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)

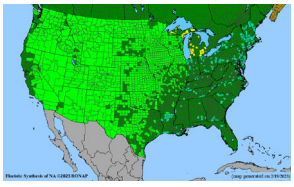
Family

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, ⅛ 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 ⅛ in long, pappus is absent, heads open to release seed (achenes) when mature.

Habitat and Range



Full sun, mesic to dry, 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.
- **Harvest date range at TPC (2005-2022):** Oct 19 - 24
- **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 (orthodox)
- **Typical seed test:**
  PLS: 84% (n = 11)
  Purity: 92% (n = 11)
  Germination: 30% (n = 10)
  Dormancy: 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
- **NRCS release:** 'Summit' *Artemisia ludoviciana*
- **Cultivated varieties:** Several named cultivars are available in the horticultural trade.

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Species Updated: 3/5/2024

Notes