

Release of American beachgrass

File in Cape folder
PM-17-11

Attachment to Application

for

National Certified Grass Variety Review Board

In order to have a joint release of 'Cape' American beachgrass, Soil Conservation Service had to submit its material to the National Certified Grass Variety Review Board. This review board must then decide, based on material, if the new variety is indeed sufficiently different from existing varieties or cultivars of the same species. The application was secured from Agricultural Research Service, Beltsville, Maryland

The information presented to the review board was printed in this report for information on 'Cape' and to expose other Soil Conservation Service Plant Materials people to the review board.

I 'Cape' has a better capacity to trap sand because of greater top weight, and thicker culms than 'Hatteras' or Lewes strain. (Table IV)

The heavy culm of 'Cape' allows easier transplanting and greater survival on frontal sand dunes,

Distinguishing characteristics of 'Cape' are broad, open, lax, deep green leaf, versus a narrow, rolled, erect, yellowish-green leaf of other cultivars. Cape produces 80 to 90% fewer seed heads which is significant in identification of this cultivar. This one factor alone may decrease the opportunity for genetic drift.

'Cape' was originally collected as a single clone at Sandy Neck, Cape Cod, Barnstable Co., Mass. in 1965. Thirty culms from this clone were harvested and assigned accession number NJ-390. Initial increase was made vegetatively at Cape May Plant Materials Center, N.J. During 1965-66, 50 other clones of American beachgrass were assembled by Soil Conservation Service from Maine to North Carolina, Michigan and Oregon. The clones were evaluated for survival, vigor, culms per hill, and quantity of vegetative top growth. NJ-327 (frequently referred to as standard strain) represents the standard which was a selection made as an improvement over commonly used beachgrass during early 1960's. It is equivalent to commercial common stock of today.

Based on data and visual observations made between 1966 and 1969, the number of accessions were narrowed to nine selections. (See Table I)

Nine strains were evaluated in 1969 in replicate plots at the Cape May Plant Materials Center (loamy sand } Wildwood Crest (sand dune), and C & D Canal, Kirkwood, Del. (loamy sand subsoil). Plantings were completed in March and April; vigor was rated during June; number of culms and top weight data were collected during October. Based on data in Table XI and on-site investigations, it was concluded that clone NJ-390 was the most vigorous and uniform.

In 1970, extensive trials were conducted comparing 'Cape', Lewes and 'Hatteras' a cultivar released in North Carolina. Locations were selected at Cape May Plant Materials Center, Cape Cod, Mass., Long Island, N.Y., Wildwood Crest, N.J., Kirkwood, Delaware and Virginia Beach, Va. Plots were established according to a randomized block design with four replicates. Fertilizer was broadcast over all plots (300 lbs./A. 15-15-15) immediately after planting. Data collected consisted of number of culms produced per hill and top vegetative material was cut and weighed. Grams per culm were calculated from data,

III Areas of probable adaptation are sand dunes from southern Maine to northern North Carolina. States where 'Cape' was tested are Mass., N.Y., N.J., Del. and Va. Area of recommendation will be for sand dune stabilization along the northeast Atlantic coast. Merchandising will be done within this area,

For number of culms within a given area (Table III a), no significant differences were noted except 'Cape' and 'Hatteras' produced more than Lewes strain in Delaware.

Top weight (Table III b) indicated 'Cape' is superior to the other two strains in N.J. and Del., significant at 1% level.

Grams per culm (Table III c) for 'Cape' was significantly greater than other strains in N.Y. but 'Cape' was better than 'Hatteras' (not Lewes) in Del. and N.J.

IV Sand dune stabilization

Top green weight per hill (Table IV) is a good indicator for capability of beachgrass to stabilize sand. With calculated grams per culm, one obtains an appreciation for relative culm size of strains. Preliminary observations indicate heavy culms possibly due to greater food reserves. Total top weight indicated a greater capacity to trap moving sand and may yield more organic matter

'Cape' produced significantly heavier culms than either 'Hatteras' or Lewes strain at N.J. and N.Y. (Table V). In a combined analysis for five locations other than at the Plant Materials Center, mean culm weight was highly significant for 'Cape'. When grown at the Plant Materials Center, culm weight increased greatly for all, with 'Cape' being the superior strain.

During 1971 two plantings were established similar to those in 1970. One was in Delaware and one at Cape May Plant Materials Center. Table VI shows comparable data for top green weight per hill. No significant differences were noted. When grams per culm are calculated (Table VII), 'Cape' is significantly heavier than 'Hatteras' and Lewes strain. No apparent difference exists between 'Hatteras' and Lewes strain.

V Breeder stock of 'Cape' will be vegetatively maintained by Soil Conservation Service, Cape May Plant Materials Center, Cape May Court House, N.J. Foundation, registered and certified vegetatively propagated material will be maintained according to standards of N.J. State Department of Agriculture, Seed Certification Agency, Trenton, N.J.

VI a. Very few seed heads are formed on 'Cape' versus 'Hatteras' or Lewes. This is advantageous on sand dunes because culms which yield an inflorescence die and may be advantageous in maintaining genetic stability by less chance of seedlings.

b. Plants have open, wide (9-13 mm.) leaf blades and long (75-100 cm.) lax leaves. Culms are 3.5 to 10 mm. in diameter. Leaf-blades are open versus rolled or curled in other cultivars. Summer color is a lustrous dark green in contrast to others.

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History of 'Cape' American beachgrass

The Cape May PMC was established in 1965. Its primary purpose was to select, test and distribute to commercial nurseries a plant that could be used to stabilize sand dunes. The center was established as a direct result of the devastating 1962 storm.

During 1965, it was determined that American beachgrass was probably the best pioneer grass plant for stabilizing sand dunes. Many field observations by SCS Plant Materials people and others indicated that beachgrass was the dominant plant on the sand dunes and beaches stretching from Virginia to Massachusetts.

During the fall of 1965 and spring of 1966, samples of beachgrass were collected from the dunes along the coasts of Virginia, Maryland, Delaware, New Jersey, Connecticut and Massachusetts. Some 100 strains (accessions) were brought to Cape May for initial evaluation. These strains were tested for vigor, winter hardiness, growth rate, height, spread and other visible factors for several years.

Finally, all strains were discarded except for three of the best. Since the three were similar, one was retained and referred to as NJ-390. NJ-390 was compared to 'Lewes' and 'Hatteras'. These cultivars were then in use as the recommended sand dune plant.

The final testing of NJ-390 was completed at sand dune sites in Virginia, Massachusetts, Delaware, New York and New Jersey. NJ-390 was superior to the other two in amount of top growth, root growth, number of stems per hill and stem size. NJ-390 was named *Cape* in 1971 and distributed to a commercial nursery the same year.

Presently, some five or six nurserymen produce Cape. Today, Cape is the major plant used for sand dune stabilization along the mid-Atlantic coast.

REGISTRATION OF CAPE AMERICAN BEACHGRASS¹

(Reg. No. 34)

F. B. Gaffney and R. W. Duell²

'CAPE' American beachgrass (*Ammophila breviligulata* Fernald) was developed by the Soil Conservation Service, USDA, and was released in 1972 in cooperation with the New Jersey Agricultural Experiment Station.

The original plant was collected by W. C. Sharp from Cape Cod, Mass. in 1965. The single clone was increased vegetatively and tested as NJ-390 at the Cape May Plant Materials Center, Cape May Court House, N. J. It was distinguished by its broad leaves and stout culms.

A collection of 50 clones of American beachgrass was assembled during 1965-66 from the coasts of the states of Maine to North Carolina and the Great Lakes shores of Michigan. After 3 years of comparative performance ratings, the number of accessions was narrowed to nine for further testing. On the basis of vigor, number of culms, and weight of tops, Cape was found to be superior. Cape averaged higher in culm weight than 'Hatteras' and 'NJ-327' cultivars in 1970-71 tests.

Cape produces long, broad, flat leaves that are mostly lax. Culm diameters are greater than those of other cultivars. The lustrous dark green summer color contrasts with other accessions.

Very few seed heads are formed on Cape compared with Hatteras or NJ-327. This may be advantageous in a vegetatively propagated grass for sand dunes as fertile culms senesce, and seed may lead to genetic changes through volunteer seedlings.

Areas of probable adaptation are sand dunes from southern Maine to northern North Carolina and the Great Lakes region. Cape is recommended by the Soil Conservation Service for sand dune stabilization along the northeast Atlantic coast.

Breeder stock is maintained and distributed by the Cape May Plant Materials Center, Soil Conservation Service, USDA.

¹ Registered by the Crop Science Society of America. Contribution from the Soil Conservation Service, Cape May Plant Materials Center, Cape May Court House, New Jersey, and paper of the Journal Series, New Jersey Agricultural Experiment Station, Cook College, Rutgers University, New Brunswick, N. J. Received June 24, 1974.

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