Mod	Mod.	Mod.
Timothy	Yes	Exc.	Yes	Fair	Black	Medium	Bunch	May-Jul	Fast	Good	Low	High	Low	Low	High
Orchardgrass	Yes	Exc.	Yes		Black	Short	Bunch	May-Sep	Fast	Fair	Mod.	Low-Mod.	Low	Low	Mod.
Crested Wheatgrass	Yes	V.Good	Yes	Early	All	Long	Bunch	Apr-Jun		Exc.	Mod-High	Low	Low-Mod.	Mod.-High	Low
Tall Wheatgrass	No		Yes		Black	Long	Bunch	Jun-Jul	Slow	Exc.	Low	High	High	Low-Mod.	Low-Mod.
Intermediate Wheatgrass	Yes	Exc.	Yes	Fair	All	Short	Sod	Jun-Jul	Fast	Good	Mod.-High	Low	Mod.	High	Low
Creeping Red Fescue	No	n/a	Yes	Good	Black	Long	Sod	May-Oct	n/a	Exc.	Mod.	Mod.	Low	Mod.	Mod.
Tall Fescue	Yes	Good	Yes	Good	Black	Long	Bunch	Jun-Oct	Fast	Good	Mod.-High	High	High	High	V.High
Russian Wildrye	No	n/a	Yes	Good	Brown	Long	Bunch	Apr-Jul	Fast	Exc.	Very High	Low	Very High	High	Mod.
Altai Wildrye	No	n/a	Yes	Fall/Winter	All	Long	Bunch	Sept-Nov	n/a	Exc.	High	Low	Very High	Mod-High	Low-Mod.
Dahurian Wildrye	No	n/a	Yes		All	Short	Bunch	Year 2	V.Good	Good	Exc.	Low	High	High	Low
Annual (Italian) Ryegrass	Yes	Exc.	Yes	Good	Black	1 Year	Bunch	May-Oct	Fast	Poor	Low-Mod.	High	Low	Mod.	Mod.
Perennial Ryegrass	Yes	Exc.	Yes		Black	Short	Bunch	May-Oct		Poor	Low	Low	Low	Mod.	Mod.
Canada Bluegrass	No	n/a	Yes	n/a	n/a	Long	Sod	May-Oct	n/a	Exc.	Mod.	Low	Mod.	Mod.	Mod.
Kentucky Bluegrass	No	n/a	Yes	Good	Black	Long	Sod			Exc.	Mod.	Mod.	Low	Low	Low
Meadow Foxtail	No	n/a	Yes		Black	Long	Bunch	Apr-Oct		Good	Low	High	Low	Mod.	High
Pubescent Wheatgrass	Yes	Good	Yes		All	Med.	Sod	May-Aug		Good	Mod.-High	Low	Low-Med.	Mod.	Low
NATIVE GRASSES															
Slender Wheatgrass	Yes	n/a	Yes		All	Short	Bunch	Jun-Jul		Good	Mod.	Low	High	High	Low
Western Wheatgrass	Yes		Yes	Jul-Oct	Brown	Long	Sod	Apr-Oct		Exc.	High	Mod-High	High	High	Mod.
Northern Wheatgrass	No	n/a	Yes	Fall/Winter	Brown	Long	Sod	Jun-July		Good	Very High	Mod.	Mod.	Mod.	Low
Awned Slender Wheatgrass	Yes		Yes	n/a	Black	Short	Bunch	Jun-Jul		Good	Mod.	Low	High	High	Low
Streambank Wheatgrass	Yes		Yes	n/a	n/a	Long	Sod	Jun-Jul		Good	Very High	Mod.	Low-Mod.	Mod.	Low
Reed Canarygrass	Yes	Very Good	Yes	Fair	Black	Long	Sod	Apr-Jun		Good	Mod.	Very High	Low	Mod.	Mod.
Needlegrass	No	n/a	Yes	n/a	All	Long	Bunch	Jun-Jul		Good	Mod.	Mod.	Low-Mod.	Mod.	Mod.

Annual Ryegrass

General Description

Annual ryegrass is primarily used for hay and silage production. It is a cool season bunch-grass with very shallow, dense roots. It is often grown for green feed and the regrowth is utilized for grazing.

Usage

Hay: Westerwold annual ryegrass is best suited to hay production because of its taller growth characteristics.

Pasture: Italian type annual ryegrass is well suited to pasture production. It will stay leafy later in the season and is well suited to grazing or stockpiled fall and early winter pasture.

Adaptation

Annual Ryegrass is best suited to the Grey and Black soil zones of the prairies. It is very productive under conditions of high fertility and moisture. Its production peaks in late July to early August. It is somewhat tolerant to drought and handles wear well. It handles shade and compacted soil moderately well.

Limitations

Annual Ryegrass does not establish well and as a result it produces later in the season. It is not very competitive and requires good weed management. It is somewhat tolerant to drought and does not overwinter in Canada.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Millet

General Description

Millets are an annual grass best suited for swath grazing and forage production. Millets come in three different types: Crown (Proso), Siberian (Foxtail), and German (Foxtail). The foxtail Millets are taller, later maturing, and well suited for forage production. If an earlier seeded crop has failed, Crown Millets rapid maturity makes it an excellent emergency forage crop. It is often referred to as “60 day hay”.

Usage

Hay: Millets are best suited to emergency hay production and swath grazing. It will resist weathering in the swath due to its waxy coating. Millet should be cut at the boot or early heading stage. After heading foxtail millet will develop sharp bristles which may cause lump jaw and eye irritation. Millet is hard to dry down for green feed production.

Pasture: Millets are not suited to pasture production.

Adaptations

Millet is best used as an emergency hay crop late in the season due to its rapid maturity. It has good drought tolerance and does not require high levels of fertilizer. It should be grown on warm, well drained soils. It is best suited to swath grazing because of its resistance to weathering. Millets need to be planted into soil with a temperature of at least 15°C. They can be used for silage but their high moisture content requires some dry down before chopping.

Limitations

Millets do not do well under cool, wet conditions. Seeding into cool soil can drastically reduce yields and emergence. They are not useful for grazing as the plants are easily uprooted and they are not recommended for feeding to horses. They can also be hard to dry down for green feed. Nitrate accumulation can occur if the plant is exposed to stressful growing conditions. Quality is sharply reduced after heading. Millet is not very competitive and weed control is critical.

Smooth Bromegrass

General description

Smooth bromegrass is best used for hay production when mixed with alfalfa. It is the most widely cultivated grass species in Canada. It is a cold season grass that produces its vegetative growth in early spring. Smooth brome is also a sod-forming grass which means it will send out rhizomes from the main shoot which will form new grass shoots.

Usage

Hay: This high yielding grass is best suited to hay production. Although it is very aggressive in a mixture it tends to establish itself slowly which makes it suitable in a mixture with alfalfa. Alfalfa also provides the grass with much needed nitrogen. Aggressive fertility can maintain high yields for up to 10 years.

Pasture: Smooth bromegrass is commonly used in Canada for pastures. Growth is early in the spring when the plant is palatable. Because of Its sod forming characteristics, it is fairly resistant to overgrazing.

Adaptations

Smooth bromegrass thrives best on moist black or grey soils but is adapted to a wide range of soil conditions. It can withstand some drought and temperature extremes and is winter hardy. It can also be adapted to irrigation or dryland situations. It is somewhat tolerant of saline and acid soils and is fairly tolerant of alkaline soils. In dry summer periods in becomes dormant until the return of cool wet fall conditions.

Limitations

Even though smooth bromegrass is widely used grass in the Prairies it has several limitations. Light narrow seeds bridge easily in seeding equipment, so an agitation device or mixing with fertilizer is usually recommended to solve the problem. Full yields are usually not realized until the second or third year of production. Once a stand is mature and established it can become root bound as the growth of rhizomes increases tillering until the stand becomes unproductive. The rhizomes also make it difficult to eradicate by cultivation.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Meadow Bromegrass

General Description

Meadow bromegrass is best suited to pasture use but can be used for hay when mixed with a legume. It is a long lived perennial bunchgrass and contains some of benefits of smooth bromegrass and orchardgrass. It has faster recovery time and offers better fall growth than smooth brome. The grass can extend the prime grazing season and is very compatible with alfalfa. It also has better stand life as it does not become root bound like smooth brome.

Usage

Hay: When grown alone or in a mixture with a legume meadow bromegrass produces excellent hay. It is very palatable to all animals and is less aggressive than smooth brome therefore maintaining a better balance in grass – alfalfa mixtures. Good fertility will produce good results especially when the yields decline due to the age of the stand.

Pasture: Meadow bromegrass is well adapted for pasture use. It starts growth earlier in the spring than most other grasses and is ready for grazing at an earlier date. Its strong regrowth and good seasonal growth pattern make it an excellent choice for pasture. Grazing can begin when the plant reaches 20-30 cm high. Grazing should be stopped at a height of 8-10 cm. A 3-4 week regrowth period should be observed to maintain maximum production and stand life. About 15cm of regrowth is needed in the fall to ensure adequate food reserves for next spring growth. Solid stands provide strong competition to annual and perennial weeds.

Adaptations

Meadow bromegrass is adapted to the same conditions as smooth brome. Seedlings are vigorous and are easy to establish on well prepared seedbeds. It can be grown under dryland or irrigation conditions.

Limitations

Meadow bromegrass is slower to establish than smooth brome and is susceptible to spring flooding. It is also susceptible to aphid infestations.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Altai Wildrye

General Description

Altai wildrye is best suited for use in pasture. It is a winter hardy, drought tolerant, long lived perennial. The plant is generally a bunch type but the roots are somewhat creeping. The well developed root system is unique in that it can penetrate 3-4 m deep and can use moisture from that depth.

Usage

Hay: As with Russian wildrye most leaves are basal, making the forage difficult to harvest. Altai wildrye is not recommended for hay use.

Pasture: Altai wildrye is best suited to pasture production. It has a long period of growth that starts early in spring and continues into late fall. It recovers quickly after grazing if moisture is adequate. Although the growth is coarse, cattle and sheep find it very palatable. It has the ability to maintain high nutritive value throughout spring, summer and fall. It is especially useful in winter months as the stiff basal leaves remain erect in deep snow forming a bridge across the plants and making the plant accessible to grazing animals. It produces better quality forage than most other species at both the flowering stage and the mature or cured stage. To increase production, include alfalfa and seed in alternate rows or in a cross seeded pattern.

Adaptations

Altai wildrye is best adapted to the brown and dark brown soil regions of the prairies as a pasture grass. It grows best in areas where rainfall amounts to approximately 12 inches per year although its root system can utilize water from a depth of 9-12 feet. It is also very saline tolerant.

Limitations

Even though Altai wildrye has large seeds that can emerge from greater depths than other grasses, shallow seeding is recommended. The seedlings are poor competitors and need time to establish. It is for this reason that a clean seedbed is very important. Weeds should be destroyed by cultivation or herbicide before seeding. Once beyond the 3 leaf stage, another herbicide application may be needed to ensure proper establishment. Once established, Altai can compete very well with most weeds. Routine grazing should not begin until the plant has matured and set seed.

Seeding rate: See Chart in the Forage Agronomic Guide.

Russian Wildrye

General Description

Russian wildrye is best suited for pasture production. It is a large bunchgrass that is a long lived perennial. It has an abundance of long, dense, basal leaves and has high digestibility and long season of use. It has early spring growth and provides excellent spring pasture. Seed germination is high and the seed remains viable for 5 to 6 years. Its fibrous roots may penetrate up to a depth of 6-9 feet with 75% of the root mass being in the top 6 inches of soil.

Usage

Hay: Russian wildrye is not recommended for hay because of it basal leaf growth which is hard to pick up.

Pasture: Russian wildrye is best adapted for use as pasture in dry areas and established stands are more or less permanent. It is very palatable and has a longer growing period than most dry land grasses with the ability to cure on the stem. These attributes allow for an extended grazing season. It is very tolerant of grazing and regrows quickly after clipping. It is frequently best to graze this grass lightly in the spring and save most growth for late summer and fall when other grasses are unproductive and low in quality. Yields are increased by seeding mixtures with legumes and wide row spacing. Seed the legumes in alternate or cross-seeded rows.

Adaptations

Russian wildrye is best adapted to loam, clay and drier parts of the black soil zones on the prairies. Although well adapted to all soils it grows best on fertile loam soils and does poorly on soils with low fertility. It is exceptionally tolerant of cold and drought, highly tolerant of salinity, and fairly tolerant of alkalinity. Russian wildrye can be grown successfully wherever crested wheatgrass is grown, but is primarily a pasture grass.

Limitations

Russian wildrye requires special attention during the seeding year as it is hard to establish. The plants should be allowed to set seed before grazing to ensure good establishment. It does not tolerate spring flooding and is generally not well adapted to cool and moist areas.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Crested Wheatgrass

General Description

Crested wheatgrass is best suited for pasture production. It is a very important cultivated grass in Western Canada. It is an extremely long lived bunch-grass, is very winter hardy and has an extensive fibrous root system. The root system gives the plant excellent drought tolerance. Its growth is rapid and steady from mid April to late June and ends by mid July when the seeds start to ripen. Seeds shatter soon after maturity and seedlings volunteer readily.

There are two main types of Crested Wheatgrass.

- *Fairway or Diploid type:* fine leaves and stems, smaller seeds.
- *Standard or Tetraploid type:* shorter lifespan than diploid in black soil zones, but remains greener under drought stress than diploid.

Usage

Hay: Crested wheatgrass compares well with other grasses in the hay category but deteriorates quickly in yield and quality after heading. It also dries very rapidly after cutting. Although the grass is very competitive, the strong bunch habit growth allows space for legumes to grow. It is for this reason that a legume is often mixed with the grass. Regrowth after cutting is very poor.

Pasture: This grass is best suited to pasture use as established stands are more or less permanent. It is very tolerant of grazing and early spring growth is the most palatable. It becomes dormant and less palatable in the heat of summer and some regrowth occurs in fall if good moisture conditions are present.

Adaptations

Crested wheatgrass is best suited to the drier areas of the brown, dark brown, and black soil zones of the prairies. It does well on most good soils but is also noted for its ability to establish on sandier soils. It is best suited to dry conditions, close grazing and trampling, and competes well with other grass species. It is also fairly tolerant of alkalinity. The seeds remain viable for long periods until adequate moisture is present, and it responds very well to nitrogen applications.

Limitations

Crested wheatgrass is generally not adapted well to the grey or moist black soil zones of the prairies. It tolerates only short periods of spring flooding and is intolerant of high water tables. It has fair tolerance to alkali salts and acidity.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Intermediate Wheatgrass

General Description

Intermediate wheatgrass is best suited for pasture production but can be used for hay when mixed with a legume. It is a short-lived sod forming perennial. It begins growth in early spring and has heavy basal leaf growth habits. The seed is much larger than smooth brome and is easily seeded. It has a deep-feeding root system as well as creeping root stalks. It is a very aggressive sod-former under irrigation and appears more as a bunch grass under dryland conditions.

Usage

Hay: Intermediate wheatgrass by itself or in a mixture with legumes produces good yields of high quality hay. It is best suited to seeding with alfalfa as it is not quite ready to flower when the alfalfa is ready to cut. For this reason the cut of hay is of excellent quality.

Pasture: Intermediate wheatgrass is a useful pasture crop as it outyields smooth brome and crested wheat in many areas. It is rated as one of the best pasture grasses as it produces excellent pasture yields and adds fibre to the soil. It provides excellent pasture from early spring to late summer and is palatable to all livestock. It does not freeze back with an early frost and can be used for fall pasture when moisture is good. Regrowth is better than smooth brome and most growth is produced in early spring and summer.

Adaptations

Intermediate wheatgrass is best suited to the well drained, fertile soils of the black soil zone and moister portions of the dark brown soil zone. In general it does well where bromegrass does well. It grows well on irrigation especially if seeded with a legume. In drier areas it performs better than smooth brome or crested wheat for the first three years, and then productivity declines.

Limitations

Intermediate wheatgrass is short-lived and good pasture stands are hard to maintain for more than six years. It can suffer winter kill after dry conditions in the fall and does not tolerate salinity or poor drainage. It is also less competitive with weeds than crested wheatgrass.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Pubescent Wheatgrass

General Description

Pubescent wheatgrass is very similar to intermediate wheatgrass except for the following:

- It has short stiff hairs present on the heads and seeds.
- Longer lived.
- More drought tolerant.
- More winter hardy.
- Ability to spread by rhizomes.
- Ability to stay green in summer months when moisture is adequate.
- Better adapted to low fertility soils, alkaline soils and areas of low rainfall.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Slender Wheatgrass

General Description

Slender wheatgrass can be adapted for both pasture and hay production. It is a short-lived perennial bunch grass and is widely distributed in Canada. It has dense fibrous roots with outstanding first-year vigour. A consistent character is also the reddish or purplish color of the stems near the base. The seed is large and easy to seed in conventional seeding equipment.

Usage

Hay: When used for hay, it should be seeded with longer lived grasses to take over as the slender wheatgrass dies out. The yield increases during the first two to three years after seeding. Overall it produces good quality hay with high yields.

Pasture: Slender wheatgrass begins growth relatively early in spring and produces an abundance of palatable forage for all classes of livestock. It cures well and can be used for good winter grazing. It is not resistant to close grazing and heavy grazing reduces the stand quickly. It is useful in mixtures with sweet clover for pasture in rotation with annual crops as both species are short-lived.

Adaptations

Slender wheatgrass is adapted to a wide range of soils but prefers sandy loam soils. It is less drought resistant than crested or western wheatgrass. It is very tolerant of alkali soils.

Limitations

Slender wheatgrass is relatively short-lived and stands decrease rapidly after 3-4 years. It is relatively competitive with weeds and is shade tolerant. It usually matures late enough to be severely affected by drought. It is limited to soils with good moisture but does not tolerate waterlogged conditions. It is best adapted to the moister parts of the prairies.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Western Wheatgrass

General Description

Western wheatgrass is well adapted for use as pasture or hay; however care should be taken not to overgraze it. It is a long lived sod-forming perennial. It has a well developed fibrous root with both surface roots and deep roots. It is well adapted to survive drought and take advantage of light rains that only soak the surface. Plant growth is vigorous and the entire plant is covered with a grayish bloom which gives it a distinct colour.

Usage

Hay: Western wheatgrass produces leafy and highly nutritious hay which is the standard for range hay. As yields are highly dependent on spring moisture, it produces excellent yields on spring flooded sites.

Pasture: Western wheatgrass grows from spring to fall and is palatable to all livestock. When mature it becomes coarse but cures well on the stem and provides good winter grazing. Heavy grazing during the growing season may result in the death of many plants and it will disappear if not managed properly.

Adaptations

Western wheatgrass is adapted to many soil types but prefers heavy and somewhat alkaline soils of shallow lake beds or along areas that receive excessive spring runoff. It is common in the brown and dark brown soil zones in a pure stand or mixed with other grasses. It can grow on heavy clay soils and through thick layers of silt, and it can withstand considerable flooding. It is also winter hardy and drought tolerant.

Limitations

Western wheatgrass is slow to develop and new stands appear to be a failure. However the plants spread rapidly through creeping roots and the desired cover is achieved in the second year.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Northern Wheatgrass

General Description

Northern wheatgrass is best for pasture production but it can be used for hay. It is closely related to western wheatgrass except for the following:

- Three way root system: creeping underground root stalks, very dense shallow root system, and a few deep penetrating roots. This root system increases tolerance to drought.
- The long creeping roots enable the plant to withstand heavy graving.
- It is adapted to a wider range of soil types than other wheatgrasses, and can be found growing from sand dunes to heavy alkaline areas.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Tall Wheatgrass

General Description

Tall wheatgrass is best suited to pasture production in poorly drained soil and can also be used as hay. It is a tall, coarse, late maturing bunchgrass. Its greatest benefit is its ability to thrive in saline soils where foxtail barley is the dominant grass.

Usage

Hay: Tall wheatgrass makes fair quality hay and can be used successfully for silage. High yields are produced when cut before or shortly after heading and is readily eaten by sheep and cattle.

Pasture: Tall wheatgrass provides a long grazing season due to its late maturity but is not as palatable as other wheatgrasses. It is best planted in pure stands and grazed heavily to maintain vegetative growth.

Adaptations

Tall wheatgrass is especially tolerant of saline soils and imperfectly drained alkali soils. It can survive up to 5 weeks of flooding and prefers land with high water tables. The ability of the grass to grow in such conditions makes it useful for reclaiming these areas.

Limitations

Tall wheatgrass does not germinate well, develops slowly, and the young seedlings compete poorly with weeds. It is not drought tolerant and does not live long under dry conditions. The newly established plants need to be protected for one year and should be allowed to mature and set seed before haying or grazing.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Timothy

General Description

Timothy is best suited to hay production but can be adapted for pasture use. It is a perennial bunchgrass with shallow, fibrous roots. It does well on moist or acid soils, and on poorly drained, peaty, and meadow areas.

Usage

Hay: Timothy is best suited to hay production. Its growth is erect, it is easy to harvest, and normally produces full yields in the first year. It is ideal for mixing with alfalfa, alsike and red clover. To maintain high quality it must be harvested before the bloom stage. The application of fertilizer, especially nitrogen, increases both yield and protein. It has been the standard hay for horses and is popular because it seldom lodges, and is easily cured into bright clean hay, free from dust and mold.

Pasture: Timothy is relatively short-lived and stands are soon depleted unless reseeding takes place. It produces a loose sod that is easily weakened if overgrazed. The main growth occurs in early summer and the tall shoots are easily overgrazed. Pasture rotation is critical to compensate for decreased late season growth.

Adaptations

Timothy is adapted to cooler, moister areas and is very tolerant of acidity. It can withstand some spring flooding and does well on water logged soils. It is winter hardy, does well under a wide range of conditions, and is mostly free from problems caused by insects and diseases. Seedling vigour is good and establishment is usually rapid.

Limitations

Timothy's major limitation is its lack of drought tolerance and susceptibility to heat stress. It does not tolerate salty or alkaline conditions. Its small seed size necessitates very shallow seeding. It should not be cut or grazed during the two week period before the heads emerge as this is a critical stage in the plants growth cycle and greatly weakens the plant.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Orchardgrass

General Description

Orchardgrass is best suited to pasture production and can be adapted for hay production. It is a medium to long lived perennial bunch grass with a deep fibrous root system. It is best adapted to warm, moist areas.

Usage

Hay: Orchardgrass grows tall for easy harvesting and a full yield is produced the first year. Its bunch growth habit allows for mixture with legumes with the proper seeding rates. It has excellent regrowth characteristics.

Pasture: Orchardgrass is best suited to pasture production because of its rapid regrowth. It begins growth early in the spring, which gives excellent yields and regrows during the hot summer months when other grasses have slowed down in growth. As it is very palatable, prevention of overgrazing is difficult unless it is grazed in rotation. It does not tolerate very close grazing as its main food storage is located in the lower portions of the plant.

Adaptations

Orchardgrass is best adapted to moist and warm climates and thrives on well-drained land. It responds very well to high fertility and is somewhat tolerant to acid soils. It has good drought tolerance because of its extensive root system.

Limitations

Lack of winter hardiness is the largest limitation of orchardgrass. Newer winter hardy varieties are preferred to successfully grow in Western Canada. A good snow cover or relatively warm winter is required for it to over-winter. It requires soil with good drainage. It can withstand short periods of drought but a prolonged dry period will kill it. It is moderately tolerant of salt and does not do well on alkaline soils.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Kentucky Bluegrass

General Description

Kentucky bluegrass is best suited for use in lawns and pasture production. It is a long lived perennial sod forming grass. Its root system is extensive, finely branched, and forms a dense, resistant sod. It is a major component of most home lawns and recreational mixtures.

Usage

Hay: Kentucky bluegrass is not well suited to hay production as most of its growth is basal in nature.

Pasture: Kentucky bluegrass provides palatable pasture when grown under moist, cool conditions. It can withstand grazing very well, but if kept extremely short production becomes restricted. When underutilized and not mowed it can be overrun by weeds and brush. However, over or undergrazing for short periods is not harmful.

Adaptations

Kentucky bluegrass grows best in a cool, humid climate. Although it goes dormant during dry weather it can survive severe drought. It needs large amounts of N during periods of the most active growth and P is also important. It is adapted to a wide range of soils but does best on highly productive limestone soils.

Limitations

Kentucky bluegrass usually requires more moisture than is available on the prairies. It goes dormant during dry, hot weather which can lower production in the hot summer months. It does well in irrigated areas (lawns) and is intolerant to acidity and salinity. It is slow to establish, but once established it is very aggressive.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Creeping Red Fescue

General Description

Creeping red fescue is best suited to be used as a turf or lawn grass and can be used as a pasture. It is a hardy, long-lived perennial, sod forming grass with a vigorous fibrous root system. It is a major component of most home lawns and recreational mixtures.

Usage

Hay: Creeping red fescue is not suited for hay production as its growth is basal and yields are low.

Pasture: Creeping red fescue is well suited to pasture production and has as many advantages in moist areas as Russian wildrye has in dry areas. Seedlings are vigorous, readily established, and exhibit good growth from spring to freeze up. It should be grown with a legume to improve yield and quality. It is very tolerant to close grazing but if subjected to overgrazing yields will be lowered. Its leaves retain nutritive value and color even after freeze-up. Moderate grazing after seed harvest will increase yield for the following year.

Adaptations

Creeping red fescue does best in high rainfall areas in the grey luvisol and black soil zones. It does well under irrigation and tolerates spring flooding and some water logging. It is fairly tolerant to drought and low fertility soils. It is very tolerant of acidity and somewhat tolerant of salinity. It is also well suited to prevent erosion in irrigation ditches, highway, and railroad right of ways.

Limitations

Creeping red fescue is not suited to the brown soil zone and other areas where moisture is a limiting factor. It is very susceptible to snow mold, winter crown and root rots.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Reed Canarygrass

General Description

Reed canarygrass is well suited to pasture and hay production. It is a tall, coarse, long lived perennial that spreads underground by short, scaly rhizomes to form a heavy sod. It is well suited to very moist soil conditions.

Usage

Hay: Reed canarygrass is exceptionally high yielding for hay. Low quality hay is frequently made because it is usually grown alone or in areas too wet to harvest until late in the season. It should be cut before the heads emerge for best quality. Heavy applications of fertilizer, especially N, are required because of high yields and a usual lack of a legume companion crop.

Pasture: Reed canarygrass is well suited to pasture because of early growth, high yield, and good regrowth. Due to its low palatability it needs to be fenced separate so that the livestock are forced to eat it. Livestock do well on the grass when forced to eat it. To maintain good quality it should not be allowed to get more than a foot high. It is intolerant of close grazing and should not be clipped to below 3 inches. Controlling its height makes it possible to include a legume except on very moist areas.

Adaptations

Reed canarygrass is a useful forage because of its ability to withstand ponding, waterlogged soils, and very moist conditions. It is somewhat tolerant of acidity and alkalinity and tolerates some drought.

Limitations

The main limitation of reed canarygrass is seed shattering and problems with seed production. The seed has slow germination and its oily seed coat limits its storage time. Although easily established it does take two years to become fully established. It is not tolerant of salinity and for this reason it is not well adapted to planting in sloughs. It tends to winterkill if there is limited snow cover. The alkaloids in the grass have been shown to somewhat limit animal gains in certain instances.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Meadow Fescue

General Description

Meadow fescue is ideal for pasture production. It is a hardy, short-lived perennial with succulent basal leaves and a large number of tough coarse roots. It is generally considered a grass of minor importance.

Usage

Hay: Meadow fescue makes good quality hay but because of its basal growth it is primarily recommended as a pasture crop.

Pasture: Meadow fescue is best adapted for pasture because it is ready for grazing in early spring and continues to grow into late fall. It makes good late fall pasture which stays green until winter. It can tolerate fairly heavy fall grazing and winter grazing. It should be mixed with a legume since other grasses are grazed in preference to it.

Adaptation

Meadow fescue is best adapted to a heavy, well fertilized soil. It is fairly hardy after its first winter and is tolerant to acidity. It can be grown wherever timothy is grown but is more heat and drought resistant. It is adapted to moist areas and irrigated pastures. It plays an important role in soil conservation and can be used in mixtures to prevent soil erosion.

Limitations

Meadow fescue requires one full growing season to become established. It does not tolerate heavy grazing and needs long rest periods in between grazing. It needs high fertility to achieve good production. It is also highly susceptible to leaf rusts.

Seeding rate: See Chart in the Forage Agronomic Guide.

See Forage Adaptation Chart in the Forage Agronomic Guide.

Perennial Rye Grass

Description

A relatively short lived perennial bunchgrass with a shallow root system, mainly used in pastures either in pure stands or in mixtures. Stems can reach between 30 and 60 cm in height and are nearly leafless. Its basal leaves are dense, dark green, glossy and folded when young. It is a diploid plant with 14 chromosomes; it crosses readily with each other obtaining a natural hybridization that has resulted in intermediate types also known as Common Ryegrass. Controlled hybridization has resulted in Tetraploid types that are higher yielding, recover faster after cutting, are highly palatable, have more vigorous seedlings and show some resistance to rust.

Usage

Hay: Because of its basal leaves and its short growth habits Perennial Ryegrass is better suited for use in pastures. However it can be included in small amounts in a hay mixture as it is quick to germinate and establish. This trait makes Perennial Ryegrass an excellent choice for a Companion/Nurse crop. It will provide enough production to get a cut of hay or haylage as soon as the plants shed their pollen; when cutting you must ensure there is at least 3 – 4 inch stubble.

Pasture: Perennial Ryegrass is best suited for pasture usage as it offers rapid establishment with strong seedling vigour, high yields, excellent palatability and good regrowth after defoliation. Newly seeded pasture can be grazed within six to eight weeks after seeding to allow for proper root development.

Adaptation

The shallow fibrous root system of Perennial Ryegrass limits its adaptability to the moister areas of the Grey Luvisol, Black and Moist Black soil zones as well as irrigated areas of the Prairies. It is adapted to a wide range of soils including heavy clay and poorly drained soils, and prefers medium to high fertility. Sometimes it is considered a wetland grass, however, production declines as drainage gets poorer.

Limitation

Production decreases when temperatures rise and moisture decreases in July and August. Even though it has a high moisture requirement, it will not tolerate flooding during the growing season.

Winter survivability is also low in the prairies as cold temperatures can be very extreme in these areas, making it a short rotation or short lived perennial.

Perennial ryegrass is not a Dryland grass and is not well adapted to areas with extreme cold, heat or drought.

Meadow Foxtail

Description

A long lived perennial with a few short rhizomes that produce an even sod. In the early stages of the stand, meadow foxtail starts as a bunch grass, and develops into a dense sod with time. Erect flowering stems can reach a height of about 90 cm. Heads can easily be mistaken with those of timothy, however, the tapering of the tip of the seed head, which resembles the tail of a fox, helps in differentiating the two species.

Usage

Hay: It is suitable for hay production, but it tends to lodge and yields are lower than those of reed canarygrass and timothy. Quality is very similar to those two. Meadow Foxtail starts growing very early in the season, making it possible to hay by mid June. Under favorable moisture conditions and proper fertilization two cuts of hay are possible, as it is a fast regrowing grass, making it a good option to include in hay mixtures.

Pasture: Meadow Foxtail is an excellent choice for those areas that tend to be wet in the spring and annual work is difficult and a permanent cover is required. It is one of the earliest grasses to start growing in the spring, and often provides enough growth for pasture by mid May. Being best adapted to the moister areas of the prairie provinces as well as areas with enough irrigation water source, it can provide growth throughout the whole growing season and under proper rotation systems, it can provide producers with enough pasture for the season. Animals should be removed from paddocks once plants are at about 4 inches in height. Because it is a fast regrowing grass, animals will be able to be back at that paddock in a short period of time.

Adaptation

Meadow Foxtail is a very hardy grass adapted to the cool moist conditions found in the grey luvisol soil zones of the Prairie Provinces. Its ease of establishment can provide a full crop the year of seeding. It is second to Reed Canarygrass in flooding tolerance, and prefers fields with a high water table and cool conditions which makes it an ideal choice for peaty soils. It also thrives on clay and loam soils in the high moisture areas of the prairies. Because of its flully, small seed size, a well prepared seed bed is necessary in order to achieve best establishment rates.

Limitation

Meadow Foxtail is very intolerant of drought and prolonged periods of very hot weather. It can survive, but will not produce well in areas of moderate moisture amounts or areas that experience long periods of dry weather. Seed is very light and fluffy, making it difficult to harvest. This can create scarce and expensive seed stocks. Seed is hard to plant with conventional equipment and needs to be coated to provide some weight thereby making seeding a little easier.

Tall Fescue

Description

A deep rooted, long lived, bunch type perennial grass with short underground stems that can create an even sod in a thick stand with mowing or grazing. Roots are tough and coarse, and have the ability to penetrate to a depth of at least 5 ft. in moist soils. Tall Fescue can be distinguished from Meadow Fescue by its greater height, broad leaves and the deep green upper leaf surfaces which are prominently ribbed and rough. It also is longer lived and with a deeper root system than Meadow Fescue.

Usage

Hay: Best results are achieved when Tall Fescue is properly fertilized and grown in a grass legume mixture. When grown in a pure stand, Tall Fescue is hard to hay as it has predominantly basal leaves. Best feed quality is achieved when plants start to head, and should not reach flowering stage. Its regrowth can provide excellent late summer or fall pasture.

Pasture: Tall Fescue is best suited for pasture and it produces abundantly under good moisture and fertility conditions. To maximize animal intake, it is recommended that it is grazed when plants are young and succulent. As plants age, palatability declines and will have an affect on animal intake. Tall Fescue grows well throughout the season, and can also be used as stockpiled pasture as when there is a killer frost, plants tend to maintain their green color and remain high in nutrients.

Pure stands of Tall Fescue can be risky as animals may not perform as well as if it was seeded in a mixture with legumes. Nutrition deficiencies in animals grazing pure stands of tall fescue may be more noticeable in late spring or early summer, especially under high moisture conditions. It can also pose the risk of fescue poisoning due to the possible presence of endophytes. However, new and improved forage type varieties have been developed to contain low levels of endophytes.

Adaptation

Tall Fescue is an amazingly tough plant, that will perform best under cool weather conditions. It is tolerant of alkalinity, salinity, acidity, flooding, as well as being one of the most drought tolerant grass species available in Western Canada. It can also provide an excellent sod formation that provides growers with a thick turf making it an ideal grass for airports, playgrounds, waterways, eroding gulleys and many other areas that require a sod forming, persistent, deep rooted grass.

Its deep fibrous root system makes it a great choice for soil improvement, especially in heavy soils where it can open up the soil below the 6 inch mark. It also provides the soil with high amounts of organic matter as there is a partial renewal of the root system every year.

Limitation

Tall Fescue is a great option to use in almost any soil type and field condition, as well as in any type of operation, but as a seedling it is slow to establish and requires a full season for this to happen.