

UNITED STATES DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

NOTICE OF RELEASE

PANICUM AMARUM VAR. *AMARUM*, BITTER PANICUM FOURCHON GERmplasm

The USDA Natural Resources Conservation Service (NRCS) announces the release and naming of a selected ecotype of *Panicum amarum* var. *amarum* (bitter panicum).

The Fourchon germplasm is assigned the NRCS accession number 9068225 and was selected to provide superior plant materials for use in Louisiana's coastal wetland restoration initiative. The Fourchon germplasm is released to provide a locally-adapted ecotype for use on low profile beaches, dune enhancement and sand stabilization on coastal beaches and barrier islands of the north central Gulf coast.

NOMENCLATURE

Scientific Name — *Panicum amarum* Elliott, Sketch Bot. S.C. and GA. 1:121. 1816 var. *amarum* Palmer.

Common Name — bitter panicum is the most widely accepted vernacular name; however, literature references also cite beach panicum, shoredune panicum, and coastal panicgrass as other common names.

Germplasm — Fourchon is the selected germplasm name that will be used for the 9068225 release. There are three additional known cultivars; Northpa and Southpa, both released in 1992 from Brooksville, Florida, and Atlantic which was released in 1981 from Cape May, N.J. All three cultivars were released as dune stabilizing plants for the Atlantic coast and the Florida/Georgia Gulf coast.

DESCRIPTION

Fourchon bitter panicum is a warm season native perennial grass that spreads primarily by rhizomes or by tillering from lower nodes on the culm (stem). Culms are erect to decumbent at the base, solitary from creeping rhizomes, branching from the lower nodes is common. Culms are 0.2 to 1.5 m tall, glaucous (waxy) and glabrous (hairless). Sheaths are longer than or equal to the internodes, glabrous and glaucous. Blades are ascending, firm, 3-12 mm wide, 7-35 cm long, flat at the base, tapering into an involute tip; blade margins are smooth or occasionally scabrous and the ligules are 2.5-3.5 mm long. The panicle (inflorescence) at maturity is contracted, 10-30 cm long, 2-6 cm wide, with the primary branches ascending, closely appressed to the main axis, scabrous to occasionally smooth, usually solitary, sometimes paired, rarely whorled. Spikelets are ovate, acuminate, glabrous, 4.7-7.7 mm long, 2.0-2.8 mm wide. Glumes are acuminate, the first one-half to two-thirds the length of the spikelet and 7- or 9-veined. The sterile lemma is acuminate, 7- or 9-veined, shorter than the second glume. The sterile palea is thin membranaceous, slightly shorter than the sterile lemma. The fertile lemma and palea

are smooth, shiny, 2.9-3.9 mm long and 1.3-1.8 mm wide. *Panicum amarum* var. *amarum* is uniformly hexaploid ($2n=54$), consequently, the caryopsis (seeds) are consistently sterile.

Flowering begins in September and continues through December. Seeds are essentially sterile, thus reproduction is entirely vegetative by lateral tillering from established clumps. Tillering and shoot growth from older culms generally begins in late February to March and continues throughout the summer and fall. Where sand is actively accumulating on top of the plants, year-round growth occurs even in mid-winter; however, winter cover is more sparse. Distribution is along the coastal beach system on the Atlantic coast from Connecticut south to Florida, and on the Gulf coast to Texas

It should be noted that there is much discussion and some disagreement concerning the *Panicum amarum* and *P. amarulum* complex. For the purpose of this release, we chose to follow the systematics of P.G. Palmer. For a complete discussion refer to the publication *A Biosystematic Study of the Panicum Amarum-Panicum Amarulum Complex (Gramineae)*, Brittonia 27: 142-150. April-June, 1975.

ORIGIN AND SITE DESCRIPTION

The Fourchon germplasm was collected from a native stand of bitter panicum located on Fourchon Beach (N29°10', W90°10') Lafourche Parish, Louisiana. Plants were selected from a naturally-occurring population growing on a low-profile beach ridge and slightly elevated sandy backridge. Plants were collected from sites that were exposed to salt spray, overwash, and blowing sand. Soils were generally low in fertility, dry during the summer months, and subject to heavy pedestrian and vehicular traffic. Collections were made in August 1994, and vegetatively increased at the Golden Meadow Plant Materials Center. Known cultivars and other commercially available germplasm was also collected and increased for testing. Field evaluation plots were established at the Golden Meadow Plant Materials Center; Fourchon Beach, Lafourche Parish; Timbalier Island, Terrebonne Parish; and Rutherford Beach, Cameron Parish, Louisiana. Additional field plots were established at Harrison County, Mississippi. Performance criteria were based on survival, vigor, persistence, dune enhancement, and stability.

METHOD OF SELECTION

Fourchon bitter panicum is a pre-varietal release, selected as a locally adapted ecotype. Vegetative materials were maintained and tested between 1994 and 1998 under both controlled experimental design and as outfield plots. The Fourchon selection demonstrated superior transplant survival, rate of growth, plot density, and persistence,

USE AND ADAPTATION

Fourchon bitter panicum is intended for use on coastal beaches and barrier islands of the north central Gulf coast, primarily Louisiana, Mississippi, and Texas. Fourchon bitter panicum is an early colonizing species that grows best on the crest and windward slope of the foredune where few other species compete with it. The windward side of the foredune is the harshest habitat of the dune system, subject to salt spray, occasional

inundation, high temperatures, low soil moisture, low fertility, sand abrasion and smothering by drifting sands.

Bitter panicum shows greatest plant vigor where blowing sand accumulates around the plant. Accumulated sand either mechanically or nutritionally stimulates the growth of new shoots and tillers which keep pace with the accumulation. Bitter panicum is an ideal dune species. The above ground portion of the plant reduces wind velocity causing sand to drop out of the wind stream and accumulate. Trapped sand is eventually stabilized by an extensive root and rhizome system.

RELEASE JUSTIFICATION

Fourchon bitter panicum has application as a vegetative component in Louisiana's coastal restoration program and represents a superior ecotype of *Panicum amarum* var. *amarum*.

Bitter panicum is a Louisiana native grass species that is salt-tolerant and considered a pioneering species that can provide early vegetative protection to loose, unconsolidated, and general ephemeral soils associated with dredge/fill operations, artificial beach and dune restoration, and barrier island nourishment. Bitter panicum has the capability of rapidly colonizing, enhancing, and protecting large areas of bare sands that are typically low in fertility, arid, periodically inundated, and abrasive. Bitter panicum is one of very few plant species that will grow in a foredune environment, particularly on low-profile dunes common to Louisiana's coast.

Bitter panicum is easily propagated from container stock and from fresh sprigs. Because it is a native species and has been tested extensively in Louisiana field trials, demonstrations, and small scale restoration projects, it is anticipated that Fourchon bitter panicum will be suitable for Louisiana's existing commercial wetland industry.

AVAILABILITY OF PLANT MATERIALS

Fourchon bitter panicum must be established vegetatively; seeds are not available. The aerial portion of mature stems as well as underground rhizomes can be established as sprigged materials. Rooted container stock of any size provides the highest probability of survival and rapidity of growth. Both fresh sprigs and container material will be available through coastal wetland plant growers in Louisiana..

Foundation material for commercial nursery production is available from the USDA, Natural Resources Conservation Service, Golden Meadow Plant Materials Center. The Golden Meadow Plant Materials Center is located at 438 Airport Road, Galliano, Louisiana. The Center can be reached by phone at 504-475-5280 or by FAX at 504-475-6545.

References

- Allen, C.M.** 1992. Grasses of Louisiana, Cajun Prairie Habitat Preservation Society, Eunice, LA
- Dahl, B.E. and D.W. Woodard.** 1977. Construction of Texas Coastal Foredues with Sea Oats (*Uniola paniculata*) and Bitter Panicum (*Panicum amarum*) Int. J. Biometero. Vol., 21, No.3, pp. 267-275.
- Dahl, B.E., B.A. Fall, A. Lohse, and S.G. Appan.** 1975. Construction and Stabilization of Coastal Foredues with Vegetation: Padre Island, Texas. Misc. Paper No. 9-75, ACOE, Fort Belvoir, VA.
- Eleuterius, L.N. and J.D. Caldwell.** 1987. *Panicum amarum* (Beach Panicum): The Ideal Plant for Sand Beach Stabilization and Dune Building. Contract DACW01-72-C-0001, ACOE, Mobile District, Mobile, AL
- Eleuterius, L.N. and H.A. McClellan.** 1990. Transplanting Maritime Plants to Dredged Material in Mississippi Waters. Gulf Coast Research Laboratory, Ocean Springs, MS
- Godfrey, R.K. and J.W. Wooten.** 1979. Aquatic and Wetland Plants of southeastern United States: Monocotyledons, University of Georgia Press, Athens, GA
- Gould, F.W.** 1975. The Grasses of Texas, Texas A&M University Press, College Station TX.
- Hester, M.W. and I.A. Mendelsohn.** 1990. Effects of Macronutrient and Micronutrient Additions on Photosynthesis, Growth Parameters, and Leaf Nutrient Concentration of *Uniola paniculata* and *Panicum amarum*. Bot. Gaz. 151(1): pp. 21-29.
- Hitchcock, A.S.** 1950. Manual of the Grasses of the United States, United States Government Printing Office, Misc. Pub. 200, Washington, DC
- Palmer, P.G.** 1975. A Biosystemic Study of the *Panicum amarum*-*Panicum amarulum* Complex (Gramineae). Brittonia 27: pp. 142-150
- Radford, A.E., H.E. Ahles, and C.R. Bell.** 1968. Manual of the Vascular Flora of the Carolinas, University of North Carolina Press, Chapel Hill, N.C.
- Seneca, E.D. W.W. Woodhouse, Jr., and S.W. Broome.** 1977. Dune Stabilization with *Panicum amarum* Along the North Carolina Coast. Misc. Rpt. No. 76-3, ACOE, Coastal Engineering Research Center.
- USDA, SCS.** 1984. Plants for Coastal Dunes of the Gulf and South Atlantic Coasts and Puerto Rico. USDA, SCS, Agriculture Information Bulletin 460, U.S. Government Printing Office, Washington, D.C.

USDA, SCS. 1982. 'Atlantic' Coastal Panicgrass. USDA, SCS, Program Aid No. 1318, Cape May, N.J.

USDA, SCS. 1982. 'Northpa and Southpa, Bitter Panicum. USDA, SCS, Brooksville Plant Materials Center, Brooksville, FL.

Signature Sheet

APPROVED BY:

Donald W. Gohmert

Donald W. Gohmert, State Conservationist
USDA, Natural Resources Conservation Service
3737 Government Street
Alexandria, Louisiana, 71302

4/12/98
Date