

MISSOURI GOLDENROD

Solidago missouriensis Nutt.

Plant Symbol = SOMI2

Contributed by: NRCS Plant Materials Center,
Pullman, WA



Solidago missouriensis. Jim Pisarowicz, USDI National Park Service

Alternate Names

Prairie goldenrod, Tolmie's goldenrod (*S. missouriensis* var. *tolmieana*)

Uses

Pollinator habitat: *Solidago* species provide vital sources of pollen and nectar for bees and other insects in the late summer and fall throughout North America (Mader et al. 2011). Insects known to visit *Solidago* species include beneficial solitary wasps and pollen-eating beetles such as the soldier beetle (*Chauliognathus pennsylvanicus*) and the black blister beetle (*Epicauta pennsylvanica*). Goldenrod and aster species are believed to be the preferred

floral sources of many oligolectic bees such as *Andrena hirticincta*, *A. nubecula*, *A. placata*, *A. simplex*, *A. solidaginis*, *Colletes simulans armatus*, and *Melissoides druriella* (Mader et al. 2011). Honey bees collect large amounts of nectar from goldenrod prior to winter, and other bees use pollen from goldenrods to provision late-season nests (Mader et al. 2011).

Rangeland revegetation: Missouri goldenrod can be used for revegetation of disturbed areas, for minespoil reclamation, and soil stabilization (Walsh 1993).

Forage: This plant has poor forage value, however cattle and sheep will graze it in the spring and early summer, and deer and antelope will graze the lower leaves (Stubbendieck et al. 2003). The plant may be toxic to sheep (Stubbendieck et al. 2003).

Ethnobotanical: Native Americans chewed leaves and flowers of this plant to relieve sore throats, and chewed roots to relieve toothache (Stubbendieck et al. 2003).

Ornamental: Missouri goldenrod is not typically planted in a landscaped setting due to its spreading rhizomatous growth. However, it may be possible to manage plants by planting in a pot submersed in the ground, or by removing new growth each year. Seed dispersal can be controlled by removing flower heads prior to seed ripening.

Status

Missouri goldenrod is the state flower of Nebraska, and is listed as threatened in Michigan. Consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Weediness

Goldenrods have a reputation of being weedy due to their rhizomatous growth, which enables them to rapidly colonize disturbed sites and causes them to be difficult to control. In stable rangeland environments, however, they seldom achieve densities that are a problematic (Whitson et al 2004). Please consult with your local NRCS Field Office, Cooperative Extension Service office, state natural resource, or state agriculture department regarding this plant's status and management.

Description

General: Sunflower family (Asteraceae). *Solidago missouriensis* is a native, warm-season, short-lived perennial. Stems grow singularly or in group from a creeping rhizome or woody caudex. Stems are reddish-green, smooth, slender, erect and are 20 to 90 cm (8 to 36 in) tall. Leaves are alternate, triple-nerved and have entire or sparsely serrated edges. Basal leaves are oblanceolate, up to 30 cm (12 in) long and 3 cm (1 in) wide, and have short petioles. Upper leaves are smaller, lance-shaped and sessile. Numerous inflorescences form on curved panicle branches. Inflorescences have 7 to 13 yellow disc flowers and 8 to 13 yellow ray flowers, and bloom July through October. Seeds are brown cylindrical achenes 1 to 2.2 mm (0.04 to 0.09 in) long, are smooth or hairy, and have white bristly pappus 2.5 to 3 mm (0.1 to 0.12 in) long. (Hitchcock and Cronquist 1973; Nebraska Department of Agriculture 1979; Stubbendieck et al. 2003; Burke Museum of Natural History and Culture 2011; USDA-NRCS 2011).

The genus name *Solidago* is from Latin *solidus/solido* (whole) and *ago* (to make) meaning to “make whole or heal”, in reference to the plants’ supposed healing properties (Hitchcock and Cronquist 1973; Charters 2011).

Distribution: This plant is found in most Midwestern and western states in the U.S., and in the south-central and southwest provinces of Canada. There are four varieties: *fasciculata*, found throughout most of the species’ range; *missouriensis*, found primarily in the western portion of the species’ range; *tenuissima*, found only in Colorado, New Mexico and Arizona, and *tolmieana*, found only in Washington and Oregon. For current distribution of this species and varieties, consult the Plant Profile page on the PLANTS Web site.

Habitat: Missouri goldenrod grows on dry, open slopes in upland prairies, plains, meadows, deciduous and evergreen forests and deserts, and along roadsides, railroads, ditches and fences (Walsh, 1994; Stubbendieck et al. 2003). This species often establishes in open, disturbed sites, but is also tolerant of partial shade (Wasser 1982, as cited by Walsh 1993). It is considered a mid-seral species in northwestern Iowa (Platt 1975, as cited by Walsh 1993).

Adaptation

Missouri goldenrod is adapted to areas receiving 30 to 90 cm (12 to 35 in) of annual precipitation at elevations up to 3,200 m (10,600 ft). Plants grow well in sandy loam to clay loam soils, and poorly in gravel and dense clay (Walsh 1993). Plants are tolerant of weakly acidic to moderately basic and weakly saline conditions (Wasser 1982, as cited by Walsh 1993) and not tolerant of extremely acidic and

saline conditions (Dittberner and Olson 1983, as cited by Walsh 1993). Plants in the dormant state are adapted to fire (Wasser 1982, as cited by Walsh 1993).



Solidago missouriensis. Rod Gilbert, University of Washington Burke Herbarium

Establishment

Plants can be established by seed, seedlings, or rhizomes. Seed should be planted into a firm, weed-free seed bed at a rate of 1.1 kg PLS/ha (1 lb PLS/ac) and at a depth of 0.3 to 0.6 cm (0.125 to 0.25 in). If planted in a mix, the seeding rate should be adjusted according to the proportion of the mix. The seed does not require a cold moist period for optimal germination (Skinner 2004) therefore can be planted in the spring or fall. Due to differences in environmental conditions however, planting in the fall may result in more successful establishment. In a field trial conducted at the Pullman Plant Materials Center, Skinner found Missouri goldenrod had significantly better establishment when planted in early fall (Sept 15) and late fall (Oct 30) compared to spring (April 20) (Scheinost et al 2010).

Plants established by seedlings can be started by sowing seed in containers in January and placed in a greenhouse. Seed should be covered lightly with soil and kept moist until germination. A layer of pea gravel can be applied to the soil surface to prevent seeds from floating. Seeds planted in this manner

will begin germination about Day 7 and complete germination by Day 14 (Skinner 2004). Plants should be moved to a cold-frame in late March or early April and hardened off for 2 to 4 weeks prior to transplanting into a prepared field site in early May. Plants should be spaced 30 to 60 cm (1 to 2 ft) apart.

Plants can also be established by rhizomes. Sections of rhizomes should be collected from cultivated plants or approved areas, kept moist during transport, and replanted in a prepared field site.

Management

This plant spreads by rhizomes and by seed. Where plant spread is not desired, seedlings should be planted in a large pot or barrel submersed in the soil, or new growth should be cut and removed each year. To prevent seed dispersal, flower heads should be removed prior to seed ripening. Plants will withstand vigorous cutting, and will regrow if cut during the growing season.

Pests and Potential Problems

Missouri goldenrod can be damaged by a native leaf feeding beetle, *Trirhabda canadensis* (Skinner 2004).

Environmental Concerns

This plant may create monotypic stands in some habitats, particularly where ground is open and disturbed. To prevent monotypic stands from forming, seed Missouri goldenrod at low densities or plant in small areas.

Control

If control of this species is desired, contact your local agricultural extension specialist or county weed specialist to learn what works best in your area and how to use it safely. Always read label and safety instructions for any control method.

Seeds and Plant Production

Stands of Missouri goldenrod produce seed crops for at least five years (Skinner 2004). Plants are indeterminate, and seed ripens about 6 weeks after flowers bloom (Walsh 1993). Seed is wind-disseminated and will blow away when ripe. Seed can be harvested with a vacuum, which removes only mature seed and minimizes amount of undesired plant material (Skinner 2004). Small amounts of seed can be cleaned by rubbing over 10 mm mesh screen and using an air column separator to remove the pappus. Larger amounts of seed can be threshed with a hammer mill and cleaned with air screen equipment (Skinner 2004). There are about 2,000,000 seeds per pound (USDA-NRCS 2011).

Cultivars, Improved, and Selected Materials (and area of origin)

None, however seed and seedlings are available from multiple vendors.

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