

YELLOW SWEETCLOVER

(*Melilotus officinalis*)

Description: Yellow sweetclover is a member of the Fabaceae or pea family. Yellow sweetclover is a herbaceous annual, winter annual, or biennial that can grow 2 to 6 feet tall. Stems of the plant are upright, coarse or fine, grooved or channeled, and usually pubescent or pilose near the tip. Leaflets of the trifoliate leaf, are broadly ovate, oblong, and rounded or truncated near the tip. Leaves are similar to alfalfa except the leaflet margins are serrated halfway or more back from the tip. Flowers of the plant are small, yellow, often fading to cream color, and arranged in many-flowered terminal and axillary racemes. Pods are ovoid, leathery, pale brown, tip obtuse, and wrinkled with one or two seeds. Seeds are approximately 1/16 of an inch long, oblong, yellow or greenish-yellow with a shallow lateral notch at one end.

White sweetclover is similar to yellow sweetclover, but has white flowers and net-veined pods.

Plant Images:



Yellow sweetclover



Infestation



Leaves



Flowers

Distribution and Habitat: Yellow sweetclover is a native to Eurasia and is adapted to most of the environmental conditions found throughout North America. The plant is drought tolerant and only requires enough moisture for establishment, after which the plant will develop in extremely dry conditions. Yellow sweetclover is very winter hardy and productive on a wide range of soil types, particularly, fertile, well-drained clay and clay-loam soils but can be successful on sandy loams and heavy, clay loams. The plant also prefers neutral or alkaline soils. Yellow sweetclover is found in a variety of communities including agricultural land, roadsides, railway embankments, river banks, and waste areas.

Life History/Ecology: Yellow sweetclover is an annual, winter annual, or biennial that reproduces by seed production. During the first growing season, vegetative shoots are produced from March to April or September and can grow approximately 4 to 12 inches tall by October. Primary stems become branched and a prominent primary root develops, with crown development following. As root size increases, crown buds begin to develop. The following growing season, stems can grow from crown buds but growth is mainly from the top of the plant. Yellow sweetclover flowers in June and July, with later developing plants continuing to flower until freezing weather in the fall. Seeds of the plant begin to ripen in July and continue through autumn and may remain on the plant over the winter. Yellow sweetclover can produce more than 100,000 seeds per plant and can remain viable in the soil for more than 20 years.

A condition known as sweetclover disease or 'bleeding disease' can appear in cattle after feeding on spoiled sweetclover or ensilage. Yellow sweetclover is high in coumarin which causes anticoagulation of blood that often causes bloat in cattle.

History of Introduction: Yellow sweetclover is native to Europe and Asia and was introduced to North America as early as 1664, as an impurity in forage seed. The plant has been used as a forage crop, promoted for soil stabilization, and as a nectar source for honey bees. Yellow sweetclover has escaped from cultivation and thrives in disturbed areas throughout the United States and Canada. In North Dakota, yellow sweetclover is widely distributed throughout the state and is most likely found in all counties.

Effects of Invasion: Yellow sweetclover is an aggressive species that can reproduce in large numbers and is often the first plant to appear on disturbed sites. The plant degrades native grasslands and reduces biodiversity by covering and shading native sun-loving plant species. Yellow sweetclover can also mask guide rails and sign posts, creating a hazard for motorists.

Control:

Yellow sweetclover has been cultivated for soil stabilization and as a forage crop throughout the United States since the early 1900s. Yellow sweetclover has since become a threat to recovering native prairies because populations are able to easily invade open areas and can effectively compete for nutrients with desirable, native species. Management objectives for yellow sweetclover control should involve early detection and prevention of seed production. Seeds of yellow sweetclover may remain viable in the soil for more than 20 years, therefore, infestations should be monitored to prevent re-establishment. Preventing or reducing seed production and dispersal can decrease the spread of the plant. Control methods should be combined into an integrated management system for the best long-term control of the plant. Management techniques selected are dependent upon a specific site and will be determined by land use objectives, extent of yellow sweetclover infestations, desired plant community, and effectiveness and limitations of available control measures.

Mechanical - Hand pulling can be effective on small infestations when soil is moist. Hand pulling first year stems of yellow sweetclover may be more effective conducted in late summer or early fall when the plants are still green and easily detected among the dried grasses. Second year plants should be pulled before seed set. Cutting can be effective if conducted prior to flower emergence. Resprouting may not occur if plants are cut close to the ground below the lowest branch axils; however, in northwest Missouri approximately 30 percent of second year plants had resprouted. In North Dakota, mowing in late spring or early summer reduced yellow sweetclover infestations, but mowing generally did not kill the plants and flowers that were on low, uncut branches were still able to set seed. Burning yellow sweetclover has had variable results. Prescribed burns conducted in March, early April, or fall may stimulate germination. In Minnesota and Wisconsin, burns conducted from April through mid-May increased germination and the development of first year plants. Dormant season burns conducted in late fall or early spring, followed by a later spring burn the following growing season, may be the most effective burn schedule in reducing populations. If a follow-up burn is conducted prior to seed set, new seed production can be prevented. In Wisconsin, a prescribed burn conducted in April in an even-aged stand of yellow sweetclover scarified seeds and stimulated germination. A prescribed burn conducted in May during the following year killed yellow sweetclover populations before plants were able to finish bolting and replenish the seed bank. The second burn should be conducted when plants are elongating so the meristematic buds of the plants do not escape injury by being too close to the ground. These treatments may not be as effective for uneven-aged stands of yellow sweetclover because second-year plants may escape the first-year burn and set seed.

Chemical - A few herbicides are available for yellow sweetclover control. Imazapyr, picloram, metsulfuron methyl, sulfomethuron methyl, dicamba, clopyralid, and 2,4-D may control the plant.

Contact your local county extension agent for recommended use rates, locations, and timing.

Biological - A few biological control agents have been found feeding on the plant. The sweetclover weevil, *Sitona cylindricollis*, may severely damage the plant. Adults of the insect feed on the foliage and larvae feed on the roots of the plant. A sweetclover root borer, *Walshia miscecolrella*, is a native insect that may damage sweetclover plants on rare occasions. An ash-gray blister beetle, *Epicauta fabricii*, a striped blister beetle, *Epicauta vittata*, and a margined blister beetle, *Epicauta pestifera*, have also been found feeding on the plant. Yellow sweetclover is palatable by livestock, and infestations may be reduced if heavily grazed. Yellow sweetclover is more palatable in the early spring and summer.

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Yellow sweetclover and infestation photographs courtesy of J. S. Peterson @ USDA-NRCS PLANTS Database.

Leaves photograph courtesy of Purdue University Agronomy Extension.

Flowers photograph courtesy of N. Sloth, Biopix.dk.