Building and Planting Coastal Sand Dunes: Frontal Dune Species

'Cape' American beachgrass (*Ammophila breviligulata*)

Figure 18. 'Cape' American beachgrass *(Ammophila breviligulata)*

American beachgrass (*Ammophila breviligulata*) (Figure 18) is a native, cool-season grass also known as dune grass that grows most prolifically in the zone of accretion in the foredune area. Once the sand becomes stabilized, American beachgrass loses vigor and yields to other species that provide long-term cover and stabilization. However, it should still be a component of backdune plantings as a quick cover or nurse crop.

Foredune areas (essentially from the dune crest seaward) should be planted with 'Cape' American beachgrass (*Ammophila breviligulata*) culms in late winter to early spring, to maximize plant survivability and productivity. Culms should be planted in groups of two in a staggered pattern and should be planted 6 to 8 inches in depth depending on the length of the dormant stem. Ideally, three fourths of the length of the stem should be placed in the sand. The spacing of planting units will depend in the location in the dune profile of the planting. The densest plantings (12") should be in the most landward part of the dune. The mid-dune plants should be approximately 18 to 24 inches apart and the frontal dune plantings more widely spaced. This type of plant spacing results in a wider dune with a gentler slope in the front (O'Connell 2008) (Figure 19).

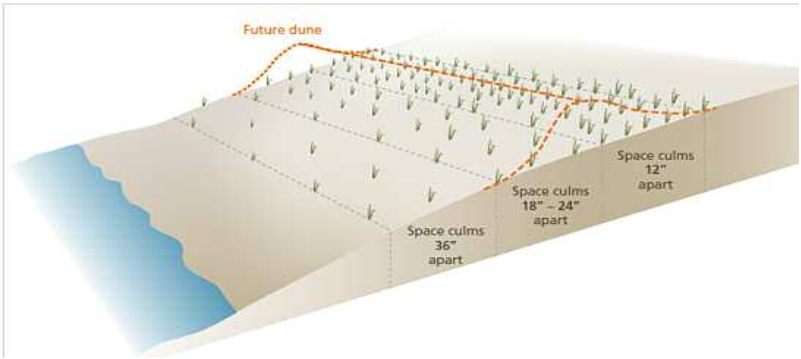

Figure 19. Staggered spacing for American beachgrass dune planting.

Assessing Beachgrass Plant Quality

The growth of bare root beachgrass plants is not dependent on the presence of roots, but rather the little "node" or growing point located at the bottom of the plant. When you squeeze the bottom end of the culm, it should be hard, not soft. A hard stem indicates sufficient energy stored to facilitate the growth of the plant. Spindly and soft stems should either be discarded or combined with a good stem in a common planting hole (Skaradek, et al. 2003).

Planting date:
Bareroot-November to April
Plugs-November to June
Method of establishment: Transplants using 2 live stems placed bare-root or 1 multi-stemmed containerized plants. Use a dibble bar or similar tool.
Material size: > 8-12 inches in length.
Planting depth: Insert plant stems to a depth of 6 inches, pack soil firmly around the plant.
Plant spacing outside of areas that support or are set aside as habitat for rare, threatened or endangered species: 12-18 inches apart. Spacing will depend on how quickly complete coverage is needed.

Notes:

- If you are planting later in the season (past the dormant planting season), greenhouse-produced plugs are a good alternative. These are more expensive than a bare root stem (culm), but they may be planted into early June. Plants need to be installed deeply for better survival. For instance, beachgrass stems should be planted so two-thirds of the stem is in the sand. Planting 2 stems per hole is sufficient (the old recommendation was 3 stems). This is referred to as a planting unit.
- The planting densities recommended above are likely to degrade rare, threatened, and endangered (RTE) species' habitats over time, as dense stands of dune vegetation move down into the back beach. As a result, these planting practices should not be adopted in RTE species areas. Instead, dune creation and management in RTE species areas should follow the approved BMP if there is one, as well as guidelines in Maslo et al. (2011). Both of these will be superseded by the RTE dune guidelines, once complete. Dune management in RTE species areas should be guided by the site-specific recommendations of the Breeding and Nesting Bird program staff at New Jersey's Division of Fish and Wildlife Services.

The 'Cape' variety of beachgrass is currently the only commercially available beachgrass that is adapted to the northern Mid-Atlantic and Northeast. For more information on 'Cape' American beachgrass, consult the Plant Brochure and Plant Guide at the links below:
http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/njpmcrb12116.pdf

http://plants.usda.gov/plantguide/pdf/pg_ambr.pdf

Additional Beachgrass Genetic Material that is Commercially Available

Bogue Germplasm - This beachgrass material was originally collected in the Bogue Banks of North Carolina and was propagated and producted by a grower in North Carolina. This plant material has never gone through any variety-release program but it is available commercially from a few select growers in the Mid-Atlantic. It performs best in Virginia and the Carolinas and has fair to good performance in New Jersey. It can be a suitable substitute for 'Cape' if that material is not available.

Vans Great Lakes ecotype - This material is not recommended for planting in New Jersey since its origin is a freshwater environment along the Great Lakes in Michigan.

Bitter Panicgrass (*Panicum amarum*)

Figure 20

Bitter panicgrass (*Panicum amarum*) (Figure 20) is a native, warm-season grass, closely related to upright coastal panicgrass but much more horizontal in its growth habit. This species is less adapted to accreting sand than beachgrass, so it is better adapted to secondary dunes or the backside of primary dunes. It is rather slow to establish from vegetative culms, but should at least be a small component in backdune plantings. Unlike coastal panicgrass, it does not produce a large quantity of viable seed in the Mid-Atlantic region.

Bitter panicgrass is a perennial warm-season grass with a horizontal growth habit that spreads slowly from short, strong rhizomes, initially forming open clumps. Over time these clumps can fuse to form a dense mat of vegetation. Since this grass produces little viable seed, it must be planted vegetatively.

Planting date: November to May.
Method of establishment: Potted and bare-root plants are available commercially. Freshly dug root tillers (sprigs) or rooted stem cuttings can also be obtained from vigorous stands.
Material size: ≥ 6 inch stem length with a minimum 2 nodes.
Planting depth: Place sprigs at a 45 degree angle in an 8 to 10 inch hole or slit leaving the top 6 to 10 inches of stem exposed. Plant tillers (sprigs) so the roots are well distributed in moist soil and the crowns are covered with one half to 1 inch of soil. Pack soil firmly.
Plant spacing outside of areas that support or are set aside as habitat for rare, threatened, or endangered species: Tillers (sprigs) should be planted in rows 6 to 8 feet apart and spaced about 18 inches apart in the rows.

'Northpa' – This is an NRCS plant release from the Brooksville, Florida, Plant Materials Center. The origin of this genetic material is North Carolina. No other commercial sources adapted to New Jersey are available for this species.

For more information on 'Northpa' bitter panicgrass consult the Plant Release and Planting Guides at the links below:
http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/flpmcrb5053.pdf

http://plants.usda.gov/plantguide/pdf/pg_paam2.pdf

Sea Oats (*Uniola paniculata*)

Figure 21

Sea oats (Figure 21) is a southeastern U.S. native perennial. It is an erect, rhizomatous, and colonizing grass that produces an extensive underground root system. This species is the most important plant on frontal dunes along the southeastern coast. From Virginia into Maryland, it intergrades with American beachgrass. It flourishes best where sand is drifting and accumulating. It persists as a perennial cover after the sand has stilled but dies back to the ground over the winter. Very little to no seed is produced by most seed heads; what little is produced is readily eaten by birds. Only rarely is reproduction by natural germination of seed observed.

Planting date: April to June (late spring-early summer)
Method of establishment: Potted plants and bare-root stock are available commercially and form vigorous stands. Hand planted.
Material size: ≥ 30-inch stem height.
Planting Depth: Plant 2 inches below the nursery grown depth.
Plant Spacing outside of areas that support or are set aside as habitat for rare, threatened, or endangered species: Use an 18 to 36 inch row spacing with plants placed 18 inches apart within a row.

Note: Currently, commercially available genetic stock of this species from growers in the Carolinas would not be adapted long term to our climate in New Jersey. It may live one season or for a few seasons but would most likely die in the first harsh winter. The Cape May Plant Materials Center is testing a cold-tolerant strain that should be available in a few years for planting in our climate. Consequently, in future years an adapted sea oats should be released to the nursery industry for planting in Maryland, Delaware, and southern New Jersey.