Forbs Wildflowers

white sagebrush

Artemisia ludoviciana Nutt.

Alternate Common Names

white sage, prairie sage, western mugwort, Louisiana sage, prairie wormwood, cudweed, mugwort, dark-leaved mugwort, sagewort, western sage, sailor's tobacco, sagebrush

Scientific Synonym

Artemisia vulgaris var. ludoviciana (Nuttall) Kuntze

Functional Group

forbs (wildflowers)

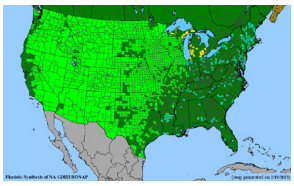
Family

aster or sunflower family (Asteraceae)

Description

- **Life cycle/growth form:** Perennial, spreading by rhizomes to form large colonies that exclude some other plants.
- **Height:** 1-3 ft
- **Leaves and stem:** Alternate leaves, aromatic when crushed, of variable shape but mostly narrow, elongated ellipses up to 1 in wide and 3.5 (occasionally up to 5) in long, short-stalked or sessile, with silvery-white hairs on leaves and stems giving them a felt-like texture; stems may be branched or unbranched.
- **Flower:** Individual florets are inconspicuous within silvery, barrel-shaped, 1/8 in heads arranged in clusters in upper leaf axils or in spike-like to open, branched arrays up to 17 in in length; at full flowering, yellow stamens and minute, yellow to reddish corollas may be visible; wind-pollinated.
- **Fruit/seed head:** Roughly cylindrical in shape, approximately 1/8 in long, pappus is absent, heads open to release seed (achenes) when mature.
- **Pollination:** wind

Habitat and Range



Dry to mesic soil; full sun; sandy or rocky prairies, roadsides. Wetland Indicator Status is Obligate Upland (UPL) for the Midwest.

Conservation Status

Global- G5, secure; Michigan- S1, critically imperiled (NatureServe)

General Comments

All above ground parts of the plant have a distinctive sage-like fragrance when rubbed or crushed. This species has traditional medicinal and ceremonial uses among numerous Native American tribes. Because it is wind-pollinated, white sagebrush is not considered a resource for pollinators, though it is a larval host for at least one species of moth caterpillar, *Phaneta argenticostana*. Its mode of vegetative spread produces a dense network of rhizomes and roots that function in erosion control.

Establishment for Seed Production (Appendix A)

Direct seeding:

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

Greenhouse:

- **Seed pre-treatment:** 60 days cold-moist stratification (fine silica sand).
- **Sowing:** Surface (seed is small and must not be buried too deeply); seed directly onto plug flats or start seedlings in germination trays and dibble into plugs when seedlings have first true leaves; start in greenhouse about 8-10 weeks prior to transplanting.
- **Transplanting:** Harden off seedlings 1-2 weeks prior to transplanting; transplant with 12 in plant spacing in plasticulture plots or into bare soil in 36 in rows, after danger of frost; cut or remove plastic after the first full growing season to allow plants to spread by rhizomes.
- **Note:** Also readily propagated through division or rhizome cuttings (see NRCS Plant Guide referenced below).

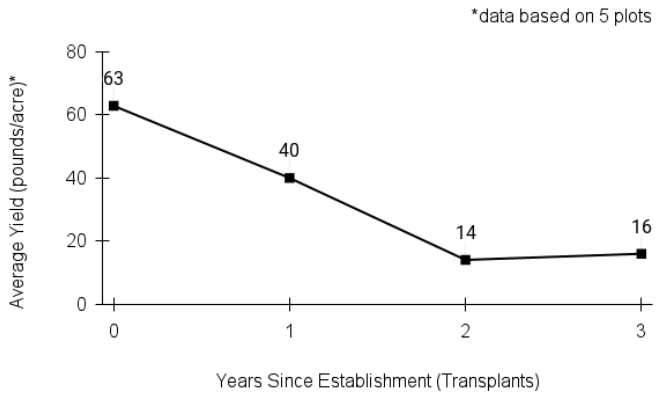
Stand Management

- **Weeds:** Few issues as dense, young colonies tend to exclude weeds; other small-seeded members of the aster family (e.g., frost aster, *Symphyotrichum pilosum*, and marestail, *Erigeron canadensis*) could contaminate seed and should be rogued out before harvest.
- **Pests:** None noted.
- **Diseases:** None noted.

Seed Production (Appendix B)

- **First harvest:** In fall of first year when started from greenhouse transplants.
- **Yield:** 15-60 pounds/acre (based on 5 plots)
- **Stand life:** Peak seed production in the first two years, then declining.
- **Flowering date:** late August - September
- **Seed maturity/Harvest date:** Mid-October in northeast Iowa; gauge maturity by sampling heads from several plants and crushing to reveal developing seeds (a hand lens is helpful); mature seed will have a grayish-brown color and separate easily from the receptacle; watch for heads to open and release seed when mature; seed shatters easily and will be lost if harvest delayed.
- **Seed retention:** Shattering begins once seedheads open in mid to late October.
- **Harvest date range at TPC (2003-2023):** July 17 - Oct 28

» **Recommended harvest method:** Combine at maturity or cut/swath stems when about 10% of plants in the plot have open seed heads and lay to dry in shed, then run through stationary combine.



Seed Cleaning Process (Appendix C)

Brush (Westrup LA-H) with stiff bristles and #14 screen mantle to release seed from heads, use minimal vacuum; airscreen several times.

Seed Characteristics (Appendix D)

» **Seeds per ounce:** 250,000 (IA NRCS)
» **1000 seed weight:** 0.11 g (Seed Information Database)
» **Description:** Cypsela (achene), elliptical in outline, about 0.5 mm long, light grayish-brown, without hairs or attached fluff (pappus).

» **Seed storage:** cool/dry (33-50° F, 30-50% RH)
» **Typical seed test:**
PLS: 84% (n = 11)
Purity: 92% (n = 11)
Germination: 30% (n = 10)
Dormant: 57% (n = 11)
(averages obtained from n tests of purchased seed lots)

Released Germplasm

» **Source identified material:** Natural Selections/Iowa Ecotype Project Zones 1, 2, and 3
» **Cultivated variety (cultivar):** Summit (LA); horticultural varieties may also exist.

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Species Updated: 12/18/2024

Notes