

Medicinal Herb Production Guide

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False Unicorn, Fairywand *Chamaelirium* [*Chamaelirium luteum* (L.) A. Gray]

Introduction

Botanical Information

Chamaelirium luteum (L.) A. Gray, member of the Liliaceae family, is native to North America with a natural range stretching from Florida north to New York and west to the Mississippi River. Most of the significant wild populations of this plant exist in the southern portion of its range. An herbaceous perennial, its leaves form a basal rosette with an emerging flower stalk that bears either a male or female flower spike about two feet tall. Flowering occurs from May to June. *Chamaelirium* likes to grow in moist, acidic soil located in partially to fully shaded areas in meadows, thickets, and rich woods. Harvesting of the roots usually occurs in autumn, after flowering is complete, and when plants are about four to eight years old.

Chamaelirium is known by many common names, including: fairy wand, star grub root, devil's bit, false unicorn, and blazing star.

Bioactive Components

The main bioactive components of *chamaelirium* are a mixture of steroidal saponins, including *chamaelirin* and *aglycone diosgenin*. The effects of these bioactives include acting as an emmenagogue, diuretic, and emetic.

Uses and Treatments

Chamaelirium is widely used by North American Indians as a woman's herb. Traditionally, it was used to prevent miscarriage and has a reputation for improving fertility. In Western herbal medicine, it has been used to treat pregnancy problems and ovarian cysts. Table 1 summarizes modern and traditional uses.

Table 1. Modern and traditional uses of false unicorn.

<u>Modern Uses</u>	<u>Traditional/Folk Uses</u>
- Anti-inflammatory	- Menstrual problems
- Diuretic	- Pregnancy complaints
- Treat ovarian cysts	- Improve fertility

Cultivation Practices

Site Selection

Chamaelirium grows in rich open woods or under the shade of hardwood trees and conifers. It prefers a moist, acidic soil, which drains well. Richo Cech (2002) recommends a soil pH ranging from 4.5 to 6, with a high humic content. If planting in a natural woods setting, he suggests locating the planting beds in a conifer or mixed hardwood-derived loam, a sandy loam (like in the North Carolina piedmont region), or bottom land, where leaf mulch does not accumulate. Look for a site where other woodland plants grow such as Solomon's seal, lady's slipper orchid, hepatica, or perhaps a native stand of chamaelirium.

If an open field is used for production, shade structures should be erected. Typically, a wood lath structure or polypropylene shade structure is used. For artificial shade, make the structure seven feet tall or higher with two ends open to the prevailing breeze. For forest culture, select a site with good air and water drainage in an area shaded by tall, preferably hardwood trees.

Planting

Propagation is typically done through seed or root division, though large quantities of seed are not readily available commercially. Chamaelirium can be propagated by dividing the rhizomes in early spring or in fall. Plants can be started from seed, but the rhizome divisions may allow for a faster harvestable plant.

The surface of the rhizome is covered with small eyes that have the ability to produce growth buds and roots, according to Cech. Cech recommends cutting rhizomes into sections as narrow as one-quarter inch, leaving the disk-shaped pieces to callus overnight. Plant in pots, keeping soil moist and pots shaded until the new plants emerge. In a well-prepared three-foot wide bed with high organic matter, transplant young plants six to ten inches apart by staggering the plantings. Top dress beds with a light covering of mulch. Cech recommends pine needles, bark mulch, or rotted conifer-derived sawdust. Add mulch as needed throughout the growing season. Plants should be ready to harvest four to six years after planting.

Germinating chamaelirium seed is not too difficult, according to Cech, but the seed does need to go through a period of cold then warm stratification, according to Baskin et al. (2001). Baskin et al. also found that germination of chamaelirium seed was much higher when seeds were exposed to light. Cech recommends seeding flats with a high organic soil mix comprised of two parts peat moss, one part decomposed pine needles, one part perlite, and one-half part sand. In late fall or early winter, gently sow the newly harvested dried seed approximately one-eighth of an inch deep in flats or in prepared outdoor, shaded seedbeds. When the seedlings emerge in spring or early summer, Cech suggests leaving the young seedlings undisturbed for at least one growing season before transplanting out into permanent beds. Weed control is very critical the first few years.

Insects and Diseases

Snails and slugs can be pests to this species under moist conditions. Deer have been observed feeding on the flower stalks.

Harvesting, Cleaning, and Drying

Chamaelirium is usually harvested in the fall. This allows for the seed to be collected before digging the roots. Since rhizome pieces are small and generally measure less than three inches in length, digging is easiest with a spading fork or smaller digging tool.

Shake the roots free of dirt and carefully remove roots making sure they are chamaelirium. It is not acceptable to include foreign roots. Protect from the sun and heat; do not allow the roots to dry out. Since fresh roots are susceptible to mold, keep unwashed roots stored in sphagnum moss until ready to process. Check often to prevent the roots from drying out, and stir the roots to allow for aeration. When ready for processing, it is recommended to wash chamaelirium roots quickly with a pressure hose. Take great care to not damage the roots as they are cleaned and to remove all particles of dirt.

Once the roots are cleaned, dry the roots in a warm place with adequate airflow. Chamaelirium roots are quite small and should be dried whole. If a drying unit is not available, a dehydrator, converted greenhouse, or converted rooms in a barn are areas that can be used for drying. According to Cech, "Dry for one day with low temperature (70°F) and high air flow. Then, turn up the temperature to 100°F until roots are dried thoroughly." Once the roots are completely dry, put in cardboard boxes, cloth bags, or polypropylene sacks. Store in a cool, dark, and dry location. Stored like this, chamaelirium should keep for two to three years.

Marketing and Economics

Annual Consumption and Dollar Value

Approximately 13,500 pounds of chamaelirium were consumed in 2001. Almost all of the supply came from wild harvested sources. This consumption was two and one-half times the amount of material consumed in 1997 and a 37.2% increase from the year 2000. The dollar value of consumption for this material has increased from approximately \$412,000 in 2000 to almost \$700,000 in 2001.

Supply and Demand

Demand continues to increase for chamaelirium at a slow, but steady, rate. Supply of this material is harvested exclusively from stagnant to declining wild populations. Although harvested pounds increased by over 37% from year 2000 levels, strains on the wild populations, particularly in the southeastern United States, are beginning to show. A wild harvester can easily collect entire populations in a short period of time. Harvest volumes above 15,000 pounds per year can only be consistently achieved with the incorporation of cultivated material into the supply channel.

Pricing

From 1995 to 1999, chamaelirium traded in a range between \$25 and \$35 per pound. In 2001, prices ranged from \$40-\$50 per pound of dried root and in 2003, reached \$45-\$65 per pound.

Distribution Channels

Buyers of chamaelirium are widely dispersed throughout North America and Europe. Suppliers are highly concentrated. Current supplies are wild-harvested on a very small-scale throughout its natural range, particularly in the southeastern United States. Experienced brokers and professionals move the material through the supply chain. The market, in terms of pounds, is small relative to other botanicals.

Commercial Visibility

This material does not have a great deal of visibility beyond a small core of botanical users and herbalists. Of the top manufacturers and distributors of nutraceuticals/botanicals in North America and Europe, 8% offer this material as a stand-alone product, and 11% offer this material as either a stand-alone product or as part of a multi-constituent supplement.

Conclusion

Demand for chamaelirium continues to increase at a slow but steady rate. Supply is harvested exclusively from native sites, putting strains on wild populations, particularly in the southeastern United States. An increasing number of buyers, who fear the exploitation of natural populations, are stipulating that the chamaelirium they purchase be supplied through cultivation or by sustainable wild-harvest techniques. Growing support among conservation groups are considering petitioning CITES (Convention for International Trade on Endangered Species of Wild Fauna and Flora) to include chamaelirium in Appendix II. CITES is an international treaty that was formed to provide a mechanism to regulate and monitor international trade in wild plants and animals. All efforts should be accelerated to protect this species.

This Medicinal Herb Production Guide includes excerpts from, [Analysis of the economic viability of cultivating selected botanicals in North Carolina](#). Strategic Reports. 2002.

References

Allard, D.J. 2003. *Chamaelirium luteum* (L.) A. Gray (Devil's Bit). Conservation and Research Plan for New England. New England Wild Flower Society, Framingham, Massachusetts, USA.

Baskin, C. C., J. M. Baskin, and E. W. Chester. 2001. Morphophysiological dormancy in seeds of *Chamaelirium luteum*, a long-lived dioecious lily. *Journal of the Torrey Botanical Society* 128:7-15.

Cech, Richo. 2002. Growing At-Risk Medicinal Herbs. Horizon Herbs. Williams, Oregon. 314 pp.

Strategic Reports. 2002. Analysis of the economic viability of cultivating selected botanicals in North Carolina. A report commissioned for the North Carolina Consortium on Natural Medicinal Products by North Carolina State University, Raleigh, NC. 244 pp.