Area of Adaptation
Sweetclover (Melilotus officinalis, M. alba) is native to temperate regions of Europe and Asia. In the United States, sweetclover is grown primarily in the Corn Belt and Great Plains area.

Although sweetclover will tolerate a wide range of soil and climatic conditions, it will not tolerate acid soils or areas subject to flooding. Sweetclover is one of the best legumes to grow on highly alkaline soils. With adequate rainfall or irrigation, it is winter-hardy and highly productive.

In Oregon, sweetclover is grown primarily in the Snake River Valley area and the northeastern section of the Columbia River Basin.

Sweetclover is primarily a biennial, though annual forms are available. Like alfalfa, sweetclover has a deeply penetrating taproot that functions as a food storage organ. Early growth during the second year draws upon these stored reserves.

Stems of sweetclover are coarser than those of alfalfa. Flowers are white or yellow, borne on a central stem (raceme), and much smaller than alfalfa flowers.

Primary Use
Sweetclover is used for hay or silage, pasture, and as a "green manure" soil improvement crop. Also, it has long been recognized as one of the most valuable plants for honey production.

When sweetclover is used as a soil-improving or "green manure" crop, its strong taproot improves subsoil aeration, which provides better conditions for succeeding crops. As a legume, sweetclover plants store atmospheric nitrogen for growth. Plants store this nitrogen in organic form in roots, nodules, and forage. The roots provide large amounts of nitrogen to the soil as they decay. Production of 3 to 4 tons of dry matter per acre will result in considerable quantities of nitrogen added to the soil.

Planted as a hay crop, with an oat companion crop, sweetclover can produce a considerable amount, but the majority of production is from the second year's crop.

Varieties
Most of M. officinalis is "common yellow," of which only biennial forms are grown. Both biennial and annual forms of M. alba are available, but most is biennial white. Huban is an annual white variety that has been used in the Snake River Valley area.

Madrid (from Spain), Goldtop (from Wisconsin), and Yukon (from Saskatchewan) are improved varieties of M. officinalis with increasing levels of winter hardiness, respectively. Improved M. alba varieties include Denta, a low-coumarin variety developed in Wisconsin, and Polara, which was developed from Madrid for use in western Canada.
Couvmarin

Couvmarin is an aromatic compound present in large quantities in most unimproved sweetclover varieties. When animals consume these plants, couvmarin produces an undesirable taste that reduces forage palatability. Couvmarin may be converted to dicoumarol, a toxic product, during heating and spoilage. Dicoumarol reduces blood-clotting capability and may result in animals bleeding to death from slight wounds. Varieties containing low amounts of couvmarin have been developed through breeding programs to overcome these problems.

Caution. Although most sweetclover hay and silage is safe for feed, use improperly cured or moldy forage with caution. Analyze samples from such forage for dicoumarol content. You can lessen the danger of losing animals from bleeding by intermittent feeding with alfalfa for 7 to 10 days.

Establishment

Soil preparation for sweetclover should be similar to that for alfalfa. Sweetclover is productive on fertile, well-drained clay and clay-loam soils. It also can be grown on sandy loams and heavy clay loams, provided there is good drainage. A good seedbed is finely pulverized, leveled, and firmed. Sweetclover is most often planted in the spring since it is a biennial and needs a full growing season to prepare for the next season of production. For best seedling survival, drill seeds approximately 1/4 inch deep. Seedling emergence will be greatly reduced if you plant seeds deeper than 1/2 inch.

A seeding rate of 6 lb/A is usually adequate to provide for a good stand of sweetclover. However, higher seeding rates are sometimes used to compensate for poor soil preparation or seeding methods.

Seed of sweetclover are "hard" and must be scarified before planting. For this reason, seed companies sell only scarified seed.

Inoculation

The presence of effective nodules on the roots of the plants is essential to a good, productive stand of any legume. These nodules are formed by bacteria (Rhizobium meliloti) that are able to fix nitrogen from the air for use by the legume plants. These bacteria may be present in fields where sweetclover has been grown recently, but all strains of bacteria are not equally effective. Inoculate all legumes, even those with a fresh, commercial inoculum immediately prior to seeding, regardless of the cropping history of the land or any previous inoculation of the seed. Keep inoculated seed cool and moist until you plant it.

Fertility and Soil Requirements

Sweetclover will tolerate acid soil but grows well on neutral or alkaline soils. If soil pH is below 6.0, apply lime well in advance of seeding. Adequate levels of phosphorus, potassium, and sulfur should be available for good growth and high production. Properly inoculated and nodulated sweetclover will not require the addition of nitrogen. For specific recommendations based on soil test data, consult OSU Fertilizer Guides 18 and 20 for fertility requirements of alfalfa.

Management

The growth habit of sweetclover requires careful management in the seedling year. Cutting of the single main stem requires that regrowth initiate from buds along the stem, not from the crown as in alfalfa. Any clipping treatment the first year reduces root size and results in less plant vigor in the second year.

If you plant sweetclover with a companion crop, harvest during the first year with the binder or combine set as high as possible. Biennial sweetclovers produce a large quantity of forage during the second year. Growth occurs early in the season and declines rapidly after midsummer. Grazing may begin when plants are 12 to 14 inches in height. However, maintain a height of 10 inches throughout the summer to allow for rapid regrowth. Heavy stocking rates are desirable to prevent forage from becoming coarse and of low quality. Although bloat can be a problem to animals grazing sweetclover, it is less common with sweetclover than with alfalfa and true clovers (Trifolium species).

Generally, it is difficult to produce high quality hay from sweetclovers, especially from 2-year-old stands. For this reason, weed control in the establishment year is more difficult than with other legumes.

Weed Control

Sweetclover is very susceptible to herbicide injury—especially from 2,4-D. For this reason, weed control in the establishment year is more difficult than with other legumes.

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