

Plant Propagation Protocol for *Amorpha fruticosa*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/AMFR.pdf>



Photo taken by Sally Wasowski

Source: https://www.wildflower.org/gallery/result.php?id_image=21242

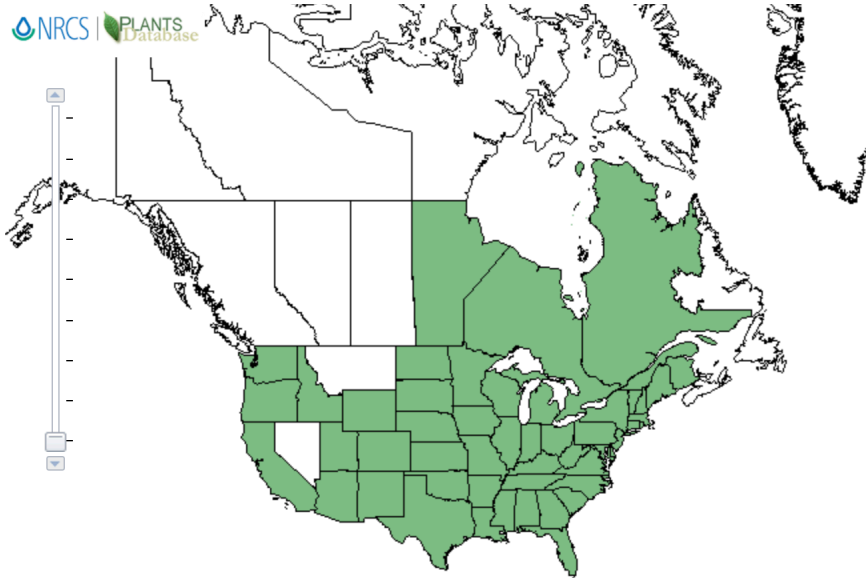
TAXONOMY	
Plant Family	
Scientific Name	Fabaceae (Leguminosae)
Common Name	Legume, Pea, Bean Family
Species Scientific Name	
Scientific Name	<i>Amorpha fruticosa</i> L.
Varieties	None recognized by the USDA Plants database.
Sub-species	None recognized by the USDA Plants database.
Cultivar	n/a
Common Synonym(s)	<i>Amorpha angustifolia</i> (Pursh) Boynt. <i>Amorpha bushii</i> Rydb. ¹⁰ At least 16 obscure synonyms. ⁶
Common Name(s)	Tall Indigo Bush Bastard Indigo False Indigo Bush ⁷
Species Code (as per USDA Plants database)	AMFR

GENERAL INFORMATION

Geographical range

North American distribution

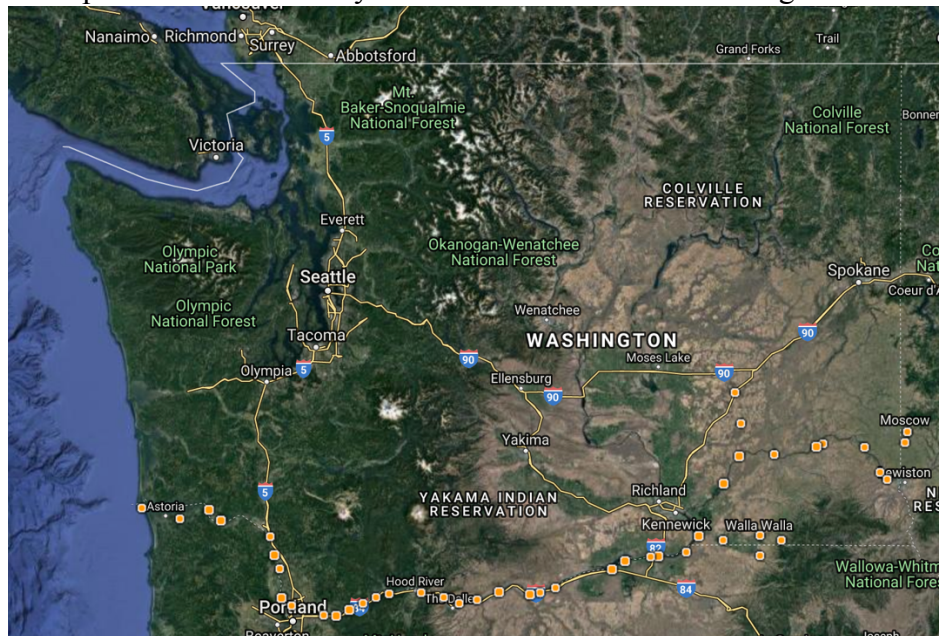
This species is widespread throughout United States and eastern Canada.



Map from USDA Plant Database¹⁰

Washington state distribution

This species is found mostly in southern and eastern Washington.



Map from Consortium of Pacific Northwest Herbaria Specimen database¹

Ecological distribution	This species occurs in wetlands, riparian areas, floodplain forests, and low woodlands. ^{6,8}
Climate and elevation range	No specific elevation range is given for this species. It is widespread in North America and parts of Europe and typically found in moist habitats. ⁸
Local habitat and abundance	Usually found in riparian or lakeshore habitat, and occasionally in moist upland areas. ⁶ In Washington this species has been found in association with <i>Salix</i> , <i>Rubis armeniacus</i> , <i>Clematis ligusticifolia</i> , <i>Alnus rubra</i> , <i>Dipsacus</i> , <i>Iris pseudacorus</i> , <i>Carex vulpinoidea</i> , <i>Convulvus</i> , <i>Bromus</i> , <i>Rumex</i> , <i>Plantago</i> , <i>Centaurea</i> , <i>Populus</i> , <i>Phalaris</i> . ⁹
Plant strategy type / successional stage	Often found growing in dense thickets along streams or lakeshores. Weedy or invasive in some places. Sometimes found in moist upland locations. ⁶ This species is banned and listed as potentially invasive in Connecticut. In Washington it is listed as a Class B noxious weed and as a noxious weed seed and plant quarantine species. ¹⁰ This species is a nitrogen fixer. ²
Plant characteristics	Deciduous shrub that grows to 11ft. Compound leaves 4-12 inches long, 5-25 leaflets. Leaflets elliptic to oblong with velvety lower surface. This species has blue-violet flowers in fan like masses on top of leaflets. This species usually occurs in wetlands but may occur in non-wetlands (FACW). It is a valuable plant for several species of native North American butterflies. ^{10,8}
PROPAGATION DETAILS	
Ecotype	Seed was collected in South Central Missouri. ⁵ Seeds were harvested from seed production hedges in the middle Rio Grande Valley in Central New Mexico. ⁴
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug). ^{3,4} Bareroot (field grown). ⁵
Stock Type	164 ml conetainers ⁴
Time to Grow	1 year in MO. ⁷ Weeks in NM. ⁴
Target Specifications	24 inches, 0.25 to 0.5 caliper, root system must balance top growth. ⁵
Propagule Collection Instructions	In one protocol seeds were purchased from local people who collect with 50 mile of White State Forest Nursery in Licking, MO. Seeds were collected in August and September when they were olive brown in color. ⁵ Seedlings typically sown in early March. ⁴
Propagule Processing/Propagule Characteristics	77,000 seeds per pound. ⁵

Pre-Planting Propagule Treatments	<p>Air dry seed. Seed can be cleaned with brush machine followed by a Jesse aspirator to remove chaff.⁵</p> <p>Scarification is required for germination. Mechanically nick the seed, soak in hot water for 10 minutes, or soak in concentrated sulfuric acid for five to eight minutes. Seeds germinate at 30-20°C.³</p> <p>Presoak seed for 12 hours in warm water then sow early spring in a greenhouse. Seed should germinate in 1-2 months at 20°C.²</p>
Growing Area Preparation / Annual Practices for Perennial Crops	<p>Seeds can be planted directly into fields. At White State Forest Nursery in Licking, MO soils are amended the spring before planting and a soybean cover crop is grown. In August, disking is done to produce smooth soil surface, and soils are fumigated in late September. Overhead irrigation is used throughout growing period.⁵</p>
Establishment Phase Details	<p>Seeds are sewn 0.25 inches deep to protect from herbivory. Old sawdust and hydromulch can be applied after sowing.⁵</p>
Length of Establishment Phase	<p>1 month after emergence in spring.⁵</p> <p>2 to 4 weeks.⁴</p>
Active Growth Phase	<p>Fertilization occurs in year one of growth 5 to 6 weeks after germination. Seedlings are root pruned during June with pruning depth of at least 10 inches.⁵</p> <p>First 4 to 6 weeks of active growth happens in greenhouse. Containers are irrigated as needed. Water needs steadily increase as the plant grows in the greenhouse. Seedlings are fertigated every irrigation with (20-10-10;N-P-K) during the active growth phase. Greenhouse temperatures were 21 to 26°C in the day and 18 to 22°C at night. Plants are transferred to the shade house to grow for in ambient light and temperature for another 4 to 8 weeks.⁴</p>
Length of Active Growth Phase	<p>4-5 months⁵</p> <p>14 weeks total.⁴</p>
Hardening Phase	<p>Hardening starts in August when fertilization stops, and irrigation frequency and duration are shortened and applied only when needed.⁵</p> <p>The hardening process takes place in the shade house around the end of August. Water stress is incrementally increased. Nights begin to cool. Plants become acclimated to water deficits and cooling by fall. Plants are considered hardened when buds have formed and leaves have dropped.⁴</p>
Length of Hardening Phase	<p>3 months.⁵</p> <p>8 to 10 weeks.⁴</p>
Harvesting, Storage and Shipping	<p>In bareroot production plants are lifted from late November to April by hand after seedling beds have been undercut at an average depth of 10 to</p>

	12 inches. Lifted nursery stock is then stored in cooler, graded, and bundled to be shipped in February. ⁵ For container production seedlings are moved from the shade house to cold frame in late October to early November to protect seedlings from damage by fluctuations in diurnal winter temperatures. Temperatures in the cold frame ranged from 2 to 4°C day and night. ⁴
Length of Storage	5 months. ⁴
Guidelines for Outplanting / Performance on Typical Sites	Plants should be planted out while still small. Plant out in late spring or early summer. ²
Other Comments	Plant is said to contain alkaloids and be poisonous to livestock. ²
INFORMATION SOURCES	
References	See below
Other Sources Consulted	Fischbach, Jason A, et al. "Seeding Rate Affects Establishment of Native Perennial Legumes in the Upper Midwestern US." <i>Native Plants Journal</i> , vol. 7, no. 1, 2006, pp. 61–68. <i>JSTOR</i> , JSTOR, www.jstor.org/stable/43309683 . 30 July 2018.
Protocol Author	Kyra Matin
Date Protocol Created or Updated	07/31/18

References

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- ⁸"Plant Database." *Lady Bird Johnson Wildflower Center, The University of Texas at Austin*, www.wildflower.org/plants/result.php?id_plant=amfr. Accessed 21 July, 2018.
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