Perennial Cool-Season Grasses for Hay in the Midwest

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Cool-season perennial grasses are of great importance in beef and dairy cattle production. They have higher fiber digestibility than alfalfa and provide many ecosystem services (i.e., reducing soil erosion, sequestering soil carbon). Most importantly, they remove excess nitrogen (N) and phosphorus (P) from the soil, especially when manure has been applied, preventing losses of N by leaching or volatilization and soluble P by run-off. Cool-season perennial grasses can provide very high-quality forage for hay and silage, in both monoculture and alfalfa mixtures.

Unfortunately, high-quality cool-season grasses commonly grown in the South are not as winterhardy in the North. If they survive, they have very short persistence (ability of a perennial to be long-lived). However, the most persistent cool-season grasses are usually not the best in forage yield, forage nutritive value, and ability to regrow after a cutting.

Smooth brome is one of the most common cool-season grasses in the North Central states. It is very winterhardy and palatable, but has several negative characteristics. About 60-70% of its yield is in the first cutting, providing very little forage the rest of the season. It is vigorously rhizomatous, encroaches the pasture, has low tolerance to heat, and should not be cut during stem elongation or heading to prevent a reduction in tillering. Recommended hay cutting stage is in anthesis (flowering). **Meadow brome** has better regrowth. Its rhizomes are shorter than and not as vigorous as smooth brome's, so it is less invasive and has better heat and drought tolerance.

Tall fescue is very persistent under frequent short grazing and heavy traffic, but most common varieties are not very cold-tolerant. It is usually less palatable than other grasses; however, newer varieties with softer leaves are available. It naturally contains an endophytic fungus, producing toxic alkaloids for cattle. Newer, improved varieties are "endophyte free" or have a novel endophyte not toxic to animals.

Meadow fescue is more cold-tolerant, does not contain toxic endophytes, and has higher fiber digestibility and better nutritive value than tall fescue, but has 20-30% less yield. It is adapted to a wide range of soils and conditions where other grass species struggle.

Orchardgrass is a highly productive bunchgrass that regrows quickly after a cutting. Unfortunately, it is not very cold-tolerant, has short persistence in Northern climates, and dislikes poorly drained soils. It has very good nutritive value and high fiber digestibility. It can be used in mixtures with alfalfa. Choose a late-maturing variety if it will be used in alfalfa mixtures. Select a variety with resistance to leaf rust.

Perennial ryegrass has very high nutritive value, high palatability, and is probably one of the highest-energy forage grasses available. It recovers rapidly after a cutting and can be high yielding if it has enough moisture. It is not very winterhardy, and most varieties do not survive in ND and MN, but there are newer promising varieties for Northern environments. It does not tolerate heat and drought.

Timothy is a very winterhardy bunchgrass but most of its yield is in first cutting. Most varieties are late-maturing and regrow very slowly after first cutting. It persists well under poorly drained conditions. It has very good forage nutritive value and is an excellent hay for horses.

Reed canary grass is very winterhardy and tolerant to poor soil drainage and flooding. It establishes slowly, but has vigorous rhizomes and is very competitive, dominating any mixture it is in. It is a high-yielding grass but relatively low in nutritive value.

Crested wheatgrass is very winterhardy and produces high-quality forage early in the season if harvested before heading. It is a low-yielding, short bunchgrass; new varieties have higher yield. **Creeping wheatgrass** is a hybrid of crested and intermediate wheatgrass and has high persistence and superior yield to crested wheatgrass.

Intermediate wheatgrass is very winterhardy, rhizomatous, sod-forming, and produces most of its yield in the first cutting. It has high palatability and good forage nutritive value.

In summary, to select a perennial cool-season grass for hay: decide which species to use according to your needs and species characteristics; check variety trial results near you; select a variety with consistent yield year-over-year and throughout the season; and make sure it is winterhardy and persistent in your area, preferably with leaf rust resistance.