

## **Planting & Growing Big Trefoil (advice from twenty years of growing trefoil)**

Big Trefoil (*Lotus uliginosus*) is a great forage legume; however, it does have somewhat peculiar characteristics making it hard to grow. Here are some hints and tips:

### **Planting:**

You can plant trefoil via broadcasting or using a standard grain drill. If you drill, make sure it's a firm seedbed and the seed goes no deeper than 1/4" (1/8" or less is preferred). You can also "frost seed" the crop by broadcasting over frozen ground and letting the thaw do the work.

Seeding rate varies by how much you want. With companion planting or in a re-seed of a pasture, then the rate is usually 10 pounds of trefoil seed for every 15-20 pounds of other crop. Companion crops I've used successfully include oats, annual ryegrass, clovers, and vetch. Avoid planting with fescue if possible because some of the research literature suggests fescue exudes a chemical inhibiting trefoil growth. However, I have fescue in my fields and my trefoil seems to survive so I'm not sure how accurate that academic fact is for the real world.

Because of the small size of the seed and the low rate of application, you'll have to ensure your equipment can deal with that small of settings. For small acreage, I've used a hand garden broadcast seeder with success. I also have an ATV broadcaster for larger acreage. The key thing is the ability of the equipment to basically be set to zero.

If you wish increase the bulk of the seed to increase the seeding rate for your equipment, you can add a companion crop or an inert "filler" such as sand, vermiculite, sawdust, or the like. Use what you have available.

### **Germination:**

Big Trefoil has an incredibly hard seed coat. The proportion of hard seed is usually 80% or more. Additionally, trefoil requires somewhat warm temperatures for seedling growth (it's native to Portugal). What this means is the seed coat must be worn down before the plant can germinate and seedlings will grow in the spring and summer.

Normally, trefoil grows in water-logged, high acid soils, so the acid and anaerobic conditions scarify the seed and allow germination. However, this takes time and a bit of luck. The more wet and acid your soil, the more germination you'll get. Also, the warmer the soil, the more germination. If you couple these two things together, you'll see germination in your wettest parts of the field beginning in spring. The drier sites will germinate later.

Flowering and plant growth are the inverse of germination. The drier "better" sites will flower first with the wetter sites maybe not flowering at all. This is due to this species of trefoil's rhizomatous growth. Think of how a strawberry grows and you'll get the idea. In the wetter soils, the trefoil prefers to grow vegetatively because conditions are stable. In the drier areas, the plant knows the water will run out so it shifts to a sexual reproduction and sets seed.

## **Growth Pattern & Forage Quality:**

Trefoils grow similarly to clover and alfalfa—the younger, thinner growth has higher protein and more palatability than older, more stemmy growth. For trefoils, the plant begins to “stem out” as the water begins to decrease and the plant begins to enter “drought mode.” For my soils, that’s roughly late-July. But as stated earlier, the plant’s growth depends on the soil conditions, so you may have fantastic quality forage in the low spots of your field and low quality forage on the dry spots, all at the same time due to water level and age of the plants.

Depending on the literature you read, my species of trefoil has a protein percentage between 22% and 29% when at maximum palatability. Trefoils are a non-bloating legume due to condensed tannins, so you can graze or feed it straight and not risk bloat as is common with clovers and other legumes.

For hay, treat trefoil as you would alfalfa and clover—earlier hay is better than later. Try to keep the leaves on the plants when drying by avoiding excess mechanical raking or tedders. The trefoil should dry to a light green color slightly faster than grass; however, you may find trouble on the bottom side of your windrows due to the trefoil growing in wetter sites. The more trefoil in the hay, the more water on the ground under it. Also, my experience has been that increasing the percentage of trefoil in the hay mixture makes it harder to pack the bales as heavy as with grass. This may have been due to my peculiar equipment, but I’ve heard this rumor from other farmers who made trefoil hay.

Flowering on my soil is usually beginning mid- to late-June and hits full force in mid-July. Flowering continues indeterminately until the flowers enter drought mode, which may be as late as October.

Trefoils will be “sub-dominant” meaning they will begin growing once the other crops (such as grasses) begin to decline. So in my fields, the trefoil really gets going once the ryegrass and fescue begin to shut down after seed set in late-June and early-July.

## **Grazing management:**

Treat trefoil gently, as you would clover. In addition, trefoils don’t put on a lot of starch storage in the summer, so they rely on fall growth to get them through the winter. Avoid excess grazing in the winter months. Rotational grazing is the best method of grazing trefoil, partially to help keep your stand going, and also to avoid your animals’ desires to eat the trefoil and leave the other stuff standing. I’ve seen a local dairy farmer basically eat the trefoil right out of his field by letting his cows preferentially eat the trefoil and leave the fescue every grazing day. Excess hoof traffic can also beat the trefoil to death.

Once established and growing in the “sward” as the Brits like to say, trefoil is surprisingly resilient to all but the most poor management. My fields were planted over twenty years ago and I graze them continuously every day of the year, plus take seed off of them.. Both the crop and the sheep are doing fine with each other. The rotational grazing (electric fence) and being able to reduce the grazing acreage during the lush growing season keep the trefoil from getting overgrazed. In addition, my fields are a mixture of grasses and forbs, so the trefoil isn’t the only thing the sheep want to eat that’s better than grass.

**Inoculant:**

Trefoils are a nitrogen-fixing species, so you must have the proper species of bacteria in the soil for the root nodules to form. In addition, each trefoil species has a different species of inoculating bacteria, a fact a lot of big ag outfits don't know.

The seed I sell is coated with the proper inoculant to ensure good nodule development and subsequent nitrogen-fixing.

**Other tidbits:**

Trefoil can inhibit worms when grazed by sheep due to the particulars of condensed tannins.

Trefoil is preferentially grazed by deer and elk. We have used it for new conifer seedlings to draw the deer away from the new trees. Of course, they'll still eat the seedlings, but at least it's not their first choice. If you like having wildlife, plant trefoil.

Trefoil likes to grow upwards by climbing on something else. Your fence row or the rushes in the ditch will soon be a trellis for this crop.

Trefoil will grow right to standing water line of a pond, so use it on ditches and streams.

Honey made from trefoil flowers tends to be like clover honey in taste, but slightly darker.

The seed stays viable if dry for decades. Just put what you don't use in a sealed container. I use those white plastic buckets with lids that every farm seems to have mounded up somewhere.

You can see the soil moisture of your fields by noting when you see the trefoil flowering. Drier will be first; wetter will be last.

My species of trefoil is normally yellow-flowered, but the flowers can have red spots off-and-on.

The three main species of trefoil in the U.S. are:

- Lotus corniculatus = Birdsfoot Trefoil. This is more common in the mid-west and NE. This grows in colder but drier conditions. Not as acid or water tolerant as my species. This is also the species most people think of if you have for trefoil.
- Lotus uliginosus (also called L. pedunculatus) = Lotus Major or Big Trefoil. This is the species I grow. More of a sub-tropical plant than its cousin above.
- Lotus tenuis = Narrow Leaf Trefoil. Not big here. More common in South America. Used as a research plant in the U.S. mostly.

Some people consider trefoils a non-native invasive because it's non-native (true) and it can spread in the right conditions (not as true as it sounds). While my crop can spread in a wetland environment, it doesn't achieve enough dominance to really be "invasive" they way I'd use the term. However, be advised this plant is sometime snubbed by those who seek only native plants for habitat plantings.

Feel free to contact me if you have questions or comments.

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