United States Department of Agriculture

Natural Resources Conservation Service Plant Guide

SEA OATS

Uniola paniculata L.

Plant Symbol = UNPA



Hamer Germplasm sea oats on a back dune in Avalon, New Jersey.

Alternative Names
Common Names: araña, arroz de costa, sea oats, seaside oats (Hazell et al., 2014), southern seaoats (Bachman and Whitwell, 1995)

Scientific Names: *Trisiola paniculata*, *Uniola floridiana, Uniola heterochroa, Uniola macrostachys, Uniola maritima*, *Uniola paniculata* L.

Description
General: Sea oats is a native, warm season, semi-tropical, rhizomatous, perennial grass dominating many beach and dune environments. Culms are stout, erect 3.0-6.5 feet tall, nodes and internodes glabrous (Radford et al., 1976). Leaves are both basal and cauline with blades elongate, 8-24 inches long and 0.25-0.5 inches wide, both surfaces glabrous (Radford et al., 1976; Brown and Brown, 1984; Hosier, 2018). The inflorescence is a large open panicle 7.5-19.5 inches long with flat yellowish spikelets composed of 8-20 florets (Radford et al., 1976; Duncan and Duncan, 1987). Seed heads become a yellow-brown, straw color in late summer and into the fall.

Distribution: Sea oats occur along the US coast and barrier islands from Virginia through Florida, the Gulf coast, and south to Mexico (Hosier, 2018). However, it is uncommon in Louisiana west of the Mississippi River delta over to Texas.

For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Sea oats is typically found on loose sands of upper beaches and the more exposed and accreting areas of dunes such as foredunes and dune crests. It is one of the few species that can establish and grow in this dynamic beach zone. Sea oats thrive and is stimulated where sand is actively accumulating (USDA-NRCS, 2018). It is highly tolerant of xeric conditions, but sea oats do not tolerate water logging of roots, which will stress or kill plants within a few days (Hester and Mendelssohn, 1989). There are also beneficial microorganisms associated with the roots of sea oats. Vesicular-arbuscular mycorrhizal fungi are reported to increase the surface area of roots facilitating nutrient absorption and improving nutrition of sea oats communities (Sylvia, 1986).

Adaptation
Sea oats is an excellent pioneering species on upper beaches, fore-dunes, and dune crests, where loose sands accumulate. It is tolerant of salt spray, short periods of inundation by saltwater, rapid sand burial, and very drought tolerant. The extensive system of rhizomes and roots binds and holds blowing sands.

Uses
Sea oats is exceptionally tolerant of harsh conditions associated with coastal beach environments, such as, salt spray, short inundation of saltwater from storm surges, strong winds, xeric soil conditions, and rapid sand accretion. It is considered an excellent pioneering species because of its ability to rapidly establish and colonize on fore-dunes and dune crests, and a climax species because of its ability to persist in these extreme coastal beach conditions.

The attributes found in sea oats make it an excellent dune builder and sand stabilizer. Sea oats is an excellent conservation plant for dune building, dune enhancement, and sand stabilization on coastal beaches and barrier islands of the Atlantic and Gulf of Mexico (Duncan and Duncan, 1987; Mendelssohn et al., 1991; USDA-NRCS, 2018).

Sea oats provide wildlife benefits to birds and small mammals as a source of nutrition. Red winged blackbirds, song sparrows, marsh rabbits, and mice feed on the seeds which can provide a winter source of calories as spikelets often persist on the plant beyond the fall (Hosier, 2018; DOI-NPS, 2021).

Conservation Practices: If site conditions are appropriate and specific criteria for the conservation practice standard are met, sea oats could have beneficial applications for NRCS Conservation Practice Standards Critical Area Planting (342), Wildlife Habitat Planting (420), Upland Wildlife Habitat Management (645), and Early Successional Habitat Development/Management (647).

Ethnobotany
Native American tribes located in present time Florida foraged sea oats seeds as a source of nutrition prior to agricultural development (Marvin, 2011).

Status
Threatened or Endangered: Sea oats is ranked on the Rare, Threatened, and Endangered Species state heritage conservation lists in Louisiana as S2 - imperiled because of rarity (6 to 20 known extant populations) or because of factors making it very vulnerable to extirpation. It is assigned a global ranking of G5 - demonstrably secure globally although it may be quite rare in parts of its range, especially at the periphery (1000 + known extant populations).

Wetland Indicator: Facultative Upland (FACU) plant for all regions in which it occurs (USACE, 2022).

Weedy or Invasive: Sea oats is not on any state or national invasive species lists (Wallace, 2018).

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
Sea oats is generally established using vegetative propagules. Freshly dug bare-root plant divisions can be used effectively. Container grown plant materials have been proven to be more reliable in establishing stands.

Generally, no site preparation is needed when planting vegetative plant materials. Establish beach plantings by planting propagules with the top of the root mass 4-6 inches below the soil surface on 2-5 feet centers (Craig, 1984; Hazell et al., 2014). Spacing is dependent on-site conditions, erosion potential, and desired outcome of the planting. Sea oats is relatively slow to establish, so planting faster growing, site appropriate, companion species, such as, American beachgrass (*Ammophila breviligulata*), saltmeadow cordgrass (*Spartina patens*), bitter panicgrass (*Panicum amarum*), coastal panicgrass (*Panicum amarulum*), or other desirable pioneering species is recommended (USDA-NRCS, 2025).

Generally, container grown plant materials can be planted year around; however, better results are achieved by planting mid-winter to early spring. Plant bare-root propagules in November through March. Though sea oats are drought tolerant always consider site moisture conditions before planting. Since the sea oats growing season varies considerably by geographic location, consult with local professionals when planning sea oats plantings.

Management
Restrict traffic during establishment (Hosier, 2018). Sea oats can be effectively established and grow on low fertility soils without fertilization. Wootton et al. (2016) recommends an initial nitrogen broadcast application for establishment plantings but cautions that fertilizer applications should be site appropriate and that overfertilization can degrade water quality due to leaching of excess nutrients. Alternative nutrient sources such as a slow-release fertilizer applied directly to the planting hole and organic options provide fertilization choices other than standard synthetic fertilizers for coastal dune sites (Wootton et al., 2016). For nursery production applications, contact your local agricultural extension for soil test analysis and fertilizer application recommendations prior to implementing a fertilization plan.

Pests and Potential Problems
There are no known serious pests associated with sea oats.

Environmental Concerns
There are no environmental concerns associated with sea oats. It is highly desirable and beneficial native species.

Seeds and Plant Production
Propagate sea oats vegetatively or by seed.

Divide dormant parent plants to produce 5-10 plants for every robust plant divided. Finer divisions risk higher mortality rates, but larger plants have produced up to 15 successful propagules under controlled conditions. Propagules require two to three growing seasons before attaining sufficient size to warrant dividing.

Seed matures in the fall and is ready for harvest from mid-October to mid-November in southern New Jersey, Plant Hardiness Zone 7b (Craig, 1984; USDA-NRCS, 2025). If weather conditions are calm, seed is persistent and has been harvested as late as mid-December. New Jersey Plant Materials Center (NJPMC) staff harvest seed by hand, clipping and bagging the entire seed head. Lab germination tests of the previous year's seed production have yielded 18-31% viable seed. Seed stored in cold, low humidity storage (4°C with 40% relative humidity) for five years showed 0% viability indicating the seed does not maintain long term viability even in ideal storage conditions. Other research has produced results indicating a similar inverse relationship with seed germination/viability decreasing as storage time is increased (Westra and Loomis, 1966; Bachman and Whitwell, 1995). Research has indicated that seed stratification in cold water (5 °C) improves germination rates (Pihl et al., 1978). Gibberellic acid treatments have also shown increased germination rates and accelerated germination times (Westra and Loomis, 1966; Bachman and Whitwell, 1995). Seed production is highly variable based on the small seed production fields (0.014-0.046 ac) at the NJPMC. Over an eight-year period, seed production ranged from 0.43-76 lb/acre with an average yield of approximately 14 lb/acre. Environmental factors impact seed production. Seed production sites at the northern extent of the native range of sea oats typically produce reduced seed yields compared to sites at the southern end of the range. Plant stress due to drought conditions during flowering and seed production stages can also reduce seed yields (Pérez et al., 2025). To clean harvested material, hammermill using a 0.25 inch round screen. An air screen seed cleaner with a 7/64 inch round top screen and a 1/24 inch round bottom screen readily separates most of the chaff from the seed. Use a seed blower seed cleaner to further increase purity. Sea oats seed ranges from approximately 82,000-116,000 seeds/lb (Westra and Loomis, 1966; USDA-NRCS, 2025).

Cultivars, Improved, and Selected Materials (and area of origin)
These plant materials are somewhat available from commercial sources.

Caminada Germplasm sea oats is a pre-varietal release from the USDA NRCS Golden Meadow Plant Materials Center, Galliano, Louisiana, selected to provide a plant for dune building, enhancement, and sand stabilization on coastal beaches and barrier islands of the Gulf of Mexico.

Hamer Germplasm is a selected class composite germplasm release from the USDA NRCS Cape May Plant Materials Center, Cape May, New Jersey, which has cold tolerance for planting in southern New Jersey, Delaware and Maryland (USDA Plant Hardiness Zone 7b or warmer) (USDA-ARS, 2023).

Louisiana State University Agricultural Center developed and registered three sea oats cultivars in 2012. 'LA12-201' (LA) was collected from Fourchon Beach, LA. 'LA12-202' (FL) originated from western Florida near Pensacola at Eglin Air Force Base on Santa Rosa Island. 'LA12-203' (FL) was collected from a population near Destin, FL, on Henderson Beach (Knott et al., 2012). All three cultivars were tested in comparative field trials with Caminada Germplasm sea oats. Results indicated that the performance of all three cultivars was similar to Caminada Germplasm for northern Gulf of Mexico beach stabilization and restoration applications before and after a major hurricane. Testing provided evidence that the three cultivars are genetically distinct from one another and Caminada Germplasm sea oats (Knott et al., 2012).

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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.

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