



swamp verbena

Verbena hastata, L.

Alternate Common Names

blue vervain, simpler's joy, American blue vervain, American simpler's joy, wild hyssop

Functional Group

forbs (wildflowers)

Family

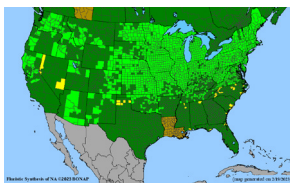
verbena family (Verbenaceae)

Description

- » **Life cycle/growth form:** Perennial, short-rhizomatous.
- » **Height:** 2-6 ft
- » **Leaves and stem:** Leaves are opposite, lance-shaped (up to 6 in long and 1 in wide), coarsely toothed, strongly veined above, and usually short-hairy beneath; stems square, grooved, and green to purple, with flattened hairs, often branched in the upper half of the plant.
- » **Flower:** Individual flowers are blue-purple, ¼ in across, with five expanded lobes (petals) attached to a short tube; flowers are arranged in a branched “candelabra” (panicle) of spikes; spikes elongate through the flowering season as new flowers emerge in whorls (rings) near the tops while seeds (nutlets) mature near their bases.
- » **Fruit/seed head:** Each calyx of fused sepals contains four developing seeds (nutlets); spikes ripen from the bottom up.



Habitat and Range



Swamp verbena grows best in full sun and moist to wet, organic-rich soils. Plants are typically found in wet places such as wet prairies, sedge meadows, fens, and ditches. Wetland Indicator Status is Facultative Wetland (FACW) for the Midwest. Production fields benefit from irrigation.

Conservation Status

Global- G5, secure; North Carolina- S2/S3, imperiled to vulnerable; Wyoming- S3, vulnerable (NatureServe)

General Comments

Swamp verbena is well suited for planting in moist soils or seasonally wet sites such as roadside ditches. It grows quickly

and flowers in the planting year, producing abundant seed that is relatively easy to harvest and clean. Most mammalian herbivores avoid the bitter foliage, hence this species has persisted even in heavily grazed, wet prairie pastures. Swamp verbena has a long flowering period and is visited by diverse species of bees and small butterflies. The seeds are eaten by native sparrows and juncos. Swamp verbena has numerous uses in traditional Native medicine, including as a treatment for digestive and obstetric complaints. Caution: Extracts of this species are known to interfere with prescription medication and can cause vomiting and diarrhea in high doses.

Establishment for Seed Production (Appendix A)

Direct seeding:

We do not have experience with direct seeding this species for seed production.

- » **Seeding rate:** 0.5 PLS pounds/acre (40 seeds/linear foot)
- » **Row spacing:** 30-36 in rows
- » **Seeding time:** Dormant (needs 30-90 days cold stratification).
- » **Seeding depth:** surface
- » **Weed control:** Prepare clean, firm, weed free seedbed prior to seeding.

Greenhouse:

- » **Seed pre-treatment:** Cold/moist stratification is recommended. Different sources suggest a minimum of 30 days (RNGR) up to 3 months (NRCS Plant Guide). Most northern Iowa accessions showed high rates of germination after 30 day stratification, but a few accessions appeared to have a higher degree of dormancy. In these cases, we saw a second flush of germination after a week of very high temperatures in the greenhouse, more than 2 months after sowing.
- » **Sowing:** Sow seed on surface of germination mix (light needed for germination).
- » **Transplanting:** Seedlings grow rapidly with fibrous root systems that form firm plugs for transplanting. Plan on sowing seed in greenhouse containers 8-10 weeks before transplanting. If seedlings grow too tall in plug trays, they should be pinched back to adjust the shoot:root ratio.

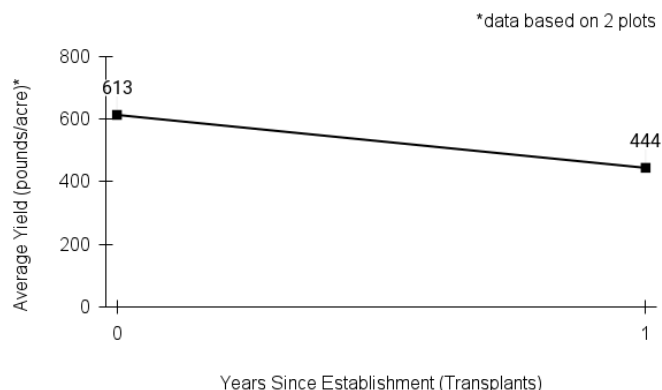
Stand Management

- » **Hybridization:** Maintain separation between fields of swamp verbena and other species in the genus *Verbena* (e.g., hoary vervain, *Verbena stricta*) as hybrids readily form.
- » **Weeds:** Plastic mulch prevents weed competition in the first year, and tall fast-growing verbena plants are fairly competitive. Holes in the plastic may need to be widened to accommodate rhizomatous spread in the second and subsequent years. Focus weeding or roguing efforts on weeds that could contaminate the seed (i.e., species with small, elongated seed).
- » **Pests:** None noted. Bitter foliage deters mammalian herbivores.
- » **Diseases:** None noted, though plants appear to be short-lived (2-4 years) in production rows.
- » **Soil moisture:** Irrigation is recommended.

Seed Production (Appendix B)

- » **First harvest:** In planting year, when grown from transplants.

- » **Yield:** 440-610 pounds/acre (based on 2 plots)
- » **Stand life:** Estimated 3-4 years, with peak harvest in year one.
- » **Flowering date:** late June - September
- » **Seed maturity/Harvest date:** mid-September - mid-October
- » **Harvest date range at TPC (2021-2023):** Sept 16 - Oct 19
- » **Recommended harvest method:** Seed heads turn from green to purple to brown as they mature. Harvest when all, or nearly all, parts of the spikes have turned brown. Some seeds will shatter from lower parts of spikes as the seeds in the upper parts mature, but most seed is retained on the plant. Hand harvest early maturing individuals to preserve genetic diversity, then combine the rest of the plot at peak maturity.



Seed Cleaning Process (Appendix C)

- » **Hand-collected material:** Dry on tarp or in a cloth bag for 2 weeks. Thresh by passing through a stationary combine or by stomping/beating material on the tarp or in a plastic tub. Pass through a ¼ in and ⅛ in mesh to remove sticks before airscreening.
- » **Combined material:** Dry for two weeks. Pass through ¼ in and ⅛ in mesh to remove larger sticks (if any) before airscreening.
- » **Note:** Airscreening one-two times results in a very pure product.

Seed Characteristics (Appendix D)



- » **Seeds per ounce:** 93,000 (IA NRCS)
- » **1000 seed weight:** 0.23 g (Seed Information Database)
- » **Description:** Seed unit is technically a type of dry fruit called a nutlet. Rust-brown nutlets are 2 mm long and approximately 0.5 mm wide.

- » **Seed storage:** cool/dry (orthodox)
- » **Typical seed test:**
 PLS: 97%
 Purity: 100%
 Germination: 13%
 Dormancy: 84%
 (averages obtained from 5 tests of purchased seed lots)

Released Germplasm

- » **Source Identified material:** Natural Selections/Iowa Ecotype Zone NI

References

- Chayka, Katy. (n.d.). *Verbena hastata* (Blue Vervain). Minnesota Wildflowers. <https://www.minnesotawildflowers.info/flower/blue-vervain>
- Hilty, J. (2019). *Blue vervain - Verbena hastata*. Illinois Wildflowers. https://www.illinoiswildflowers.info/wetland/plants/bl_vervain.htm
- Kartesz, J.T., The Biota of North America Program (BONAP). 2023. North American Plant Atlas. (<http://bonap.net/napa>). Chapel Hill, N.C. [maps generated from Kartesz, J.T. 2023. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP). (in press)]
- Kirk, S. and S.Belt. (2010). Plant fact sheet for blue vervain (*Verbena hastata*). USDA-Natural Resources Conservation Service, Norman A. Berg National Plant Materials Center. Beltsville, MD 20705.
- Moerman, D. (2003). *Native American ethnobotany database*. BRIT. <http://naeb.brit.org/>
- NatureServe. 2024. NatureServe Network Biodiversity Location Data accessed through NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Available <https://explorer.natureserve.org/>. (Accessed: February 28, 2024).
- Society for Ecological Restoration, International Network for Seed Based Restoration and Royal Botanic Gardens Kew. (2023) Seed Information Database (SID). Available from: <https://ser-sid.org/> (February 2023)
- USDA-NRCS. (2022). Iowa NRCS Conservation Cover Native Seeding Calculator. https://www.nrcs.usda.gov/wps/cmیس_proxy/https://ecm.nrcs.usda.gov%3A443/fncmis/resources/WEBP/ContentStream/idd_D0038083-0000-C716-9B80-F4A34594D552/0/327_IA_OTH_Conservation_Cover-Native_Seeding_Calculator_2022.xism
- USDA NRCS National Plant Data Team. (n.d.). *Verbena hastata* L. USDA plants database. <https://plants.usda.gov/home/plantProfile?symbol=VEHA2>
- Species Updated: 3/5/2024

Notes
