# Agroforestry Production Of Rare Medicinal Herbs In New Hampshire

*By Kate Dobrowski*

***"This material is based upon work supported by Sustainable Agriculture Research and Education in the National Institute of Food and Agriculture, U.S. Department of Agriculture, under Award No.FNE22-008."***

In March of 2022 our farm was awarded a SARE (Sustainable Agriculture Research and Education ) Farmer grant for "*Agroforestry Production of Rare Medicinal Herbs in New Hampshire".*
The grant would allow us to determine an first-stage agroforestry production method of growing four rare medicinal plants in a central NH woodland setting. Our objectives also sought to identify new business opportunities and improvements in woodland diversity and ecology for farmers in NH.
The rare medicinals we chose to grow from seed and rootstock were: Black Cohosh (Actaea racemosa), Bloodroot (Sanguinaria canadensis), Goldenseal (Hydrastis canadensis) and American Ginseng (Panax quinquefolius). These plants were chosen for their *Species at Risk* status (Species At Risk List by United Plant Savers), their marketability in the herbal marketplace, adaptability to NH climate and historical presence in the state. What follows are some of the highlights of the project. If you are interested in growing medicinal woodland plants perhaps our experiences might be of value to you and the plants that choose you to grow them.

## Some Highlights Of The Three Year Project

*Initial Fall planting November 2022*

### Choosing a location and setup

The start date of the project was March 1, 2022. Since seeding and planting roots of woodland medicinals should be usually done during fall dormancy we had time to connect with plant suppliers for advice, choose a suitable location, test soil, amend and create plots for the new plantings. We chose a wild simulated method which produces a naturalized population of plants.
Plot setups were the most expensive part of the project. The location of the plots was based on Table 5 of Visual Site Assessment from the book Growing and Marketing Ginseng, Goldenseal, and other Woodland Medicinals by Jeanine Davis and Scott Persons which we call the “Bible” of medicinal plant cultivation. We settled on a plot size of approximately 5’ X20’ or 100 square feet for 100 roots. The seed plots were the same size but the number of seeds varied and were recorded. Initially, there were 8 plots divided into 2 areas of 4 plots. Each area was surrounded by 4’X16’ high livestock panels to deter large predators like deer, moose, coyotes, bear, and turkeys from browsing or digging. Due to the presence of woodland voles that find tender roots enticing, we created 2 raised bed plots for the ginseng roots surrounded by quarter inch grid hardware cloth dug down 2 ft  for vole exclusion. Wildlife surveillance cameras were installed on each plot to monitor intrusions. Finally, the plots were raked of debris, cleared and amended with gypsum to raise calcium levels without raising Ph and to loosen compacted soil. Certified organic compost was added to each plot to cover roots and seeds and a final blanket of natural leaf litter, topped off each planting.

*Plots ready for planting roots*

## Sourcing Roots And Seeds

We researched seed and rootstock suppliers after the grant was awarded. Suppliers provided great information on soil conditions, and planting techniques for the woodland medicinals. Seed and roots require planting in the fall season while in a dormant state but before the ground freezes. Larger amounts of seed and rootstock within our budget were unavailable regionally for any of the four plants. We were able to find a supplier from Iowa and one from West Virginia that could fill our order. Two sources were chosen in the event that one was not able to deliver the products in the necessary time frame. We did not realize that climate and weather differences between Iowa, West Virginia and NH might become an issue . Using several root and seed sources was important but also an additional tracking variable in the research. The climate in Iowa was in a drought in November and the grower could not dig roots for us until the soil was hydrated. However, we did get the roots just before the ground froze. We were able to plant ginseng, goldenseal and black cohosh seeds earlier since seeds can be stored from the previous season to plant in early November. Bloodroot seed was the exception as it does not grow well from seed, requires intervention from ants, and must be planted immediately after harvest which is in early summer.

Plots were checked weekly through the winter with no major issues.

*April 2023*

## Spring Emergence, Counts And Seeds

The roots made it through the first winter ! One of the most exciting parts of this project was the emergence of bloodroot on April 16, 2023. Ginseng followed on May 1 along with a few goldenseal and black cohosh peeking through the leaf mulch. All plants continued to emerge through the end of May. Two ginseng seeds germinated on May 15th with continued germination through the summer ending with 76 new seedlings. Blood root, golden seal and black cohosh seed plots showed no germination. Plant counts were noted throughout a rainy spring

season of approximately 22 inches of rain from June through August. Ginseng requires at least 30” of rainfall per year making 2023 a great startup for the project.
Deer, porcupine, racoon, squirrels and turkeys were recorded passing through the area with no interest in the plants. The fencing proved valuable for keeping all but small rodents and birds out. The squirrels and chipmunks that got through the fence were only interested in acorns. A Barred Owl was spotted many times and may have helped with rodent remediation.
The woodland plants were healthy and surprised us with a bonus of bloodroot, ginseng and goldenseal seed production from June through October. We did not expect seed production the first year and needed to quickly create 3 new plots to replant the seeds which were counted and subsequently monitored.
Replanting the collected Bloodroot seed (*Sanguinaria canadensis*) provided a novel opportunity to experience the relationship of ants and bloodroot up close also known as myrmecochory. We were able to record a video of ants taking seeds away from the container they were in before we had time to plant them.
For more on this amazing  relationship check out this link from xeres.org/ Myrmecochory: How Ants Shape Plant Communities | Xerces Society

*Fresh ginseng berries*

## *April 2024*

### Weather Challenges And Organic Certification

After a long dark winter, the emergence of woodland plants is rejuvenating to the spirit. Black cohosh seed germination brought flushes of crowded, tiny green seedlings and the ginseng seed plots had lots of new seedlings. Still, no germination occured in the original goldenseal or bloodroot seed plots or the three new seed plots.
2024 with moderate rain,and by July weather in Merrimack County NH was trending into moderate drought which stressed the plants, especially goldenseal https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?fips_33013  2024 also brought insect damage and falling branches.
Bloodroot and ginseng produced seed but goldenseal and black cohosh did not.

The SARE medicinal herb plots were added to our farm organic certification and approved by Maine Organic Farmers and Gardeners Association Certification Services LLC.

Organic certification recognizes the importance of a healthy environment for production of non-toxic food and plants and advocates for safer alternatives to synthetic pesticides and fertilizers, and farming practices. See Maine Organic Farmers and Gardeners Association

Autumn of 2024 brought a spectacular red oak acorn mast season. For more than a week, acorns rained from the trees making it difficult to work in the forest without getting hit in the head. Wheelbarrows full of acorns had to be raked from the plots before tucking the plants in for the winter with an additional sprinkling of compost and leaf mulch.

*Black cohosh seedling*

*Ginseng in flower w/ insect damage*

*Ginseng seedlings*

## *April 2025 thru November 2025*

### Drought And Damage

The amazing spring 2025 emergence began with bloodroot on April 22, black cohosh on April 28, ginseng April 30 and goldenseal on May 2, followed by a week of very heavy rains thru early May.

A few bloodroot and goldenseal seeds finally germinated from seed plots after 3 years.

96.5 % of ginseng seed collected from the original rootstock planting germinated.

Red oak seedings were sprouting everywhere from the previous fall and had to be weeded out of the plots.

As it turned out, the heavy rain was critical for the survival of the plants. It was the last significant rainfall leading into severe drought preceded by a 5 day heat dome of 90 degrees throughout NH. Bloodroot seed was bagged for collection on May 27. By July 19th all plants were exhibiting signs of stress from lack of moisture.The plots were irrigated one time in mid July. By August, Merrimack County was experiencing severe drought with no expectation of relief in sight. My observations lead me to believe that drought conditions affected seed production of all the plants. Overall, goldenseal seemed to be most affected by drought. Only a few seeds were produced in 2024 and 2025 and root size has diminished.

A major setback to ginseng seed production occurred on Aug 8 2025, when almost all of the unripe green ginseng seed was decimated by an animal, most likely field mice. Game cameras were checked but nothing was recorded which led us to believe it was mice since they are not large enough to trigger a game camera. Chewed up seed is seen in the photo below. Mice were not a problem up until this incident. It is possible that they were looking for a source of moisture and the green seed was available. The remaining few seeds were bagged on the plants, counted, and replanted. Traps and seed bags will be used as prevention in the future.

*Ginseng seed destroyed by mice*

*Ginseng flower to seed and longhorned beetle (Analeptura lineola)?*

By September 24, the plants had died back and the forest canopy was invaded with many types of caterpillars. A constant barrage of caterpillar frass (poop) and chewed up leaves rained down on everything including our heads. The frass fallout is an important nutrient in the soil food web of life and will act as an all natural fertilizer for the forest environment. Caterpillar activity happens every year but 2025 seemed intense, possibly a response to severe drought conditions.

The ability to dig roots for measurement was also greatly affected by drought as roots cannot be dug in extremely dry conditions. Digging roots in dry soil damages them and they may not be suitable to replant. However, I was able to dig a few roots for a small average sample. Ginseng roots increased in weight by an average of 0.24 oz per root. Bloodroot, black cohosh, goldenseal did not increase in weight or size but used their energy to create many tiny running rootlet extensions. Some rainfall occurred in Sept and October and the beginning of November 2025 but much more is needed before the earth freezes to replenish aquifers to pre-drought levels. In retrospect, the methods of measurement used by digging up roots was not an effective way of determining project success at this point. Since plant maturity can be 5 to 10 years, and is affected by weather, root size is not really a determinant of success and can damage the still maturing plants. A better determinant would be to measure leaf size and seed counts and stem counts both which we did. We did not know about measuring leaf size until I saw it used in another study and will incorporate it into future studies.

## Outcomes And Conclusions

This project demonstrated that bloodroot, black cohosh, goldenseal, ginseng and other medicinals can be grown as a small scale enterprise in New Hampshire over the course of three years.The four plants are more difficult to grow from seed and can take years longer. More research is needed to determine if the four medicinals can be grown to become high quality mature plants. At least two to seven more years is needed to reach the desired market sizes and weights for roots. The medicinal herb trade is booming with a need for more growers to satisfy demand for threatened medicinal plants that should be cultivated rather than wild harvested. More than 75% of NH is forested land, some of which might be used to grow many of these rare medicinal and native plants.
With some investment, time, soil amendment and minimal intervention, underutilized woodlands could be converted for this purpose. Of course, there are challenges and

risks such as weather extremes, predation by rodents, animals and humans to deal with. But, there is a market for forest grown high quality medicinal herbs. Infrastructure such as rural herb hubs and shared processing facilities for small farmers to share equipment and participate in selling their non-timber forest products would need to be developed for New Hampshire to be able to enter into these markets .

## Resources and Notes

According to the current website of New Hampshire Department of Agriculture, Markets & Food: Ginseng FAQs | Plant Industry | NH Department of Agriculture, Markets and Food
there are no rules or regulations that pertain to the growing and cultivation of American ginseng by the New Hampshire Department of Agriculture, Markets & Food and a permit is not required from the New Hampshire Department of Agriculture, Markets & Food to grow American ginseng. However, In accordance with RSA 217-A:9 Prohibited Acts, it is a violation for any person (other than the owner of private property) to export, import, transport, take, possess, sell, or ship any protected species. The US Fish & Wildlife Service also regulates American ginseng. Please visit their website for additional information.

https://unitedplantsavers.org/species-at-risk-list/

https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?fips_33013

https://www.mofga.org/

https://xerces.org/

https://www.agriculture.nh.gov/divisions/plant-industry/faq-ginseng.htm#cultivation

https://www.fws.gov/international/plants/american-ginseng.html

https://www.nhdfl.dncr.nh.gov/forest-statistics

https://www.nhdfl.dncr.nh.gov/natural-heritage/rare-native-plants

Davis, J., & W. Scott Persons. (2014). Growing and Marketing Ginseng, Goldenseal and other Woodland Medicinals. New Society Publishers.