

Maine Forage Facts: Timothy

*By Jaime Garzon, Assistant Extension Professor and Forage Educator,
University of Maine Cooperative Extension*

Reviewed by Alice Begin, Resource Conservationist, NRCS, USDA

Timothy (*Phleum pratense* L.) is one of the most popular grasses with Maine farmers, who routinely sow it in mixtures with alfalfa, red clover, or birdsfoot trefoil. This perennial grass provides stand insurance when legumes die out and helps fend off weed encroachment. Timothy grows in clumps or bunches, generally 2 to 4 feet tall at maturity. Leaves are smooth and flat and have distinct veins. The seedhead is a tight cylinder, six inches in length. This grass reproduces from corms or bulbs at the base of the stem, just below the soil surface. Timothy is very winter hardy but lacks heat and drought hardiness compared to other hay grasses, mainly because of shallow, fibrous roots. It may be confused with meadow foxtail, a weedy pasture grass.

Site selection

Timothy is well-adapted to New England and probably the most popular forage grass in the region. However, there is more area established with Kentucky bluegrass due to its persistence. It grows well in the moderately to imperfectly drained soils common in Maine. However, the yield will be low, and the stand will die out faster on either droughty or too-wet soils. It prefers a soil pH range from 5.6 to nearly 7.0.

Soil preparation and establishment

Timothy can be established successfully in either spring (late April to early June) or late summer (late August- September). However, fall seedings are more successful because the cool fall weather is more suitable for timothy growth, and weeds are less problematic. Timothy can be slow to establish and may fail when weed competition is severe during establishment. Small grain companion crops can be used in spring seedings but should not be used in late summer. Oats are the most common companion crop, but early removal for silage or grazing is necessary to



Timothy grass.

Photo: Amanda Slater, Creative Commons

reduce competition for light and moisture. A small grain and field pea companion crop may provide too much competition when establishing an alfalfa-timothy mixture.

If a late-summer seeding is planned, prepare the seedbed 2 to 4 weeks before seeding. This will allow the soil to become firm and allow seedbed moisture to accumulate. In fall seeding, sow at least 6 to 8 weeks before the first frost event to allow enough root growth for the grass to survive the winter.

The best stands of timothy are obtained when seeds are sown not deeper than ½ inch in a well-prepared, firm seedbed. Timothy should be seeded at 5 to 10 pounds per acre when seeded alone or 5 to 6 pounds in a mixture.

Liming and fertilization

A soil test should determine fertility needs at seeding. If you haven't had a soil test, the recommended nutrient rates are 20 to 50 pounds of nitrogen, 10 to 50 pounds of phosphate (P_2O_5), and 20 to 70 pounds of potash (K_2O) per acre. If timothy is seeded with a legume, no nitrogen is needed. Preferably apply the nitrogen two weeks after germination for better nutrient use.

Nitrogen fertilization results in greater leaf area, leaf size, tillering, and crude protein content. However, high nitrogen applications, over 200 pounds of nitrogen per acre per year, can reduce the storage of energy reserves and reduce persistence. Without legume, apply an additional 50 pounds of nitrogen per acre after each cut.

Varieties

There are several timothy varieties available that grow well in Maine, with differences in expected yield, winter hardiness, persistence, and maturity date.

Climax: This variety has been used widely in Canada and the United States since 1947. Climax is a cultivar developed in Canada, with greater palatability and winter hardiness than common timothy, and flowers later. It does very well on wet, peaty, and heavy textured soils. The



Timothy grass collar. No auricles and short ligule.

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establishment of this species is rather slow, and summer production is somewhat limited. Climax tolerates cutting management much better than grazing. It is rust-resistant.

Conquest: This early maturing timothy variety reaches 50% head emergence two weeks earlier than Climax. Conquest was bred for higher forage yields, greater foliar disease resistance, faster spring green-up, and improved summer regrowth. Conquest is ideally suited for pasture mixes, especially when used with alfalfa, and may tolerate moderate grazing but does best under rotational grazing.

Tenho: This highly adaptable timothy has shown good yield and quality performance through Northern America, Scandinavia, and Russia. Tenho is intermediate to late in heading and has stable yield distribution through the growing season. In Canadian registration trials, it has outyielded the standard variety Climax by 10%, both in the first cut and regrowth. Tenho has winter hardiness and good crude protein content.

Saddlebred: This is a variety selected for its earlier maturing characteristics. Some trials showed 5 to 10 percent more dry matter accumulation than Climax and other timothy varieties. Saddlebred is highly resistant to leaf rust, leaf spot, and purple eyespot.

Productivity

Timothy is productive under a two-cut or one-cut system followed by late summer or fall grazing. It does not survive well under more intensive harvest systems (three or more yearly harvests). Hay yield is low, and regrowth is slow in dry weather, or if fertility is poor. Like most cool-season grasses, it responds well to nitrogen as fertilizer or manure. Annual yield is moderate (2 tons of hay per acre) but can be increased if well managed. Timothy is usually 1 to 2 percent units lower in crude protein than other perennial grasses. Therefore, it is usually mixed with another forage in the pasture.

Timothy is well-suited for grass-legume mixtures and is mostly grown with clovers. In general, mixtures with alfalfa are difficult to manage because alfalfa tolerates more frequent harvests than timothy. In Maine, timothy produces seedheads from mid-June to early July. The forage quality is very good in the late boot to early head stages but drops after heading. In addition, harvesting at early heading reduces yields and persistence compared with harvesting at early or late bloom. Harvesting the spring growth of timothy at early heading reduces first harvest yields, and there is generally no increase in yield of subsequent harvests to compensate for this loss.

Grazing management

When harvested early, palatability is good for all classes of livestock, but timothy should not be allowed to progress very far into jointing before grazing. Delaying grazing will reduce timothy's stored energy reserves and ultimately reduce its persistence. Grazing in the spring can begin when timothy is 6 to 8 feet tall. Timothy will tolerate moderately continuous grazing, but rotational grazing with a minimum recovery period of 3 weeks will improve production and persistence. Grazing should stop at 3 to 4 inches of stubble height, to leave the plant enough accumulated nutrients to stimulate the next regrowth.

Additional Resources

- Bulletin #2262, *Forage Facts: Growing Forage Grasses in Maine*
extension.umaine.edu/publications/2262e/
- Bulletin #2263, *How Maine Farmers Can Determine if They Have Enough Hay and Forage for the Winter*
extension.umaine.edu/publications/2262e/
- Bulletin #2272, *Forage Facts: Selecting Forage Crops for Your Farm*
extension.umaine.edu/publications/2262e/

References

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extension.psu.edu/timothy
- King's Agriseeds Inc. Seed catalog. kingsagriseeds.com/
- Seedway-Growmark Inc. Seed catalog. seedway.com/
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