

THE FORAGER

Agronomics with livestock in mind!

Hay & Haylage with Selected Forage Species

Many species of grasses and legumes are used for forage production, but only a limited number are suitable for forage production in some locations. These species have the potential to produce high yields of dry matter, are winter-hardy in northern climates, and are adapted to shorter growing seasons. None of the species listed are any better than the others. Rather, species differ in their ability to perform under certain conditions and management practices. When choosing a forage species for new seedings, consider the conditions of fields to be planted and the intended use for the forage stand.

Grasses ~ Among the hundreds of grass species, the cool-season grasses are best for forage production in the northern US. These species thrive in the cool, moist conditions of late spring and early fall. Grasses have either a sod-forming or a bunched growth habit with an open sod.

Orchardgrass is a highly productive bunched grass on sites where it is well adapted. It does best on well-drained soils, and will tolerate droughty conditions. In far northern areas and in spots prone to winter ice sheeting, winterkill is occasionally a problem. Orchardgrass grows rapidly after cutting, and three or four cuttings may be possible per growing season. Because it matures early in spring before good drying conditions prevail, first cuttings for dry hay are often coarse. Many producers harvest the first cutting of orchardgrass as haylage because it allows them to harvest quality forage before they see extended periods of good drying conditions. Subsequent cuttings remain leafy, and hay quality is excellent.

Reed canarygrass is another highly productive grass, with dry matter yields exceeding five tons of dry matter/acre under a three- or four-cutting system. It is adapted to a wide range of soil conditions, tolerant of both poorly-drained and droughty soils. Though it is weak in the seedling stage, it is a vigorous, sod-forming grass once established. Reed canarygrass generally matures 1-2 weeks after orchardgrass. It is an ideal grass to plant in mixtures with alfalfa. Older varieties have high concentrations of an alkaloid that make the grass unpalatable; use improved low-alkaloid varieties such as *Palaton*, *Chiefton*, or *Bellvue* for new seedings.

Timothy is a popular bunched grass in many hayfields. It is adapted to well-drained to moderately well-drained soils; droughty conditions cause it to go dormant for prolonged periods. It generally does not mature until mid-June in most locations, and it makes excellent quality hay. Because it tends to grow back slowly after cutting, you shouldn't expect more than two cuttings each growing season.

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Smooth bromegrass is well-adapted to droughty soils. Once established, it forms a dense sod. Like timothy, it matures in mid-June and makes excellent dry hay. However, it also grows back slowly and will usually yield only two cuttings/growing season. *Saratoga* and *York* are popular varieties.

Other grasses include perennial ryegrass and tall fescue. Perennial ryegrass has excellent forage quality, but many varieties are not winter-hardy enough to persist in the north for more than two or three growing seasons. Tall fescue is a hardy, productive grass that works well in combination with alfalfa. However, forage quality is somewhat low compared to other grasses. *KY-31* is a commonly available variety, but it is infected with an endophytic fungus that helps the grass survive but also causes some health problems in livestock. Use low-endophyte or 'friendly' endophyte varieties for new seedings.

Legumes ~ Many species within the legume family of plants are used for forage production worldwide. Legumes have a unique symbiotic relationship with *Rhizobia* bacteria. These bacteria infect the roots of plants and transform atmospheric nitrogen into a plant-available form. Legumes generally yield high quality forage, but they are better suited to haylage than dry hay. If the stems get too dry, the leaves—which contain the bulk of protein starches, and sugars—may shatter and get left on the ground during baling, resulting in poor quality hay. It is easier to retain these highly nutritious leaves by making haylage, since haylage is harvested at 35% dry matter.

Red clover is popular and does best on well-drained soils, but it tolerates moderately-drained conditions as well. It re-grows slowly, so it does best in a two-cut system. Red clover is considered a short-lived perennial and usually lasts only two or three growing seasons.

Alfalfa, sometimes called the "queen of forages," is one of the highest yielding forage species grown in northern areas, capable of producing 5 tons of dry matter/acre, 70% more than high quality grasses. It requires well-drained soil with a pH between 6.5 and 7.0. Winter survival varies, as alfalfa is prone to injury from exposure to cold temperatures or ice sheeting. Under ideal conditions it will persist for 4 to 5 growing seasons. To minimize the risk of crop failure from winterkill, most producers seed alfalfa with a grass. Research shows that alfalfa/grass mixes yield better than alfalfa alone.

(Edited from an article by the U of New Hampshire Cooperative Extension)

**Contact the Agronomy Office for Information
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