

## No-Bloat Legume A Welcome Alternative for Northeast Pastures

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As winter approaches we will begin to plan for next year's forage seedings. Most pasture and hay mixes recommend inclusion of alfalfa or another legume to increase production and quality. Though, we all know that alfalfa as well as other legumes (sweet, red, alsike, and white clovers) can cause bloat. However, bloat is a concern only when grazing some legumes. There are non-bloating legumes including birdsfoot trefoil, sanfoin, and cicer milkvetch. This year you might consider integrating cicer milkvetch into your seeding plan.

### General Characteristics

Cicer milkvetch (*Astragalus cicer* L.) is a long-lived, rhizomatous, perennial legume native to continental Europe. It is found in cool moist locations in an area extending from Finland to northern Spain and eastward through north-central and southeast Russia. Cicer milkvetch is adapted to a wide range of soil types including slightly acid soils to moderately alkaline soils. Cicer milkvetch has a high level of drought tolerance making the species adapted to areas where other legumes may not survive. This legume is a very winter-hardy species and is used in many areas for soil stabilization. Due to its hardy nature and ability to survive the winter conditions of North America the legume was evaluated for use in land reclamation and agricultural applications as early as 1926.

### Crop characteristics

Cicer milkvetch is an extremely long-lived, winter-hardy, non-bloating, perennial legume with an aggressive creeping root system. Stems of cicer milkvetch are hollow and succulent. They grow upright when the plant is young but become decumbent to trailing as the plants mature. Under favorable conditions stem may reach a length of 5 ft, but the above ground length of the foliage seldom exceeds 2.5 ft. Stems tend to be more upright when the crop is grown with grasses than when growing alone. In North America, cicer milkvetch shows more frost tolerance than alfalfa and is also comparable in nutritive value. In Canada, forage yields approach that of alfalfa in some areas and have exceeded that of alfalfa in other regions where pocket gophers can attack the tap roots of alfalfa, but, do not affect the creeping roots of cicer milkvetch. In addition improved varieties of cicer milkvetch have no major pest problems. Unlike alfalfa, it does not cause bloat in ruminants. It is readily eaten by all classes of livestock as either hay or pasture. This nature of cicer milkvetch, its ability to compete with grasses and bloat-free characteristics makes it suitable for planting in mixtures in pasture and hay stands.

### Use for Pasture

Cicer milkvetch is especially well-suited to integrate as part of a pasture mix. No cases of bloat have been reported

from grazing livestock. The sodding characteristic of cicer milkvetch resists damage from overgrazing. Recovery from grazing is rapid as opposed to the slow recovery when cut for hay. New shoots arise from the base of the lower leaves as well as from crown and rhizome buds. Close grazing or clipping stimulates the growth of new shoots from all three plant parts. Cicer milkvetch retains its leaves and maintains forage quality later in the season than alfalfa. Consequently, it has the potential to provide nutritious forage in the fall, at a time when pasture productivity and quality is limited. If grown in grass-legume mixtures, the highly competitive characteristic of cicer milkvetch will require an equally competitive grass if the mixture is to be maintained with equal proportions of each. Grasses that are known to be compatible with cicer milkvetch are orchardgrass and tall fescue. Smooth brome grass and reed canarygrass severely suppress the growth of cicer milkvetch. Studies have not been conducted to evaluate the compatibility of cicer milkvetch with timothy or Kentucky bluegrass.

### Use for Hay

Although primarily integrated as a component of pastures cicer milkvetch can also be harvested for hay. Yields of cicer milkvetch cut for hay are comparable to alfalfa. Because of slow spring growth and slow recovery after hay harvest, cicer milkvetch is harvested only twice. The protein content of cicer milkvetch equals or exceeds that of other legumes. The high protein content of this legume is due, in part, to the high leaf/stem ratio (40 percent higher than alfalfa), and its ability to hold its leaves during drying and baling. The moisture content of green forage of cicer milkvetch averages four to eight percent higher than alfalfa when harvested. In the Western part of the United States, drying time of the hay is about three days longer than other legumes. Turning the windrows can reduce the drying time by 30 percent to 50 percent.

### Establishment

Why haven't you ever heard of cicer milkvetch? Although it has many desirable qualities, cicer milkvetch has not been widely adopted because most believe this crop is difficult to establish taking about three years to produce a good stand.

Many factors affect slow establishment of this crop. High proportion of seed with impermeable (hard) seed coat, relatively slow growth at seedling stage (poor seedling vigor), and inability to emerge from deep seeding have been recognized as reasons for slow stand establishment. Improved genetics and a new agronomic package devised at the Lethbridge Research Center in Alberta Canada have slashed establishment time dramatically. This new and effective protocol for seeding cicer milkvetch has enabled farmers to establish vigorous stands of cicer milkvetch in one season.

The agronomic program includes:

- \* Planting an improved variety such as AC Oxley II
- \* Using freshly inoculated, newly scarified seed.

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- \* Seeding cicer milkvetch alone or with grass, and avoiding a companion crop.
- \* Seeding at a shallow depth into a clean, firm seedbed.
- \* Fertilizing at seeding time based on soil tests.
- \* Mowing when the crop is 10 to 12 inches tall, to ensure grass doesn't overtake the stand, eliminate annual weeds and encourage the cicer milkvetch to branch and spread.

### Potential in the Northeast

As a long-lived, winter hardy, salt, acid, and drought tolerant and non-bloating species, its potential application to Northeast cropping systems appears feasible. At the present time, I am unaware of any record of cicer milkvetch production in the Northeast. Cicer milkvetch is grown extensively for grazing in the western United States and is being experimented with in the Midwest. I know of a few farmers who plan to try this forage in the coming growing season. Stay tuned for more information on grower's experience with cicer milkvetch in 2004.

*To learn more about cicer milkvetch feel free to contact Heather Darby at (802) 524- 6501 ext. 206.*

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