

SHOWY GOLDENROD

Solidago speciosa Nutt.

Plant Symbol = SOSP2

Common Names: noble goldenrod; prairie goldenrod

Scientific Names: *Solidago speciosa* subsp. *speciosa*; *Solidago speciosa* subsp. *pallida*; *Solidago speciosa* var. *jejunifolia* (E.S. Steele) Cronquist; *Solidago speciosa* var. *rigidiuscula* Torr. & Gray; *Solidago conferta* P. Mill

Description

General: Showy goldenrod is a native perennial wildflower that grows from 1-5 feet tall. It forms fibrous and rhizomatous roots, allowing the plant to spread and grow into multi-stemmed clumps. Stems are stout and hairless, sometimes occurring with bristled patches on stems and leaves. The stem hardens as plants mature and varies in color between green, red, or burgundy (NCSU Ext., 2022). The smooth to finely bristled or rough, narrow leaves grow alternately along the stem. The shape of leaves ranges from lanceolate to ovate-elliptic, with margins varying between entire, crenate, or sharply serrated, and have pinnate venation. Basal leaves are largest, with widths of up to 3 inches (7.6 cm) and lengths up to 12 inches (30.5 cm) including the stem (MN Wildflowers, 2022). Leaves taper in size, becoming winged petioles as they reach the inflorescence. Showy goldenrod produces a club-shaped inflorescence that bears a tight cluster of bright yellow florets (Rosburg, 2021). Flowers bloom from mid to late summer. Seeds form by late fall or early winter, and the yellow inflorescence turns into a gray cluster of pappus hairs. An individual seed is approximately 2 mm by 0.75 mm (MN Wildflowers, 2022). A single plant can produce up to five stems and over three hundred flowerheads (Flora of MO, 2021).



Inflorescence of showy goldenrod. Photo by Misa Cady, USDA-NRCS

Two subspecies and two varieties of *S. speciosa* have been recognized (ITIS, 2010). Both subspecies and both varieties have overlapping ranges, and generally appear in small pockets across this range. Hybridization is possible and can lead to some variation. Subsp. *speciosa* has broad basal leaves that range from approximately 1–3 inches (3–8 cm) in width, while var. *jejunifolia* has fewer, narrower basal leaves, and blooms earlier (Reznicek et al., 2011). Time of observation is important in variety or subspecies identification as basal leaves often wither before the inflorescence blooms (Flora of N. America, 2022). The distinguishing feature of showy goldenrod is the completely erect or upwards curving, stout, and hairless stem. Because showy goldenrod is found in a similar habitat as early goldenrod, *S. juncea*, they are sometimes confused. In these cases, early goldenrod is most often found associated with var. *jejunifolia*. Early goldenrod has larger basal leaves and a smooth stem, similar to *S. speciosa*; however, its inflorescence occurs only on one side of the stem—rarely this inflorescence occurs on both sides (Reznicek et al., 2011).

Distribution: Showy goldenrod's range extends from the Eastern to Central United States, and generally appears in small populations across both regions. The western boundary of the range extends through North Dakota, Wyoming, Eastern Colorado, and Northeastern New Mexico. The Georgia Mountain Region is the southernmost limit (TWC, 2015). It is found along the East Coast as far north as Southern Maine (NPT, 2022). Showy Goldenrod varieties of *S. speciosa* subsp. *speciosa* and var. *rigidiuscula* are scattered throughout most of the Eastern United States and the Great Plains. *S. speciosa* subsp. *pallida* has only been recorded in the central United States, from Western Oklahoma into Eastern Colorado and farther north into portions of Wyoming and South Dakota. *S. speciosa* var. *jejunifolia* is present in the Great Lakes region, from Minnesota as far east as the Southern Peninsula of Michigan (Reznicek et al., 2011). For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Showy goldenrod grows in upland areas that provide ample drainage and sunlight. It is often found in dry, sandy ground, especially in black oak or jack pine savannas, prairies, and fields. It is rarely found in sand dunes (Reznicek et al., 2011). This species can also be widespread along railroads and forest edges (MN Wildflowers, 2022).

Adaptation

Showy goldenrod is adapted to sunny, open sites within the uplands of Eastern and Central North America, in hardiness zones 3a–8b (NCSU Ext., 2022). It grows in moderate to well-drained soils in many soil types, including sandy, loamy, clayey, rocky, and poor soils (Missouri Botanical Garden, 2022; TWC, 2015). Moderate levels of moisture are best in areas with good drainage; however, once the plant is established it will tolerate periods of drought (Missouri Botanical Garden, 2022). At maturity, showy goldenrod becomes resistant to deer browse (Missouri Botanical Garden, 2022).

Uses

Wildlife: Goldenrods are highly valuable late-season nectar sources for pollinators across North America (Mader et al., 2011). Members of the genus *Solidago* support specialized native bees, including several members of the genera *Andrena*, *Perdita*, *Melissodes*, and *Colletes* (NCSU Ext., 2022). Michigan State University Extension reports that sweat bees, large carpenter bees, bumble bees, and honeybees are also attracted to the plant (MSU, 2022a). Larvae of the wavy-lined emerald (*Synchlora aerate*) are supported by goldenrod (NCSU Ext., 2022). Birds utilize the seeds as a food source (NCSU Ext., 2022).

Erosion control: Showy goldenrod, like other goldenrods, is capable of reproducing by seed as well as by rhizome. In ideal conditions it can spread, stabilizing soil effectively.

Gardening/Ornamental: Showy goldenrod has been recognized as a great option for native gardens, borders, and prairie plantings due to the attractiveness of its inflorescence.

Ethnobotany

The name *Solidago* means “to make whole”. This name refers to the many medicinal uses of the plant made by Native Americans (Rosburg, 2021). Roots and stalks of showy goldenrod have been utilized in tonics, infusions, and decoctions to treat a wide variety of ailments, such as lung troubles (including hemorrhages), muscle pain, difficult childbirth, scalds, burns, as well as other dermatological conditions (BRIT, 2022).

Status

Threatened or Endangered: Showy goldenrod is listed as threatened in the state of Maryland. In Maine, it is listed as special concern.

Wetland Indicator: UPL in all regions it occurs.

Weedy: Showy goldenrod is rhizomatous in nature and may become weedy, especially in moist soils (TWC, 2015). It is not reported as an invasive within the United States.

Please consult the PLANTS Web site (<http://plants.usda.gov/>) and your state’s Department of Natural Resources for this plant’s current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Planting Guidelines

Showy goldenrod is established through seed, rooted vegetative plug, or by division of rhizomes. If dividing, rosettes can be dug up and transplanted in the early spring. Seeds can be planted directly into a prepared, weed-free seedbed in the late fall or early spring. Plant in areas that receive full sun, and soils that are well-draining. If planting into plug trays, hand sow the seeds into the trays and lightly cover with growing medium. Trays can be started indoors as early as the fall or winter prior to transplanting. Once plants are established, a light application of soluble fertilizer can be applied every two weeks or as needed (Davis and Kujawski, 2002). Cutting the foliage back before transplanting can help increase vigor. If started indoors, the plants should be hardened two weeks prior to transplanting. Either reduce heat or move outdoors and stop fertilization.

Staff of the Beltsville, Maryland Plant Materials Center found that speed and uniformity of germination was greatly increased by applying heat mats to trays for one week (Davis and Kujawski, 2002). Heat mats were set to maintain 80–86 degrees F. Under standard greenhouse conditions, goldenrod takes 14–40 days to germinate; when exposed to heat, germination started as soon as five days after planting (Davis and Kujawski 2002).

Management

Once established, showy goldenrod may become aggressive and weedy in areas with higher levels of moisture. The main recommendation for control is by dividing clumps every two to three years (NCSU Ext., 2022). Some spread can be prevented by establishing the plant in a sunken container, such as a pot or barrel. Cutting or mowing is not an effective means

of control with this species, as the plant spreads primarily through rhizomes. Removal of spent flower clusters encourages more blooms (NCSU Ext., 2022).

Pests and Potential Problems

Goldenrods are one of many species susceptible to a highly specialized fungal pathogen known as rust (*Coleosporium* spp.). Rust appears as orange, yellow, or brown pustules on the underside of leaves. The fungus is parasitic, and it survives on both necrotic and living tissues. Severe infestations can reduce plant health and stunt growth (UMN, 2018). To prevent rust, limit the amount of overhead watering, and ensure ample spacing between plants to allow good air flow. Infected tissues should be removed to prevent further spread or overwintering of the fungus.

Goldenrods are susceptible to pathogens classified as powdery mildews (*Erysiphe* spp. and *Microsphaera* spp.). Powdery mildew spores are spread via air. Symptoms of infection include white, powdery growths on the leaf surface, and sometimes chlorotic spotting. In severe cases defoliation can occur. If left untreated, colonies of the mildew grow and coalesce (MSU, 2022b). High relative humidity aids reproduction and spread of the fungus. To prevent powdery mildew, plants should be planted in open, sunny areas to encourage air flow. Excess water and fertilizer should be avoided (UIUC, 2022). Plants infected with powdery mildew should be removed and disposed of after the growing season.

Goldenrods serve as larval hosts to several insects that cause galls, or abnormal growths in plant tissue. These insects include the goldenrod gall fly (*Eurosta solidaginis*), the goldenrod gall moth (*Gnorimoschema gallaesolidaginis*), and the goldenrod gall midge (*Rhopalomyia solidaginis*) (Newell, 1994). These galls form in response to the saliva of the larvae (UWM, 2022; Newell, 1994). Predation from parasitoid wasps and birds prevents significant damage to goldenrod populations (UWM, 2022).

Environmental Concerns

There are no current environmental concerns with showy goldenrod.

Seeds and Plant Production

Showy goldenrod seeds can be collected mechanically or by hand once the inflorescence turns into fluffy white pappus, either in late fall or early winter. Seeds are dispersed via wind and will fall easily if the plant is bumped. At the Norman A. Berg National Plant Materials Center in Beltsville, Maryland, seed from production fields was collected with a trac vac. A shop vac, modified leaf blower, or combine are also viable options for gathering large amounts of seed. Once collected, seeds should be left to dry before cleaning or storing. To clean, run seeds through a debarker with a #10 mantel to remove pappus hairs (Davis and Kujawski, 2002). Seeds can then be put through a full-sized, two screen clipper with screen sizes 1/15 on top, and 1/25 on the bottom to remove empty/nonviable seed and other unwanted material. A smaller clipper can be used to remove more debris. In this case, use a solid bottom tray, 1/25 size top screen with the air on low and vents fully open (Davis and Kujawski, 2002).

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

No cultivars of showy goldenrod have been produced; however, showy goldenrod can be found in several nurseries. Cultivars should be selected based on the local climate, resistance to local pests, and intended use. Consult with your local land grant university, local extension, or local USDA-NRCS office for recommendations on adapted cultivars for use in your area.

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