White Sweetclover

by
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Sweet Clover (Melilotus), is native to temperate Europe and Asia. By 1900, its value as a soil building crop was recognized. In America, it was formally called Bokhara Clover.

It is winter hardy and will grow where the annual precipitation, properly distributed, is 17 inches or more. It can be noticed easily along new highway cuts where non-acid subsoil is exposed. It will grow on infertile soil where the pH is above 6.0.

Sweet Clover is a legume that grows 5 feet tall in the annual form and can grow to 10 feet high in the biennial form. The first year, one central stem develops and the strong, spike-type taproot begins its growth, that could go to 8 feet deep. (Good to break up hardpan and help drain compacted fields.)

The roots may double in weight after September 25th due to food storage that it needs for its second year of spectacular growth. Usually the first year growth will not exceed 24 inches; it can be grazed or be left entirely for soil building.

Care must be taken if one intends to cut Sweet Clover for hay. If it has too much moisture at time of storage, heating and spoilage may result in the formation of a toxic substance, dicoumarol, because of the presence of coumarin, normally very high in Sweet Clover. The dicoumarol can prevent an animal from clotting its blood in case of a cut, and the animal will bleed to death. (7)

The requirements for Sweet Clover are similar to alfalfa. However, Sweet Clover seeds are very "hard" and should be properly scarified before sowing in order to get a high germination rate. Sow 10-15 lbs. scarified seed and 18 to 20 lbs. unscarified seed per acre. It is best planted in early spring, as a high moisture content is preferable for the best germination. (8)

Of the biennial form of Sweet Clover, there are both yellow and white flowering varieties. The white grow bigger and mature later than the yellow. Most white sweet clover available in the U.S. is unnamed. The annual variety that is mostly available is called Hubam. It does well in New England. The white biennial is Melilotus Alba and the yellow is Melilotus, officially. The yellow is tolerant of drought and competition; its leaves are finer, making a better hay, but lower yield.

In the use of Sweet Clover as a soil builder, tests have shown accumulations up to 200 lbs. of nitrogen per acre and over 2½ tons of dry organic matter per acre. It often preceeded corn in rotation before the advent of cheap Nitrogen from the chemical factories. It is one of the most valuable honey plants known.

References are Forage, Hughes, Metcalf, Heath, Iowa State U. Press, Ames, Iowa; and Principles of Field Crop Production, Martin-Leonard, Macmillan Co.

Notes, Cont'd

(7) Our humid climate makes sweet clover an undesirable hay crop because of this possibility of poisoning; it is also more stemmy than alfalfa. However, sweet clover is completely safe for pasturing at any stage of growth, as long as cows have access to grass pasture also, to prevent bloat. Don't pasture during September, though, when legumes are storing nutrients in their roots for winter.

It is probably important not to let sweet clover go to seed before you turn it under, if you are likely to plant hay on that field in the future. The sweet clover could become an undesirable "weed" in your hay, with the dicoumarol danger mentioned above. Turn under yellow sweet clover no later than July 1, and white no later than July 10.

(8) A common practice is to seed sweet clover together with a spring grain like oats or barley. As with a seeding of grass and legumes for hay or pasture, the small grain acts as a "nurse crop," controlling the weed growth. When the grain is cut, any annual weeds will also be topped, sufficient for the legumes to make a quick growth and smother the crippled weeds. You're taking advantage of the legumes' ability to grow back quickly from crown buds at ground level, an ability lacking in annual weeds.

It is possible to plant sweetclover as late as July, but it won't make as heavy growth the second year as a spring planting will. We plan to experiment with broadcasting it into corn or soybeans in July, right after the last cultivation.

YIELD AND COMPOSITION OF TOPS AND ROOTS OF SWEETCLOVER* AT SUCCESSIVE DATES IN THE SEEDING YEAR AND THE YEAR AFTER SEEDING

This table reveals some important information that can help you fit sweet clover into your rotation. You should seek a balance between the factors involved: need of soil for nitrogen; need of soil for organic matter; planting dates for crop which will succeed sweet clover; value of cropland and length of time you can afford to occupy it with a non-harvestable crop.

For example, you will notice that the fastest growth rate occurs in August of the first year, just after the oats are harvested, and in May of the second year, though June almost matches May. Thus, if you're looking for a large amount of organic matter, without letting the sweet clover go to seed, you should turn it under about July 1 of the second year, adding 8,260 lbs. of material (dry weight basis), or over 4 tons. You could then finish the season with some other cover crop, or a fall crop like spinach, roots, buckwheat, winter wheat, or short-season cole crops.

But waiting until July 1 gives you no great advantage if your main goal is increasing the soil's nitrogen content. By June 1 of the second year you have almost as much total N as you're going to get, so if you need to get a good crop off your land that year, such as corn or some other heavy N feeder, you will do well to turn the sweet clover under during the last week of May, then harrow several more times for the next week, and move right on to planting your new crop. The N percentage is still high at this time, which encourages quick rotting.

Martin and Leonard use this table in their book (ref. at end of sweet clover article), but do not say where this experiment was performed. I assume it was in the Mid-West, which means we should probably subtract a small amount from each of their figures during the second year, because of our shorter season. But the optimum plow-down dates, relative to total N and organic material, should be about the same.

*Sweetclover sown in early oats which were harvested for grain; sweetclover not clipped or pastured after oat harvest.

Date of Sampling	Air-dry Yield Per Acre			Nitrogen per Acre		
	Tops (lb.)	Roots (lb.)	Total (lb.)	Tops (lb.)	Roots (lb.)	Total (lb.)
	Development in the Seeding Year					
July 1	515	——	515	——	——	——
July 15	588	75	663	16	2	18
August 1	659	182	841	17	4	21
August 15	963	310	1273	28	9	37
September 1	1431	577	2008	41	18	59
September 15	1544	884	2428	48	27	75
October 1	1881	1273	3154	54	40	94
October 15	1714	1721	3435	44	56	100
November 1	1616	2115	3731	39	74	113
November 8-10	1397	2324	3721	32	77	109
	Development in the Year After Seeding					
April 1	420	2130	2550	19	92	111
April 15	690	1750	2440	29	73	102
May 1	1930	1360	3290	75	49	114
May 15	3360	1280	4640	110	37	147
June 1	4940	1200	6140	133	29	162
June 15	6030	1110	7140	142	24	166
July 1	7380	880	8260	144	17	161
July 15	7990	790	8780	141	14	155
August 1	7290	760	8050	112	13	115