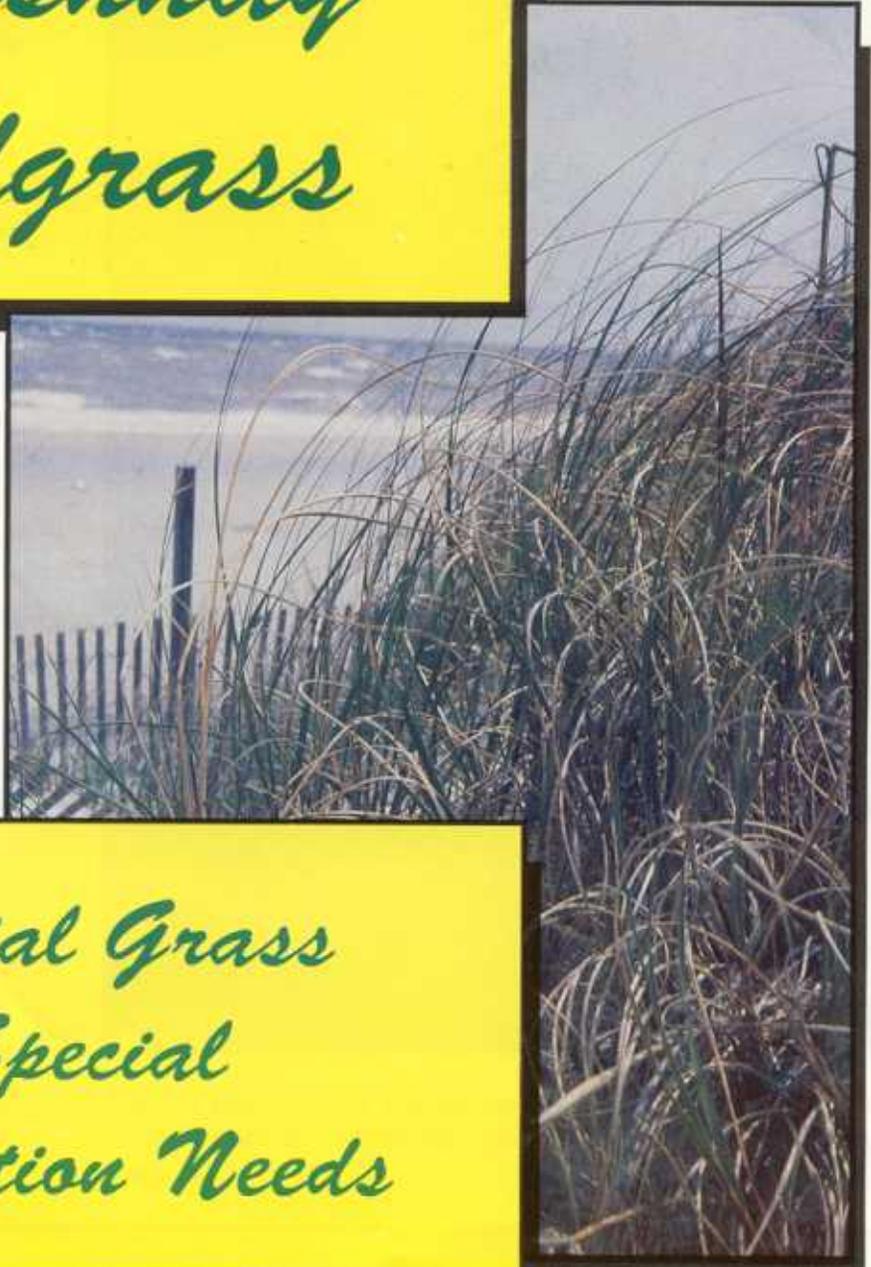


*Flageo
Marshhay
Cordgrass*

*A Special Grass
for Special
Conservation Needs*



Flageo Marshhay Cordgrass

"A Special Grass for Special Conservation Uses"

Introduction

Nearly all Americans are touched in some way by their nation's waterways — whether they vacation on the beach, enjoy a seafood dinner, raise crops or livestock near the shore, or ship their goods via boat.

Each year, many acres of the 2,700 miles of coastal barrier stretching from Maine to south Texas wash away. Often the site of fishing communities, ports, lighthouses, Coast Guard stations, and even industrial pipelines, this fragile barrier supports a vast economy that includes the recreational, travel, seafood, and commerce industries.

Its dunes defend against winds, tides, storms, and hurricanes, and buffer mainland and landward aquatic habitats from scouring waves and currents.

To help property owners halt the erosion of this coastal barrier, and anchor both land and investment, the Fort Valley State College School of Agriculture, Home Economics and Allied Programs in Fort Valley, Georgia, and the USDA Natural Resources Conservation Service (formerly the Soil Conservation Service) plant material centers in Americus, Georgia, and Brooksville, Florida, have cooperatively released Flageo marshhay



Flageo's salt tolerance and fast-spreading root system make it an excellent plant to vegetate and stabilize dunes, stream banks and shorelines.

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cordgrass (*Spartina patens*), a new plant variety for stabilizing coastal areas.

History

From 1986 to 1990, the School of Agriculture, Home Economics and Allied Programs at the Fort Valley State College and the Natural Resources Conservation Service evaluated marshhay cordgrass for dune stabilization at sites on Tybee, Jekyll, and St. Simon islands in Georgia. In 1990, they jointly released the Flageo variety for coastal dune stabilization.

Description

A native warm-season perennial grass variety, Flageo marshhay cordgrass (*Spartina patens* [Ait.] Muhl.) spreads its medium textured flexible culms and dark green leaves by a network of long, slender rhizomes. It spreads faster and features a denser, finer-textured root system than most other marshhay cordgrasses.

Flageo's 1/8- to 1/4-inch diameter rhizomes are the site of most new growth, while its culms support the leaves growing on an erect 2- to 3-foot stem.

Its leaves are less than 1/8-inch wide and usually roll inward from the edges with the upper surface inside, resembling rushes.



Flageo's root system spreads by a network of long, slender rhizomes.



In Georgia, Flageo plantings are mainly used to halt eroding coastal dunes, stream banks and marshland.

The plant produces a few whitish blooms in summer. While producing seed, its germination rate is usually less than 10 percent.

Seed heads are composed of two to seven 3/4- to 2-inch compressed spikes attached at nearly a right angle to the culm.

Flageo is recommended for vegetating and stabilizing dunes, coastal and inland shorelines, and saline, brackish, and fresh-water tidal stream banks. Salt-tolerant, it can be established above the high tide elevation to help stabilize coastal sand dunes.

In Georgia, Flageo is mainly used to vegetate and stabilize dunes, tidal stream banks, and brackish marshes.

Inland uses include stabilizing waterways, gullies, road banks, minespoils and saline oil seeps, and restoring wetlands. It is also used to reclaim nutrients in filter strips and irrigation fields where wastewater from agriculture and municipalities are applied.

Many U.S. military installations also use Flageo as a low-maintenance stabilizing grass to vegetate those areas where tanks and other vehicles cause serious erosion problems.



Dune stabilization projects combining vegetative and structural measures anchor the coastal dunes and the economies they support.

Native Habitat and Range

Flageo grows in salt marshes and sandy meadows from Quebec, Canada, to Florida and Texas. It is also found in inland saline marshes from New York to Michigan.

The species grows on dunes throughout the South Atlantic and Gulf regions and in Puerto Rico. Along the Atlantic coast of northern Florida, it is the dominant plant on dunes composed mostly of broken shell and coquina rock.

Adaptation

Its abilities to grow well in sandy to clay soils and to tolerate occasional inundation by storm tides make Flageo a principal beach plant species of the entire eastern seaboard, from Newfoundland to Florida and Texas (Figure 1).

Because of Flageo's capability to trap and grow through layers of deposited sand, it is well adapted to tidal areas, low coastal dunes, and selected inland sites all along the 2,017 miles of shoreline from Virginia to Texas.

Dune Stabilization

While it produces small amounts of seed, Flageo's essential propagation is vegetative. Both potted and bare-root plantings have been established at various sites in the Southeast.

In most situations, potted vegetation establishes and grows better than bare-rooted vegetation. The best establishment sites are stream banks with low-energy tide levels planted from early spring to July 1.

Plant parallel sets of Flageo rows just above the mean high tide elevation. Several rows of sea oats and bitter panicum can also be established with the Flageo.

Make the Flageo planting at least 10 feet wide, with staggered rows placed two to three feet apart. Space the plants 12 to 18 inches apart in each row (Figure 2).

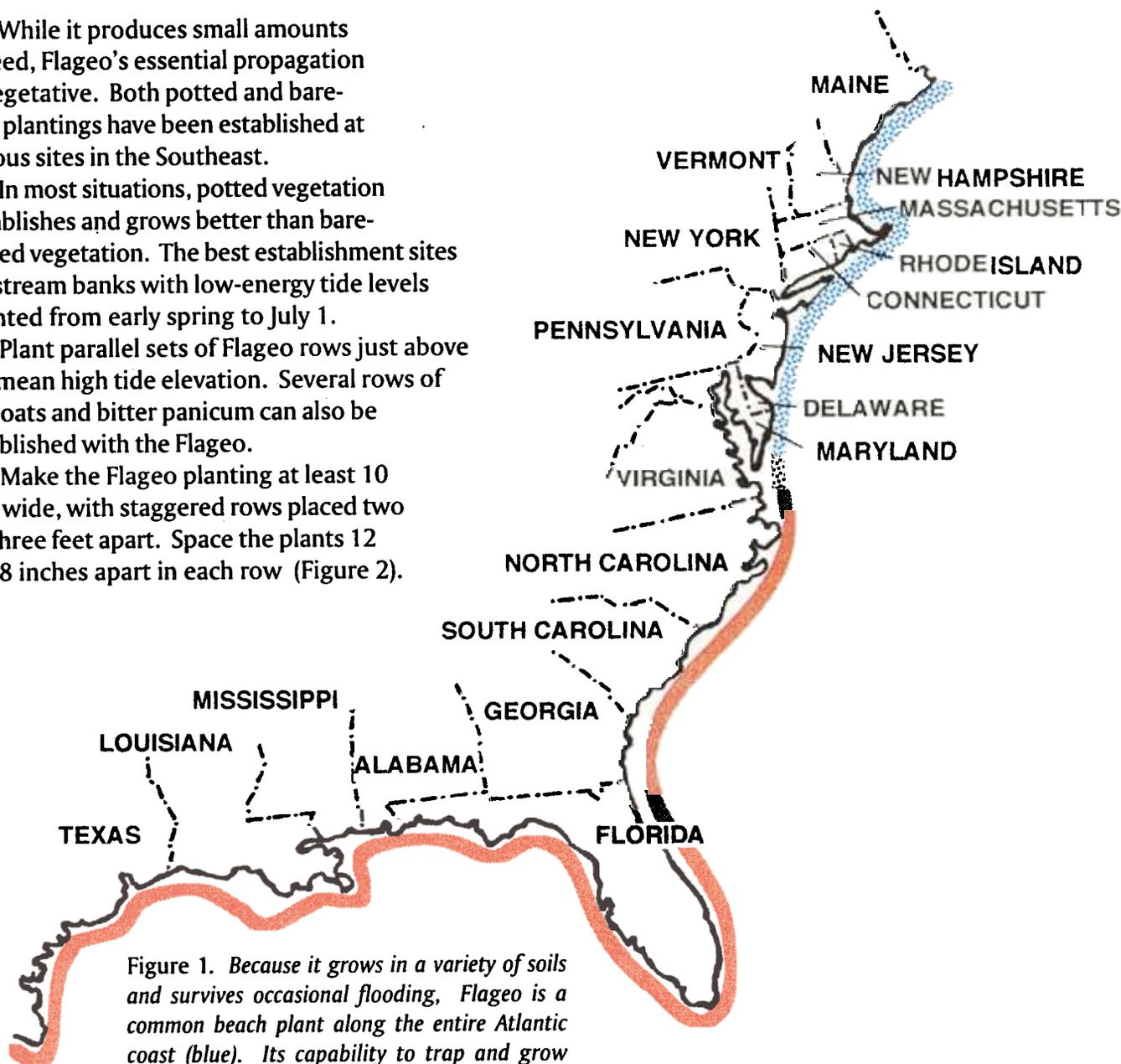


Figure 1. Because it grows in a variety of soils and survives occasional flooding, Flageo is a common beach plant along the entire Atlantic coast (blue). Its capability to trap and grow through sand makes it especially well adapted to both shore and inland conditions from Virginia to Texas (red).

Successful dune stabilization projects usually combine vegetative and structural measures. These measures include planting adapted dune grasses, providing adequate moisture during the first growing season, and constructing cross walks or cross-over structures to prevent pedestrian traffic from destroying dune vegetation (Figure 3).

Irrigation is required on all dune plantings to provide adequate moisture during the initial spring establishing period.

Site Preparation

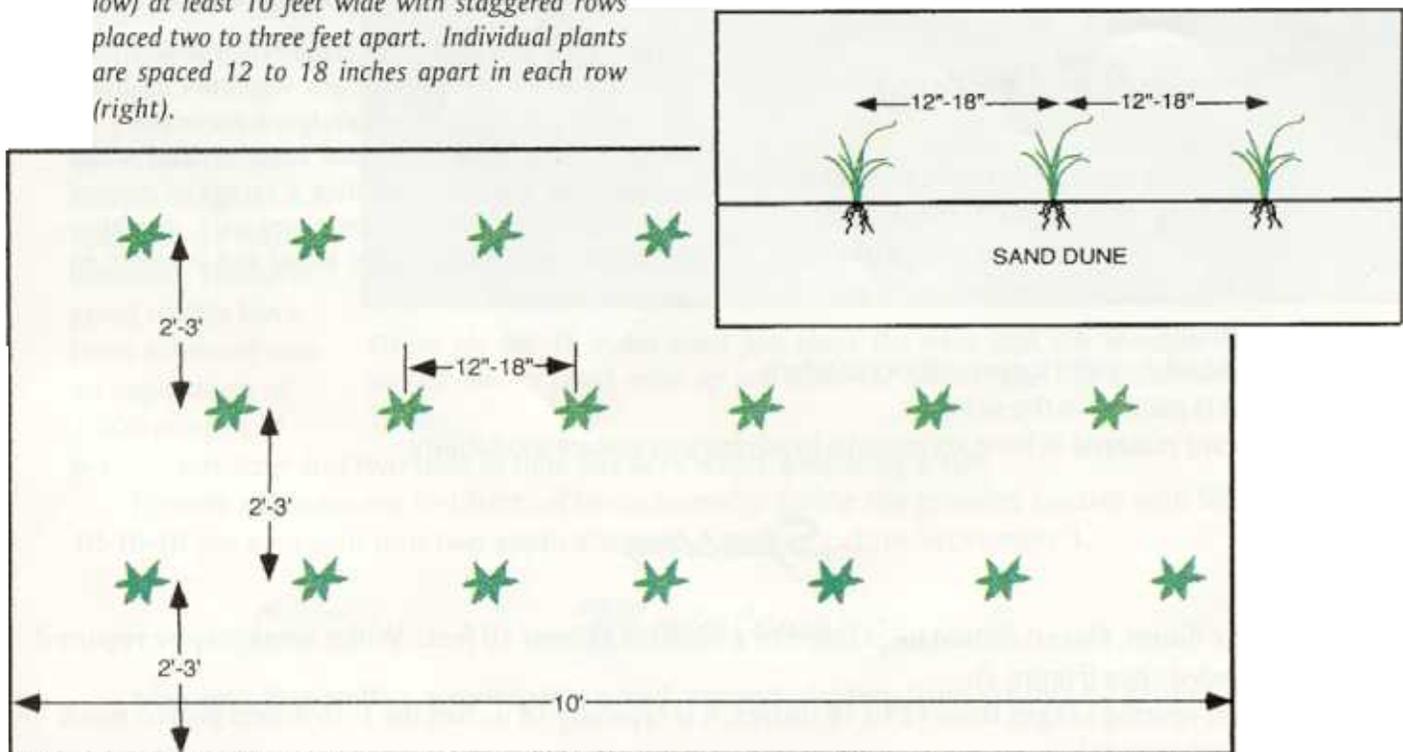
While no site preparation is required on beach sand in most instances, removing trash and other debris from tidal areas will prevent plant burial.

Install irrigation systems and structural measures, such as sand (snow) fences and dune cross-over structures, before planting. Use the irrigation system to apply enough water to increase soil moisture and reduce blowing sand.

Plant Material

Nursery-grown potted plants or bare-root stock are available commercially. Transplants should be vigorous and have at least 5 to 10 stems each. Bare-root stock is recommended for large plantings.

Figure 2. A typical Flageo dune planting (below) at least 10 feet wide with staggered rows placed two to three feet apart. Individual plants are spaced 12 to 18 inches apart in each row (right).



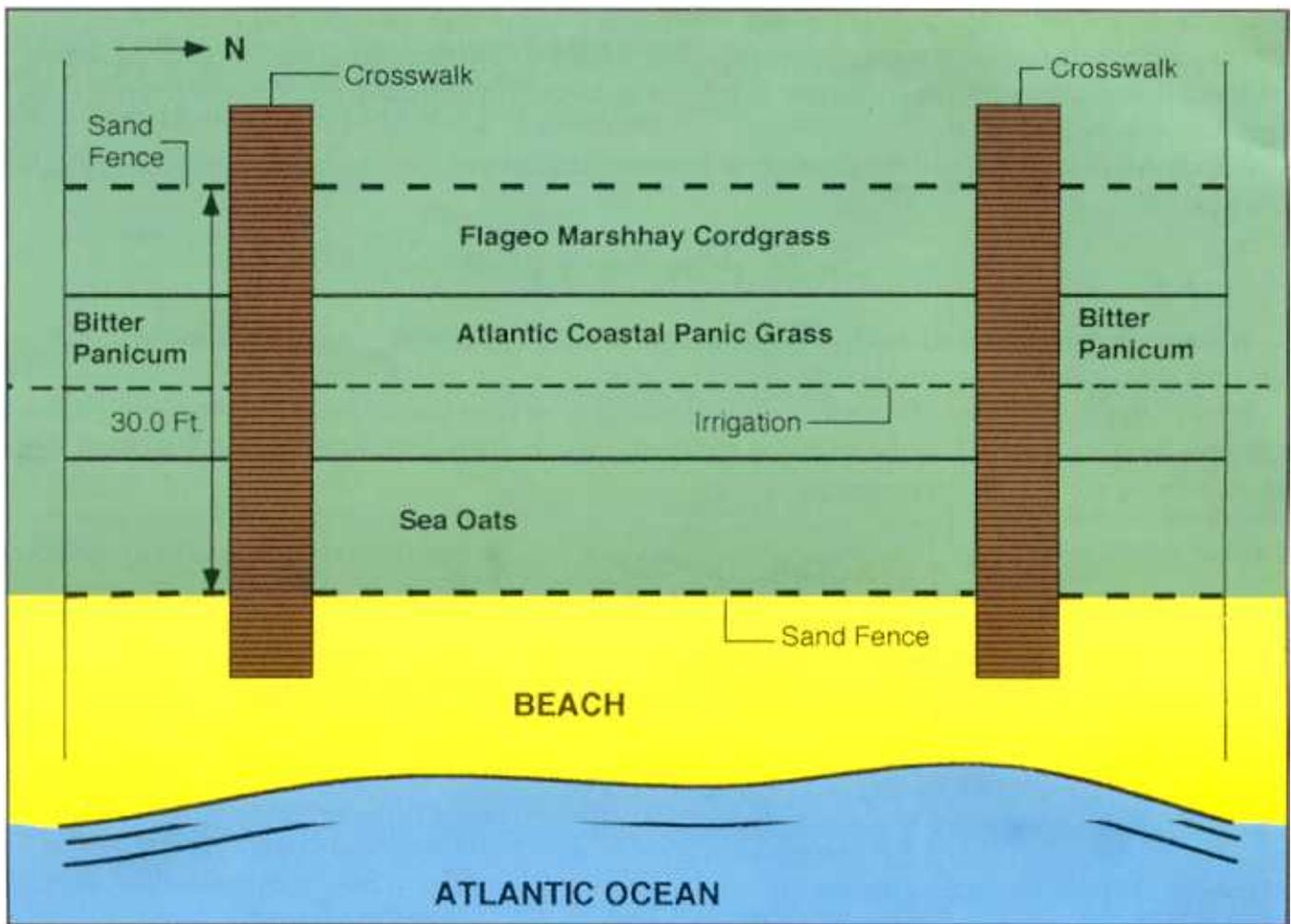


Figure 3. A successful dune stabilization project combines a number of structural and vegetative measures to control erosion. A well-designed project can include erecting sand fences and building cross walks or cross over structures, planting a variety of adapted dune vegetation (bitter panicum, sea oats, marshhay cordgrass and coastal panic grass) and installing an irrigation system.

Time of Planting

Flageo's planting window extends from early spring through June. Planting after these dates is chancy because the plants need a full growing season to build the root reserves they need to survive the winter.

Heat stress and drought losses will occur when bare-root stock is planted in the summer.

Request plant material at least six months in advance to ensure availability.

Spacing

To stabilize dunes, Flageo should be planted to a width of at least 10 feet. Wider areas may be required on severely eroded sites (Figure 2).

While plant spacing ranges from 12 to 18 inches, it is typically 18 inches for 1- to 4-inch potted stock or bare-root plant materials.

Depth

Use a tree dibble or spade to plant vegetative matter on small sites. Large, flat sites can be planted more economically by using a tractor-drawn transplanter with planting plows that create furrows 8 to 15 inches deep.

Plant bare-root or potted material 4 to 8 inches deep, or deep enough to have adequate soil moisture at planting.

Fertilizer

To establish Flageo on dunes, fertilize it by placing one ounce of a complete, slow-release fertilizer under each plant during planting.

Initial fertilization may also be provided with 200 to 500 pounds of 10-10-10 per acre broadcast six weeks after planting.

Second-year fertilization is recommended in June of the following year at a rate of 500 pounds of 10-10-10 per acre.

For critical areas and inland site plantings, soil analyses are recommended. However, good results have been achieved with an application of 1,000 pounds of



Flageo planted 18 inches apart just above the mean high tide elevation helps to stabilize coastal dune in resort areas up and down the Atlantic and Gulf coastlines from Virginia to Texas.

6-12-12 fertilizer and two tons of lime per acre when preparing a site.

Provide maintenance fertilization twice annually during the growing season with 500 pounds of 10-10-10 per acre split into two applications and applied before September 1.

Maintenance

Minimize foot traffic, remove debris and protect planting from grazing by cattle.

Harvest

Flageo plants may be dug at any time the ground is not frozen. Handling them carefully, separate the flexible culms into groups of five or fewer to make a planting unit. Bundle the clean stems into packages of 50 to 100 planting units and store them in a cold and moist environment until shipping.

Note: plant material quality is better if dug immediately prior to planting.

Nursery Propagation

Nursery producers (in the Southeast) can establish production fields of Flageo from late winter through early spring by planting three to five tiller plants, spaced one foot apart. The cordgrass can be planted vegetatively with hand dibbles or with a tree planter for larger fields.

Space the plants 12 to 18 inches apart in 3-foot rows. Control weeds by cultivating and hand hoeing. Irrigate to increase the number and size of culms.



After harvesting Flageo, separate the flexible culms into groups of five or fewer to make a planting unit. Store 50- to 100-unit packages in a cold, moist environment until they are shipped.

Availability

The Fort Valley State College maintains Flageo breeder fields at its Agricultural Research Station farm on its campus in Fort Valley, Georgia., while the Natural Resources Conservation Service maintains similar breeder fields at the Jimmy Carter Plant Materials Center in Americus, Georgia, and the Brooksville Plant Materials Center in Brooksville, Florida.

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Prepared by the Fort Valley State College Cooperative Extension Program in cooperation with the USDA Natural Resources Conservation Service, Athens; Ga.

Issued in furtherance of Cooperative Extension Work, Act of September 29, 1977, in cooperation with the U.S. Department of Agriculture. Fred Harrison, Jr., Administrator, Cooperative Extension Program, The Fort Valley State College, a unit of the University System of Georgia, Fort Valley, Georgia.

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