

## SWEETGRASS

*Hierochloë odorata* (L.)

**Beauv.**

plant symbol = HIOD

*Contributed By: USDA, NRCS, National Plant Data Center & Montana Plant Materials Center*

### Alternate Names

Vanilla grass, holy grass, Seneca grass

### Uses

**Caution:** Coumarin, a natural anticoagulant, gives sweetgrass its characteristic sweet smell (Lewis 1977). It has potentially toxic properties and can cause liver injury and hemorrhages. Research has shown coumarin and related compounds to be effective in reducing high-protein edemas, especially lymphodema (Leung 1980).

**Ethnobotanic:** Sweetgrass was and still is used ceremonially through burning the dried and braided grass stems for an incense or smudge. The fragrant smoke is used for purification and to carry prayers to the Great Spirit.

*Hierochloë* literally translates from Greek as sacred (hieros) and grass (chloë) or “holy grass” (Hitchcock et al. 1973). Indian people call sweetgrass the “grass that never dies.” Even when it is cut, it retains its fragrance and spirit (Youngbuck pers. comm. 1999). Today, sweetgrass is used inter-tribally throughout the country. Sweetgrass was used ceremonially by many tribes, including the Omaha, Ponca, Kiowa, Dakota, Lakota, Blackfeet, Cheyenne, Pawnee, and Winnebago (Jordan 1965, Moerman 1986). The Cheyenne, Blackfeet, and Lakota use sweetgrass in the Sun Dance (Kindscher 1992, Hart 1976). Sweetgrass symbolizes life’s growth for the Cheyenne (*Ibid.*).

Sweetgrass was the most popular perfumery of the Blackfeet, who braided it and kept it with their clothes like a sachet or carried it in small bags (M<sup>c</sup>Clintock 1909). The Cheyenne mixed sweetgrass with pineapple weed (*Matricaria matricarioides*) to use as a perfume (Hart 1976). The Thompson Indians used an infusion of the plant as a wash for the hair and body (Moerman 1986). The Blackfeet and the Gros Ventre used sweetgrass as a hair rinse to achieve a lustrous shine (Hart 1976).

Blackfeet women made a tea from sweetgrass that was drunk to stop vaginal bleeding after birth and to expel the afterbirth (Hellsen 1974). Women burned sweetgrass braids after their moon time to finish the cleansing. Blackfeet men drank sweetgrass tea to treat venereal infections. Both sexes drank a tea from this plant to treat coughs and sore throats. Windburn and chapping were treated through an infusion of sweetgrass stems soaked in water or a salve of sweetgrass water and grease. The sweetgrass water was also used as eyewash. Sweetgrass was mixed with seeds of meadow rue (*Thalictrum occidentale*) to make a tea to clear congested nasal passages (Kindscher 1992). The Karok of northern California used an infusion of sweetgrass to treat women who had suffered a miscarriage (Strike 1994). Pregnant women drank this infusion to arrest fetus growth. The Karok also fed sweetgrass to sick dogs.

Among the Chippewa, sweetgrass was used as an incense or smudge in ceremony, as a spiritual medicine, and in basketweaving (Densmore 1974). The use of incense is more characteristic of the Plains Indians than of the Algonquian tribes (*Ibid.*). According to Densmore, “Men would smudge before hunting to purify body and spirit. Medicine men kept sweetgrass in the bag with their medicinal roots and herbs. Strands of sweetgrass were made into coiled basketry by means of cotton thread. This took the form of bowls, oval and round, and of flat mats. Birch bark was sometimes used as the center of these baskets, with the coils of sweetgrass being sewed around it.”

Sweetgrass was used in coiled baskets, primarily in the northeast. The Paiute used sweetgrass woven with willow bark in the hoods of cradleboards. The Central-Northern Algonkians, Iroquoians, and Hurons edged woodsplint basketry and vessel borders with sweetgrass (Turnbaugh et al. 1986). Central-Northern Algonkian peoples are known for their production of flexible weft-twined bags, and some created bundle-coiled baskets of sweetgrass. Northern New England basketry intermixed wood splints with twisted or braided sweetgrass in one basket (Pelletier 1982, Turnbaugh et al. 1986). In the northeast, the Ojibwe, Potawatomi, Winnebago, Menominee, Mohawk,

Penobscot, Passamaquoddy, and Abenaki (Turnbaugh et al. 1986) made coiled baskets of sweetgrass. In the Plains cultural area, rawhide containers enjoyed much greater popularity than did woven or stitched basketry. The Arapaho and Mandan may have also used sweetgrass in their coiled baskets (*Ibid.*).

*Wildlife:* Rodents and small mammals (such as pika) browse on sweetgrass (Martin 1951).

*Restoration:* Sweetgrass is a useful plant for wetland and riparian restoration and mitigation and spring protection/renovation. Sweetgrass has potential for conservation use for erosion control on moderately sloping, hillside seeps. Seeps are sometimes erosive because the soil stays liquid and the saturated conditions inhibit the growth of many plants. The sod-forming and moisture tolerant characteristics of sweetgrass will stabilize the seep (Ivan Dozier pers. comm. 1999).

### **Status**

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status and wetland indicator values.

### **Description**

Sweetgrass (*Hierochloë odorata*) is a fragrant, rhizomatous, perennial grass that reaches a height of 7 dm. (30 in.). The stems are hollow and hairless with open sheaths. The leaf blades are flat at maturity, usually glabrous, 10-30 cm. (3.9-11.8 in.) long. The sweetgrass inflorescence is an open panicle 4-9 cm. (1.6-3.5 in.) long; the lower branches are drooping to spreading. The spikelets are 3-flowered, the 2 lowest florets staminate (male) and the uppermost is perfect (both female and male). Sweetgrass is an early blooming plant and flowers from May to July.

*Distribution:* For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site. Sweetgrass grows in wet meadows, low prairies, and the edges of sloughs and marshes in Minnesota, North Dakota, Montana, South Dakota, northwest Iowa, and western and central Montana. It grows from Labrador to Alaska, south to New Jersey, Indiana, Iowa, New Mexico, and Arizona. It is also native to Eurasia. Sweetgrass grows below 1830 m in California and is rare in the state, occurring in the north High Cascade Ranges and extending north (M<sup>c</sup>Gregor 1991).

### **Establishment**

*Adaptation:* Sweetgrass is a rhizomatous perennial that is native to cooler regions of North America and Europe. It is found in moist, cool meadows, shaded stream banks, and cool mountain canyons (Dorn 1984). *Caution:* Sweetgrass provides good groundcover; however, due to prolific rhizome production, it can be invasive.

In its native habitat, sweetgrass grows primarily in wetlands and riparian areas. Due to the loss of wetland habitat throughout the United States, it is rarely appropriate to harvest wild plants. Wild harvests should be restricted to salvage sites with appropriate approvals or permits. Sweetgrass populations are declining due to harvesting for both personal and commercial use. The species is subject to over-collecting and is sensitive to grazing. Indian elders are quoted as saying "Today sweetgrass has become scarce and is hard to find" (Hart 1976).

The following information on the propagation of sweetgrass is obtained from the Bridger Plant Materials Center (1996 and 1999) and Susan Winslow (1999).

*Propagation from Cuttings:* Sweetgrass can be propagated easily from container or bare rootstock, as it produces many rhizomes. It can also be propagated from seed. However, in nature, sweetgrass is a sporadic seed producer, and germination rates are fairly low (25-30%), so propagation from seed is more difficult than from cuttings or division of plants.

Handling and care requires commitment and attention to detail to maximize survival. Initially, the plants should remain in the pots for an additional 2-3 weeks after you receive them, and watering must occur every day while in the pots. This is because of the possibility of lingering transplant shock and because the soil in the pots dries out fairly quickly. The plants will continue to grow and thrive in the original containers for quite a period of time while site location and preparation efforts are finalized.

Pick the sites where sweetgrass is to be transplanted carefully, and prepare the site properly before planting. It is advisable to keep the immediate planting area clear of competing vegetation, which may simply mean hand weeding around individual plants, or a mechanical means may be required. Sweetgrass grows in wetter areas in its natural habitat, and during the establishment period irrigation is likely to be required. Soil should be kept very wet to moist.

For plants grown in greenhouse flats or collected from the wild, it is best to dig up and separate plants in late fall or winter plants (Hartman et al. 1990). This is the “quiescent” period that follows seed maturation, and leaves are senescent (dried up and brown colored). When separating plants, ensure that each “plantlet” has a rhizome or rhizome bud. Each plant should be planted in full sun in a light, loose soil. Plants should be planted on 3-foot centers; they will fill in and make solid stands of sweetgrass in one to two years. Plants need to be kept moist, and need frequent watering. Plants may need to be protected from herbivores, such as rabbits or gophers. Dogs love sweetgrass and will selectively eat the shoots and roll in the grass.

#### *Seed Propagation:*

**Site Preparation:** The site should be prepared well in advance of planting, either late in the fall or very early in the spring. Preparation includes the following: removal of all weeds; rototilling or hand-digging so that the soil is loose and friable; raking or smoothing to a level, clump-free grade; packing or rolling to firm the surface (afterwards, only light foot imprints should be visible when walked across); and moistening the soil evenly to a depth of 2 to 3 inches (or when surface puddling is evident) with a sprinkler or hand-held spray nozzle.

**Seeding:** Sweetgrass is a cool-season species that requires a period of cold temperatures before it will germinate from seed. Late fall, late winter, or early spring is the best time to plant the sweetgrass seed. At the time of seeding, the soil should be moistened to a depth of 1 inch. The seed should be fully ripened (very firm when squeezed between fingernails or when clipped with a fingernail clipper) and free of debris. Sweetgrass seed is very small at approximately 1.1 million seeds per pound. Depending on the amount of seed available and the plant density desired, the seed can be dribbled in rows at a rate of up to 25 seeds per linear foot, or broadcast at 50 seeds per square foot. This may optimally result in 6 plants per row and/or 13 plants per square foot (seed germination tests have averaged 25-30%). Planting depth should not exceed 0.25 to 0.5 inches. It is very important after seed placement that the area be re-rolled or packed to ensure satisfactory seed-to-soil contact. The tiny seed can be easily washed away, so follow planting immediately with a light watering. Keep the area moist until seedling emergence, in about 10-14 days. In soils (clayey) that are prone to crusting, subsequent periodic, short-duration watering may be necessary.

#### **Management**

After the plants have established and grown to a minimum height of 4 to 6 inches (to avoid damaging small seedlings), routinely weed and remove unwanted vegetation. This will reduce competition for light, nutrients, and water, and encourage vigorous plant growth and development. Sweetgrass prefers a moist environment, so regularly water the site. The rhizomes (underground, horizontal stems) develop early and will emerge during the first growing season. The grass will continue to spread if left unattended. The leaves will reach a length of approximately 12-15 inches and can be harvested once or twice a year. The foliage is very relaxed and it will be necessary to carefully lift the leaves and cut the stems close to the ground (leave 1 to 2 inches of plant stem). The actual number of harvests per year will depend on climatic conditions, seasonal timing, and the traditional environmental knowledge of the particular indigenous group tending the grass. Plan the final harvest (late summer in northern climes) so that there will be adequate time for the plants to prepare for the onset of cold temperatures and winter conditions. If this natural hardening-off process does not occur, it will eventually have a detrimental effect on the long-term persistence and survival of the stand. Fertilizing is not recommended in the first year of establishment, as weeds would reap the most benefit during that time. The use of a balanced, all-around granular fertilizer is recommended after the first year.

*Traditional Resource Management:* The following information on sweetgrass was provided by Lynn Youngbuck, who is Cherokee, Chiracahua, and Fox:

- Take only what you need, leaving the best to reproduce.
- Speak to the plant, leave an offering of tobacco or sage before harvesting. The plant will grow back two stems for every one cut.
- We humans are another strand in life. Plants sustain us and should be treated as another living being.

- Plants were taken care of by extended family groups of women. They were taken care of and watched each year for generations.
- Materials harvested were shared and traded with the whole tribe.

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

Please check the Vendor Database, expected to be on-line through the PLANTS Web site in 2001 by clicking on Plant Materials. Listed below are some sources where these plants are known to be available:

- Eastern Slopes Rangeland Consultants, Box 273, Cremona, Alberta, Canada. (403) 637-2473
- Four Wind Nursery, 5853 E. Shore Road, Polson, Montana 59860.
- Prairie Habitats, P.O. Box 1, Argyle, Manitoba, Canada. (204) 467-5004 or 467-9371
- Redwood City Seeds, P.O. Box 361, Redwood City, California 94064. (415) 325-7333
- Rice Creek Gardens, Inc., 11506 Highway 65, Blaine, Minnesota 55434.
- Richters, Goodwood, Ontario LOC 1AO, Canada. (416) 640-6677
- Little Valley Farm, Route 3, Box 544, Spring Green, Wisconsin 56801. (608) 935-3324
- Prairie Moon Nursery, Route 3, Box 163, Winona, Minnesota 55987. (507) 452-1362

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