

Gopher Stopper Clover



Gophers are naturally hemophiliacs, and since there is *coumarin*, the original source of *Coumadin* in sourclover roots, gophers will avoid it due to its blood thinning properties.

- Common Name

Although not a true clover this plant has been called sourclover, bitter melilot, annual yellow clover, bitter clover, Indian Sweetclover and Senji.

- Scientific Name

Melilotus indicus

- Seed Description

There are from 250,00-275,000 seeds/lb

- Temperature

Sourclover has been said to be frost tolerant with moderate cold resistance, and it withstands frost better than either common vetch or Canadian field pea, yet is not winter hardy. It grows well during the winter in southern California and in other areas where the minimum temperature does not go below about 18 F

- Geographic Range

This species can be grown anywhere in the U.S., and that it does especially well in the Southwest. It is native to the Mediterranean Region south to Ethiopia, and to Central Asia and India. Sourclover is most valuable from central California south. It has been used extensively in southern California, particularly in orchards

- Water

After sowing, irrigation should be immediate and be repeated 7-10 days later; sourclover can be sown into standing water; 2-3 irrigations are sufficient for the crop. It has heavy, succulent foliage, and a high water requirement. In dry-farmed fruit culture, do not allow sourclover to continue growth in spring after exhaustion of free water in the soil.

- Nutrients

Fertilizers are often unnecessary

- Soil pH

Sourclover tolerates a pH range of 5.0-8.2, is said to tolerate alkali, high pH, and to have a high lime requirement.

- Soil Type

Sourclover does well in a wide range of soil types, but it does best on well-drained neutral or alkaline soils of medium to high fertility. Almost any soil is suitable, but loams are best; the deep, large taproot is credited with the ability to break up heavy soils.

- Life Cycle

Sourclover is an annual that is self-pollinated. Seed is sown from September through November and harvested for forage from February to April, or when plants are in full flower. The flowering period in California is April through October.

- Seeding Rate

Seeding rates recommended are 15 to 25 lbs per acre. 2-25% of the seed may be hard and will not germinate the first year

- Seeding Depth

Sow at a depth of 1/2 inch

- Seeding Method

Sourclover seed requires scarification prior to sowing because there is a high proportion of hard seed; the seedbed should have a fine tilth. Sow on the dry soil mulch in orchards rather than in moist soil just after irrigation. Where furrow irrigation is used, furrows should be sufficiently close to completely wet the soil surface; otherwise, a poor stand may result. Irrigation after seeding usually firms the soil enough to insure

good germination. The seed bed should be prepared as for alfalfa, and the seed either broadcasted or drilled. After planting, the soil should be firmed over the seed sufficiently to insure an ample supply of moisture for proper germination.

- Seeding Dates

Sourclover should be seeded from September through November. In California, seeding should be from October to November. In southern California, it should be sown by October 15th to be ready for incorporation by March. In orchards where spring plowing is done in February or March, sow by September 15th. Where adequate water for irrigation is available and late spring plowing is practiced, December 1 sowings may suffice. In dry-farmed fruit culture, seed after the first fall rains, and do not allow continued cover crop growth in spring after the free water in the soil has been exhausted.

- Inoculation

Researchers recounted that sourclover grew well all over California, requiring inoculation only on soils farmed without legumes for many years. Sourclover requires type "A" Rhizobium for inoculation.

- Days to Flowering

Sourclover requires about 150 days to enter full flower, flowering in California as occurring from April through October.

- Days to Maturity

Flowering occurs from April through October, which suggests that mature seed probably is being produced from May through November .

- Seed Production

Sourclover species is a heavy seed producer. Seed is easy to produce where the species is adapted.

- Seed Storage

The seed remains viable for a relatively long period of time.

- Growth Habit

This is an erect, stemmy plant similar in its habit of growth to other sweet clovers; it shows moderate density of growth. This erect, stemmy plant bears small yellow flowers in short, dense racemes. The

stalk is woody. Various estimates of height are presented: a few inches to several feet depending on environment.

- **Root System**

Sour clover has an extensive root system. Six months after planting, tap roots may be found to a depth of eight feet. Therefore, sourclover is believed valuable for opening up heavy soils.

- **Establishment and Maintenance**

Establishment may be aided by growing in mixture with oat or barley. Weeding in the early stages is useful; manuring usually does not help stand establishment.

- **Mowing**

Sourclover can be mowed 2-4 times before harvest

- **Incorporation**

The stage at which the crop should be incorporated depends on soil type and moisture supply. On heavy soils, aeration is crucial and sourclover is best incorporated when it is mature and bulky. Thorough incorporation is important to facilitate breakdown. With dry soils, irrigate immediately after plow-down, to reduce drought stress to orchard trees. In annual farming systems, allow two to four weeks to elapse before planting successive cash crops.

When cover cropping twice in immediate succession on medium to light-textured soils, both cover crops may be disked in. Deep placement of residue is not so important for decomposition if the surface is shaded during the summer months as it is under clean culture. On heavy (clayey) soils, deep incorporation of residue is best. Decomposition requires from two to four weeks and is fastest in light-textured (sandy) soils. Inadequate soil moisture can delay decomposition two or three months or even longer.

- **Harvesting**

Sourclover is harvested for forage when in full flower and after seed formation has begun. There may be 2-4 cuttings.

- **Uses**

Sourclover has served as a green manure and cover crop in the orchards of southern and central California, particularly citrus.

By 1922, sourclover was recognized as one of the leading winter cover crops for, and in tests by the Agricultural Experiment Station of the University of California at Riverside, it out-yielded common vetch and Canadian field pea, the two legumes most commonly grown for winter green-manure crops. It is also was widely successfully as a summer cover crop, and the Agricultural Extension Service encouraged its use. Sourclover was used extensively in southern California, particularly in orchards but was replaced by bare chemical fallow. Sour clover was easy to grow where adapted, and seed was abundant and cheap. Sourclover is used for reclaiming saline areas.

- **Mixtures**

Sourclover is often used in mixes with barley or oat or mixed with rye and some purple vetch.

- **Biomass**

Experiments conducted in southern California showed that Sourclover outyields common vetch and Canadian field pea. Above-ground biomass production compares well with that of any of the green-manure crops tested in California.

- **Effects on Soil**

Sour clover improves heavy soils physically and increases the water-holding capacity of all soils. It retains moisture in the fertile surface strata, thus sustaining soil life. The deep taproot and extensive root system penetrate into the subsoil and relieve plow pan, which is common in orchards. In orchards frequently cover cropped with tap-rooted plants, water penetration is greatly improved.

- **Effects on Livestock**

Sourclover is used as green forage for cattle and cows, and as a maintenance ration for heifers; it is also grown for silage. As green feed, the analysis is 3.3% protein, 78.4% moisture, 6.4% fiber, and 14.4% total digestible nutrients. As silage, there is 2.1% protein, 70.2% moisture, 14.1% total digestible nutrients. As hay, the analysis indicates 18.6% protein, 10% moisture, and 23.8% crude fiber. If

sourclover is cut before bloom and used for feed, bloat is more likely than if it is cut during flowering. Chopped forage should be fed in mixtures with other dry forage. If sourclover is fed alone or in excess to cattle, it can cause health problems and taint the milk.

- **Insects**

Sourclover blossoms do not attract nectarivorous predatory and parasitic insects. Sourclover is resistant to aphids.

- **Weeds**

Sourclover may require some initial weeding; it is often grown in mixture with barley or oat, which are sometimes used as weed-suppressive nurse crops with other legumes.

http://plants.usda.gov/plants/cgi_bin/topics.cgi
<http://www.sarep.ucdavis.edu/cgi-win/ccrop.exe/>