

***Aralia racemosa*: Lowlight Lush for Every Season**

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EXECUTIVE SUMMARY

Aralia racemosa (*A. racemosa*) is an exciting new crop that should be brought to the forefront of shaded landscape design. This lowlight herbariums perennial outshines the competition with intrigue throughout the seasons with lush foliage, stunning flower racemes, ornament like berries, and a flavorful root. This crop paper will show growers why they should want to consider production of this slow growing crop by giving a detailed overview of the history of *A. racemosa*, its uses in the landscape, and provide an outline on how this plant may be advertised and be brought to market with an in-depth production schedule.

I. INTRODUCTION

A. Study Species.

Aralia racemosa



Figure 1. This is a picture of mature *Aralia racemosa*. Here we can see the ovary ripening to give an impressive display of pink to burgundy colored berries.

B. Taxonomic Classification and Geographic Distribution in the Wild.

[Goal 2] *Aralia racemosa*, also known as American Spikenard and life-of-man, is an herbaceous perennial native to North America from the Southeastern US to Quebec Canada from zones 3-8¹¹. In the wild, it is found in the understory of deciduous forests or along wet ravines, where it

prefers moist soils and moderate to high humidity⁵. It does best in indirect sunlight levels, where it grows between 3-5' tall as well as wide¹². American Spikenard grows long (around 2') compound leaves that feature opposite, serrate margin, broad cordate shaped leaves about 6 inches in diameter. In July it grows a panicle of tiny, white, 5 petal flowers, which by August fertilize and ripen into a ¼" red to burgundy colored berry⁵. American Spikenard has a fragrant taproot and will also spread through solons³. American Spikenard is not considered invasive and is in fact used as an alternative for the invasive, similar looking Japanese Knotweed⁻².

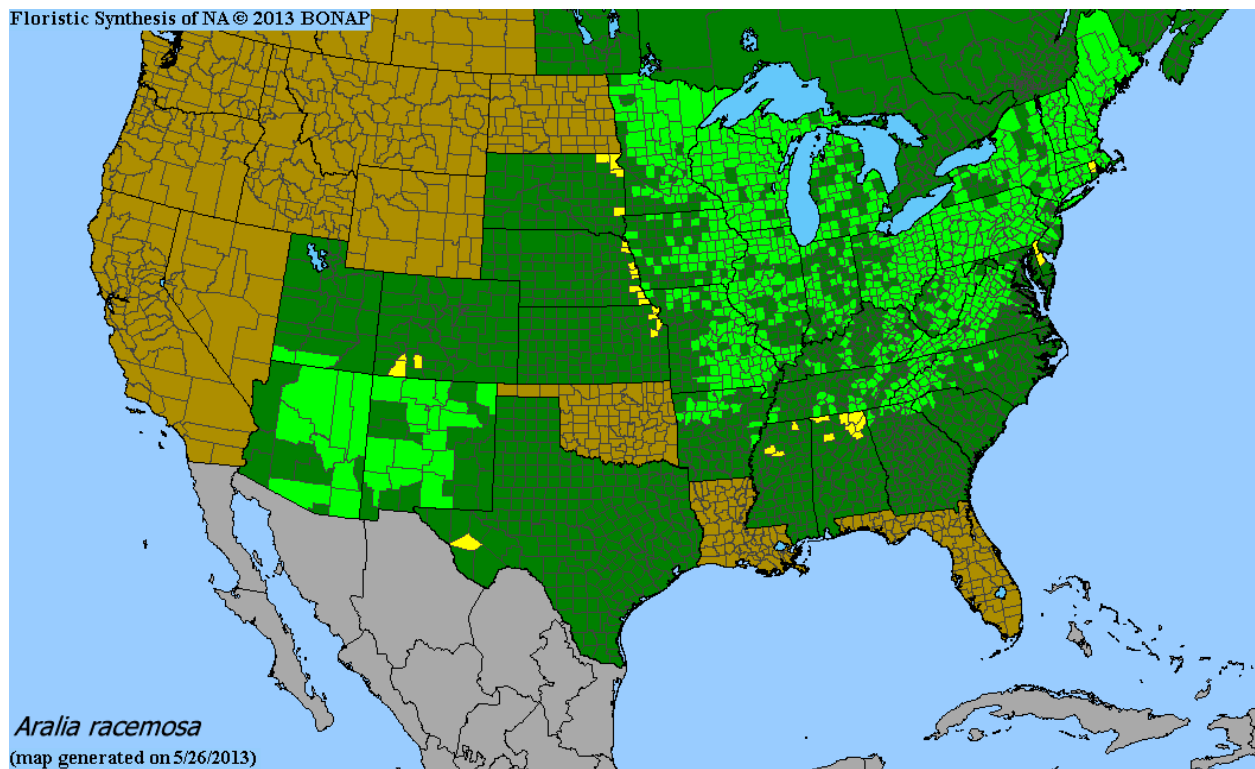


Figure 2: The native range of *Aralia racemosa*. The brown indicates where it has not been documented, the light green indicates where it is native and rare, and the dark green indicates where it is native and common.

II. CROP SPECIES

A. History and Potential Uses.

[Goal 3] The American Spikenard is native to North America, with sites ranging from Arizona to Quebec. North American Indians used most parts of this plant to cook with, as well as for medicine for centuries⁸. It remains unused by breeders and looks the same as it did centuries ago, and is today sold as seeds harvested from berries, or root cuttings. This is likely because of how long it takes to grow *A. racemosa* from seed, its low germination rates, and cold stratification necessary to grow. This leaves plenty of room for innovation for the plant and where it can be marketed. As it is a lowlight plant that is able to tolerate a wide range of soils once established⁶, it makes an excellent choice for consumers with little experience in plant care, as well as those who would like to have nice foliage but have too poor of soil. *A. racemosa* thrives in soil that can stay moist¹¹, which makes it a great choice to put by a gutter drain and hide the gutter for even more pleasing aesthetic. After it flowers for the first time, roots may be harvested in the fall for use in foods or for making drinks, which have medicinal properties similar to ginseng and have a root-beer aroma⁸. Because of all of these characteristics it makes a perfect addition to shaded understories of trees or small thickets that border a yard as well, which will look great as the broad leaves give rise to its white flower panicle in summer, and deep maroon berries in early fall.

The Minnesota Chippewa are documented using *A. racemosa* medicinally¹; taking the tea for some time before childbirth is said to make labor easier⁵; ingesting the root is good for the skin and can soothe swelling, inflammation, and chest pains⁵; and *A. racemosa* is still used medicinally today in modern herbalism as a detoxifier. In fact, every part of the *A. racemosa* plant has been utilized to provide medicinal benefits in some way³. The young shoot tips can be eaten if cooked and can also be used as a potherb for flavoring soups⁵. The root is pleasantly aromatic and imparts a licorice-like flavor; it is large and spicy and can be used in soups or as a replacement for sarsaparilla (*Smilax spp.*) in root beer¹. The berries can be eaten raw or cooked and are described as pleasant and wholesome to eat or made into a jam.

American Spikenard is sold by seed companies and can be found in some nurseries, though this plant is typically grown from seed as it is sensitive to transplanting and is typically sown into the yard

through nature or an acquired seed packet¹. There are no subspecies or cultivars that I was able to find, so it seems that it is currently being sold as *Aralia racemosa* for the perimeter of houses and for native planting projects. I have not been able to find any information on breeding, though I heavily suspect that breeders exist, as it is sold by several seed companies and its Japanese cousin *Aralia cordata* recently won 2020 Perennial of the Year by the Perennial Plant Association⁷.

As I have not been able to find sources on a distribution chain, I have hypothesized my own in figure 3. Here we can see at the base plant explorers that would be on the hunt for any phenotypes in the wild not yet found in a germplasm. From the germplasm, a breeder can take the landrace and breed it to express different aspects (foliage, flower, fruit, root) or for favoring different light levels. From the breeder to the seed producer of a finished new cultivar, I drew another arrow to show that breeders can take this product and continue to breed/modify the plant. From the seed producer it goes to a wholesale seed seller, that will market the new cultivar for sale directly to the consumer as seed, to commercial consumers like housing developments, or to nurseries for seed sale or for growing to a version that can be transplanted into its site (Ideally early spring). The same idea applies to nurseries for vegetative propagation to sell to big box stores or individual consumers.

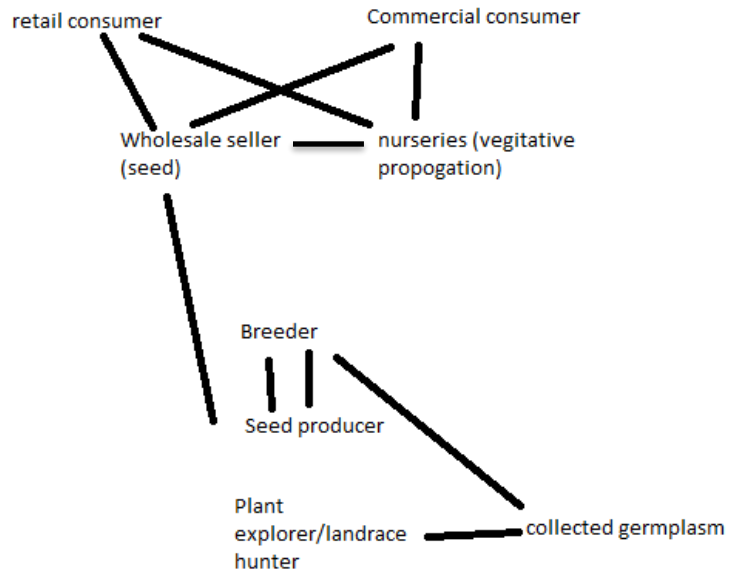


Figure 3: Horticultural distribution chain concept for *Aralia racemosa*.

A. Anticipated Cultural Requirements.

[Goal 4] *A. racemosa* seeds require cold stratification of at least 6—10 weeks to germinate¹².

After 6 weeks seeds should be sown into size 128 plug trays in a seed starting mix under low light and consistent moisture, where it can take between 14-30 days for germination. Spikenard seeds have a lower germination rate which should be accounted for (between 20-30%)¹².

After germination and outgrowing its plug, each Spikenard should be transplanted into a 4-6” inch pot and placed under lights or grown under bright-indirect sun¹². The dirt used should be heavy in loam or peat, with perlite added for pore space¹¹. Spikenard is tolerant of mild acidic soils to moderately alkaline soils but does best in a soil with a neutral pH. Water the pots to keep the soil moist, and only let dry slightly. Once plants should either be sold to be planted out or

transplanted into a new pot. This is done because it is hard to successfully transplant Spikenard once it has fully established itself.

It will take at least 180 days for the plant to reach maturity, and as such will take 1 to 2 years for it to flower, and only after it flowers can its roots be harvested for their medicinal purposes⁵. Because of this long maturity time, it is critical that young plants should not be planted outside past late spring to give enough time to establish itself.

Roots can also be dug up once it enters dormancy for the winter and stored in cold conditions and may be sold as a way of propagation³.

B. Market Niche.




[Goal 5] This is an exciting crop for the landscape industry. Not only is it a showy plant that will fill in shaded areas, it is also a native herb that can be harvested after its showy display of burgundy colored berries. This plant is well suited to be near the gutter of a house, near a pond, or anywhere the soil will get adequate moisture. Though high moisture is recommended, American spikenard is tolerant of mild drought once established. American spikenard is also able to survive in a range of pH conditions, further expanding where it can be planted. Places where American spikenard will not thrive is in direct sunlight, which will cause the plant to dry out too fast. This is a plant that is best sold to consumers through divided rhizomes or cuttings from an already established plant for the convenience of the consumer. Dormant roots or potted plants should be sold between early/mid-March to very early may for plants to establish themselves after purchase. The limitations of this plant are that it can grow to cover other plants where it is established, so selecting companion plants that can take added shade such as hostas or ferns should be considered⁶.

“A plant that changes from spring to fall, perfect for the patio environment, and will give you something to show guests time and time again. American spikenard is a shade loving plant from the ginseng family, sharing its medicinal properties in fragrant, edible roots. With large lush leaves that spread over time, transform a shaded corner of the yard into a lush paradise for all to see! Plant in early spring to see its delicate white flowers by July, and pink-red berries around August. Is best planted with other low light, fast establishing plants such as hostas or ferns, or spring perennials.”

CURRENT PRODUCTION STATISTICS

Currently, production of *A. racemosa* is limited to *L. ssp. racemosa*, the variety which is also found in the wild. There are other similar plants in the genus of *Aralia* which *A. racemosa* would compete with such as *A. cordata*, which is a slightly larger plant able to grow 8 feet tall⁷, and featuring large, white, showy inflorescences. There is also the popular *A. californica*, a very popular species in the US that features similar looking leaves and grows even taller than *A. cordata* at a height of 10 feet. *A. californica* is attractive to landscapers not only for the signature white inflorescence, but also its lovely fade to yellow in the fall that allows it to appear uniformly golden¹⁰.

From these other popular cousins of *A. racemosa*, it seems that the features that are sought out after are: large leaves that provide interest through size, shape, fall color, and showy inflorescences. These are traits that *A. racemosa* has, though not as much as all the other varieties of *Aralia*. In table 1 below are the comparisons between these different plants of the same market.

TABLE 1. Species of the genus <i>Aralia</i> and their different characteristics				
Species of <i>Aralia</i> on the Market	Plant Height x Width	Leaf description	Inflorescence	picture
<i>A. racemosa</i>	6' x 6'	Large, broad, cordate, deep green	Medium sized raceme with small white flowers	
<i>A. cordata</i>	8' x 8'	Large, pinnate, green to light green	Medium raceme with extended very small white flowers	
<i>A. californica</i>	10' x 10'	Large, pinnate, deep green to golden yellow through the season.	Extended raceme with further spaced out small white flowers.	

Production of all of these varieties including *A. racemosa* follow similar growing timelines: 6-10 week cold stratification; have a very slow germination time between 2 weeks to 4 months; have a relatively low germination rate; must be grown in a greenhouse through the first winter; until spring when they are ready for sale. The entire time for propagating *A. racemosa* and its cousins takes about 10 months total. Because of this most of the cultivation of these varieties is through propagation of cuttings.

Proposed Changes

Given this information about *A. racemosa* and its close related species, efforts should be made to make it more competitive in the landscaping market. While it would take years to select for better varieties of *A. racemosa*, the effort would be well worth it in the long run. Selection for plants with a higher germination rate of seed would be one thing to select for, as well as faster germinating seeds to close the window of a 4month germination period. Speeding up and tightening the production schedule would already put *A. racemosa* ahead of the other cultivars

from a grower's perspective, but selections should also be made for leaf size, as well as size of inflorescence.

Current production on *Aralia* species is less intensive because of this 10-month long process to raise seeds¹², and nurseries typically opt for natural cold stratification with fall planting and sell in the Spring or Summer after the plants first year. This is convenient and easier for propagating a plant that is hard to schedule with such a large window for germination, as well as lower germination rates. It is also cheaper to cold stratify *Aralia* seeds outdoors compared to stratifying in a refrigerator that costs money to run and space is limited. Nurseries are also not incentivized to change, as demand for this plant is not high, and it is inexpensive to buy. I believe that implementing cold stratification in the freezer can extend the annual availability of this plant, as well as allow for larger quantities to be sold. I believe that seeds should be sown and cold stratified every month, and each generation kept in the refrigerator at 35 degrees Fahrenheit for the required 8 weeks. After the cold stratification, trays should move to a heated greenhouse, where the grower can transplant seedlings from different generations together, based on germination time. The one-month gap is to compensate for the naturally slow germination rate as well as simplifies the growers schedule by not scheduling by generation, but rather by when seeds emerge from their plug trays. From that point they should be grown according to the crop schedule provided below. Plants grown from seed should also be grown to be mother plants from which cuttings can be taken, which is a considerably faster way to propagate.

Propagation and scheduling of root cuttings would not change for this plant, as they can be uniformly harvested from mother plants and should grow at an even rate.

III. PRODUCT INFORMATION GUIDE (PIG) & CROP SCHEDULE

From Seed:

Total time seed to maturity: 36 weeks*

Time from growth phase 1 to maturity: 12 weeks

Container size: sowing: 128 cell plug tray; transplant: 4" pot; finish: 1 gallon pot.

Plug Stage: 10-16 weeks**

Press seeds into a 128 cell plug tray, with 3 seeds per cell. Seeds should be pressed into a fine textured germination medium and covered with a light layer of vermiculite and moisten the medium.

Optional: scarify seeds with fine grain sandpaper for increased germination rate.

Place plug trays into refrigerator at 35 degrees Celsius, keep trays moist.

Refrigerator time: 8 weeks

Remove seeds from refrigerator and place in a shaded greenhouse at 60-65 degrees Fahrenheit. Keep the medium moist through germination, transplant seedlings when first true leaves appear, thin out cells as needed. Transplant seedlings that are ready in large groups for uniform vegetative growth

Germination time: 2-8 weeks

Growth phase 1:

Transplant seedlings into individual 4" pot in a peat-based soil medium mixed with perlite. Place in greenhouse at 65-70 degrees Fahrenheit under 12 hours of light.

Growth phase 1 time: 7 weeks

Growth phase 2:

After 7 weeks transplant plants from 4" pot to 1-gallon container and grow under the same conditions for an additional five weeks.

Planting:

Plants should be spaced 4' apart in a shaded to semi-shaded area that is adequately moist throughout the growing season. Flowers bloom in early August. Berries form in late August to late September. Roots should be harvested in late Fall or early Spring.

Notes:

*: This time has a variability of 6 weeks, for the most consistent results growing seedlings together that are at the same stage of development is recommended over the time the seeds were planted. It is recommended sowing seeds about 1 month apart to accommodate for this variation.

** : The germination rate for this crop is low, and germination can take up to 2 months. The recommended method of sowing 1 month after each crop should guarantee that enough seedlings are at the developmental stage ready for growth phase 1. If the grower finds they have an ample germination rate/speed, discard extra, slow germinating seeds for uniformity.

It should also be noted that this is an herbaceous perennial that will die back at first frost. It is recommended that seeds are not scheduled to be ready during cold months in the grower's area. Plants should instead be scheduled to be ready for outdoor planting between the last frost date, and 2 months before fall frost date.

IV. A. RACEMOSA IDEOTYPE FOR END CONSUMERS

The Ideal end form of *A. racemosa* should be a plant that is even in its proportions and has an appropriate plant to pot ratio. For height, the Ideal plant should follow the aesthetic ratio of 1/3 pot, 2/3 plant. The average 1-gallon pot is between 6 and 7 inches tall⁹, so the ideal height of the plant should be 18-21 inches tall depending on the pot height. At this height, leaflets may be reaching out a few inches from the pot. The Ideal leaflets at this stage should not extend further than half length of the diameter of the pot. The average 1-gallon pot is between 6 to 8 inches⁹, so

the grower should seek plants that extend between 3 to 4 inches off the edge of the pot. Uniform leaf/leaflet growth between different nodes should be even, and not throw off the symmetry achieved in the production stage. *A. racemosa* should not be in flower when sold. It typically only flowers once it has reached a certain size, so the plant would be cumbersome to transplant, and *A. racemosa* flowers later in the summer/early fall and is not recommended to be planted then. Ideally the plant flowers and produces berries in the site it is planted for maximum usage of the plant. If dividing roots or raising a plant to use for cuttings, look for stock that had longer flower racemes with the tightest spacing between nodes for the fullest look.

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