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Conservation Plant Establishment to Support Field Elevation Increase Through Beneficial Use of Dredge Material Sediment Application (poster abstract)

The New Jersey Plant Materials Center (NJPMC) partnered with a local turf production farm and the DelAtlantic Soil Conservation District to conduct a conservation field trial examining the applicability of NJPMC conservation plant releases for use as temporary cover or as an alternative production crop at a site receiving dredge material sediment. The primary goal of the project for the sod farm operation was to use the dredge material sediment to raise the elevation of the fallow turf production field and replace the topsoil lost from years of turf production. The dredge material sediment was dewatered on site in constructed pits prior to spreading and incorporation into the native field soil. When the elevation is restored to the intended level and the soil conditions are appropriate, the fields may be reverted to turf production. The primary conservation concern of this project was the potentially high erosion rate if the fields were left unvegetated after the saline dredge sediment was incorporated. The addition of the saline dredge material was expected to negatively impact agronomic parameters, increasing soil salinity and acidity. Selecting the appropriate plant species that could successfully establish and maintain vegetative cover given the altered soil chemical properties was a major concern. The selected plant species would have to withstand the harsh conditions caused by the introduction of dredge material sediment into the native soil of the fallow field and successfully spread to mitigate potential erosion.

NJPMC staff planned the conservation field trial planting and provided seed and vegetative materials. Vegetative plants were harvested and the entire trial planting was installed on 14 Dec. 2018. The trial planting consisted of three vegetatively established treatments: 'Cape' American beachgrass (*Ammophila breviligulata*), 'Avalon' saltmeadow cordgrass (*Spartina patens*), and Southampton Germplasm prairie cordgrass (*Spartina pectinata*). The fourth treatment was a broadcast seeded multispecies mix. The seed mix consisted of partridge pea (*Chamaecrista fasciculata*), Virginia saltmarsh mallow (*Kosteletzkya virginica*), 'Atlantic' coastal panicgrass (*Panicum amarulum*), Southampton Germplasm prairie cordgrass, amberique-bean (*Strophostyles helvola*), and barley (*Hordeum vulgare*).

NJPMC staff conducted monitoring, data collection, and analysis efforts to document and share the results of the conservation field trial. Soil properties (pH and salinity) were monitored using field testing equipment in addition to laboratory tested samples. Plant performance was evaluated by monitoring survival, chlorophyll content, and collecting samples for laboratory forage value analysis.

This conservation field trial demonstrated the successful application of NJPMC conservation plant releases to support the implementation of USDA NRCS Conservation Practice Standard Critical Area Planting (342) at a dredge material sediment recipient site. With the selection and establishment of appropriate plants, the project demonstrated an alternative beneficial use of dredge material sediment for the purpose of replacing topsoil loss due to sod production while minimizing potential erosive impacts.