

HOARY TANSYASTER

Machaeranthera canescens

(Pursh) A. Gray

Plant Symbol = MACA2

Contributed by: USDA NRCS Idaho Plant Materials Program



Figure 1. Hoary tansyaster flowers. Photo by Derek Tilley

Alternate Names

Purple aster

Uses

Restoration/reclamation:

Hoary tansyaster is an early colonizer of rangelands and disturbed sites. It is commonly found on roadsides and gravel pits competing with invasive plants such as cheatgrass (*Bromus tectorum*) and knapweed species (*Centaurea* spp). It can be planted to enhance species diversity in rangeland seedings throughout the western United States.

Ethnobotanical

Plants were used by Navajo Indians for nose and throat troubles (Moerman, 1998).

Wildlife:

Hoary tansyaster can be used as part of a native forb component in rangeland and wildland seedings to increase biodiversity, improve wildlife habitat, and provide food for numerous birds and mammals. Hoary tansyaster is readily visited by pollinators and other insect species. It is considered an important species for sage grouse during brood rearing because of its insect associations. Insect surveys on hoary

tansyaster plots at the Aberdeen Idaho Plant Materials Center showed visitation by sweat bees (*Halictus* spp.), green sweat bees (*Agapostemon* spp.), European honey bees (*Apis mellifera*), bee flies (*Bombilidae*) and cabbage white butterflies (*Pieris* spp.).



Figure 2. A green sweat bee (*Agapostemon* spp.) visiting hoary tansyaster. Photo by Derek Tilley

Status

Please 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).

Description

General: Sunflower family (Asteraceae). Hoary tansyaster is a short-lived perennial forb with pale to dark purple flowers. Plants are 15 to 75 cm (6 to 30 in) tall with diffuse branching. Leaves are about 5 cm (2 in) long and 6 mm (0.25 in) wide, oblong or lance shaped with entire to sharply toothed margin. Flower heads have many subtending bracts that reflex away from the flower at the tip (Welsh et al., 2003). Flower heads and vegetation are very sticky and heavily scented. Bracts are white and membranous at the bottom and green at the tip. The pappus of the achene is dirty white and hair-like. There are approximately 1.3 million seeds/lb based on seed counts conducted by Aberdeen PMC (Tilley and St. John, 2010).

Distribution:

Hoary tansyaster occurs throughout western North America from British Columbia to Saskatoon, south to California, Arizona and Colorado.

Habitat:

Hoary tansyaster is common in plant communities from shadscale desert and Wyoming big sage sagebrush shrub communities on the valley floors to mountain big sagebrush, aspen and limber pine communities moving up-slope to higher elevations. Plants can be readily found flowering in late summer in numerous habitats, but primarily in valley bottoms and other dry areas. Hoary tansyaster is very common in low seral degraded and disturbed sites and has been considered by some as a weedy species in meadows and rangelands (Whitson et al., 1996).

Adaptation

Hoary tansyaster is adapted to medium to coarse textured well drained soils with a pH of 6.0 to 8.4 (Borden and Black, 2005; Tilley and St. John, 2010). Hoary tansyaster requires full exposure to sunlight, and a minimum 10 inch rooting depth. The species is commonly found in areas receiving 20 to 150 cm (8 to 60 in) of annual precipitation.

Establishment

Parkinson and DeBolt (2005) observed 77% germination of seed that had been pre-chilled in dampened blotter paper at 4° C for 35 days.

A common garden study comparing 9 populations of hoary tansyaster from Idaho and Utah had establishment percentages ranging from 41 to 87% (Tilley and St. John, 2010) from seed that was field-planted in November and allowed to undergo natural stratification.

Seed should be drilled or broadcast seeded in late fall into a firm, weed-free seed bed at a depth of 0 to 6 mm (0 to 0.25 in). For a pure stand, target delivery of 20 to 30 pure live seeds (PLS) per square foot, seed at a rate of 2 lbs (0.9 kg) PLS per acre. If seeding as part of a mix, adjust seeding rate to the desired percentage of the mixture. Broadcast seedings should be followed with a cultipacker to ensure good seed to soil contact.

Seed should be mixed with a diluent such as rice hulls to assist seed flow through seeding equipment. When calculating rice hull amounts based on seed bushel weights, it is important to determine the condition of the seed. Hoary tansyaster seed which has not had the pappus removed has a bushel weight of approximately 3 lb/bushel.

Management

When planted in a native reclamation mix, it will be a minor component of the establishing plant community; therefore management should be based on other key species in the mixture.

Pests and Potential Problems

Moth caterpillars from the genus *Cucillia* were observed on observational plots at Aberdeen, Idaho. These were seen eating flower heads, but did not appear to do extensive damage to the plots or decrease seed production significantly (Tilley and St. John, 2010).



Figure 3. A *Cucillia* moth caterpillar feeding on hoary tansyaster flower heads. Photo by Derek Tilley

Environmental Concerns

There are no known environmental concerns associated with hoary tansyaster.

Seed and Plant Production

Seed production fields of hoary tansyaster can be planted into weed barrier fabric at 23 to 46 cm (9 to 18 in) spacing. Seed should be planted in late fall into slightly roughened soil and then lightly packed. Plants grown in weed barrier fabric at Aberdeen, Idaho (an 8- 12 inch mean annual rainfall zone) required no supplemental irrigation (Tilley and St. John, 2010). Effects of irrigation on plant growth and seed production have not been evaluated. Flowering begins in late summer and continues for several weeks into the autumn.

Seed can be harvested by hand, direct combined, or by using a vacuum harvester (Bair and Tilley 2010). Vacuum harvesters allow multiple, non-destructive harvests to take place as seed matures. Seed can be cleaned by sifting collected materials over ½ inch hardware cloth to separate seed from stems and flower heads. Using this method, it is possible to collect seed of high enough quality that additional processing may not be necessary. Seed processed in this manner will have an intact pappus and fair to moderate purity; however, when mixed with a diluent such as rice hulls, the seed flows well through grain and no-till drills and other seeding equipment.

Seed harvests of experimental plots yielded approximately 200 lbs of clean seed per acre (Tilley and St. John, 2010).

Weed control efforts should begin prior to planting. Planting into a weed-free seed bed, or using weed barrier fabric greatly reduces management inputs. Weeds can be controlled using pre-emergent herbicides and by hand rouging. Weedy grasses can be controlled with selective herbicides.

Always read and follow label and safety instructions for each control method. USDA-NRCS does not guarantee or warranty any products or control methods named, and other products may be equally effective.

Hoary tansyaster is a difficult species to clean. Seed is small with a flexible pappus that is not easily removed. Hammer-milling removes some of the pappus, but mostly results in creating a mat of pappus hairs, seed, and inert matter. The USDA Forest Service at the Bend, OR Seed Extractory uses a Westrup Model LA-H laboratory brush machine with a #40 mantel at a speed of 3 to dislodge seed from the flower heads and remove the pappus. The gate is left completely open to allow the seed to move quickly through the machine and avoid damaging the achenes. This is followed by air-screening (Barner 2009).

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

Currently there are no releases of this species.

Aberdeen Plant Materials Center assembled collections of hoary tansyaster in 2007 and began evaluating populations in a common garden study in 2008. The goal is to develop one or more selected class germplasm releases for use in the Intermountain West.

References

- Bair, C. and D. Tilley. 2010. The Jet Harvester: A New Tool for Harvesting Native Forb and ShrubSeed. USDA-NRCS. Technical Note 55. Boise, ID.
- Barner, J. 2009. Propagation protocol for production of *Machaeranthera canescens* (Pursh) A. Gray Seeds; USDA FS-R6 Bend Seed Extractory, Bend, OR. In: Native Plant Network. URL:

<http://www.nativeplantnetwork.org> (accessed 26 July 2010). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

Moerman, D.E. 1998. Native American Ethnobotany. Timber Press. 927 p.

Parkinson, H., and A. DeBolt. 2005. Propagation protocol for production of container *Machaeranthera canescens* (Pursh) A. Gray plants; USDA Forest Service, RMRS, Boise, ID. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 9 Feb 2007). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

Tilley, D. and L. St. John. 2010. Hoary tansyaster initial evaluation planting: progress report 2010. USDA-NRCS. Aberdeen, ID.

Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins. 2003. A Utah Flora. Third Edition, revised. Brigham Young University, Provo, UT.

Prepared By:

Derek Tilley; Range Scientist, USDA NRCS Plant Materials Center, Aberdeen, Idaho.

Dan Ogle; Plant Materials Specialist, USDA NRCS, Boise, Idaho.

Loren St. John; Team Leader, USDA NRCS Plant Materials Center, Aberdeen, Idaho.

Citation

Tilley, D., D. Ogle, and L. St. John. 2010. Plant guide for hoary tansyaster (*Machaeranthera canescens*). USDA-Natural Resources Conservation Service, Idaho Plant Materials Center. Aberdeen, ID. 83210.

Published November, 2010

Edited: 03Nov2010djt; 03Nov10 dgo; 05Nov10ls

For more information about this and other plants, please contact your local NRCS field office or Conservation District at <http://www.nrcs.usda.gov/> and visit the PLANTS Web site at <http://plants.usda.gov/> or the Plant Materials Program Web site <http://plant-materials.nrcs.usda.gov>.

PLANTS is not responsible for the content or availability of other Web sites.

USDA IS AN EQUAL OPPORTUNITY PROVIDER AND EMPLOYER