Planting to Save the Wetlands

Orleans Parish, Louisiana

New Orleans, LA — The hundreds of miles of wetlands along Louisiana's coastline are a vital asset in the ongoing struggle to reduce the impact of powerful hurricanes and storms. These swamps and marshes provide a natural buffer against waves and storm surges — and even protect people and property farther inland.

But Louisiana's wetlands are disappearing. Hurricanes Katrina and Rita, for example, transformed 217 miles of marsh into open water in Louisiana, with much of the loss occurring in St. Bernard and Plaquemines parishes. The U.S. Geological Survey reports Louisiana's wetlands make up about 40 percent of the continental U.S. wetlands, but about 80 percent of wetland losses. Ongoing protection and restoration is needed to prevent the shore from moving inland.

The Louisiana State University Agriculture Center, known as the AgCenter, has a research program focused on the plants that can be key components of this effort. "The AgCenter's Coastal Plants Program's primary objective is to develop improved varieties of plants used for coastal restoration," said Carrie Knott, assistant professor at the School of Plant, Environmental, and Soil Sciences.

Knott's work is centered on smooth cordgrass, which is prevalent in Louisiana's salt marshes, and sea oats, which are used to develop sand dunes on beaches.

"Smooth cordgrass is salt-tolerant and has proven to be effective in slowing down surges and hurricanes and is used in restoration projects throughout Louisiana," said Knott. "It is an ideal plant that spreads quickly and forms a dense canopy."

Vermilion is currently the only variety of smooth cordgrass used extensively in the restoration projects, according to Knott. But there are risks to using a single variety. For example, a disease that could decimate the entire variety would be catastrophic for the wetlands. Knott's work is valuable because she is breeding varieties of smooth cordgrass to prevent such a disaster.

The AgCenter provides Knott's varieties of smooth cordgrass to commercial producers. The goal is to make these varieties accessible for contractors and environmentalists that plant along the coast for restoration. Knott has developed six varieties from her breeding program and is constantly looking for sites to plant and test the grass.

Another plant that is important for wetland restoration is sea oats. "At one time, sea oats were the dominant dune grass in Louisiana, but for many reasons, natural strands of sea oats no longer exist in Louisiana," said Knott.

Louisiana beaches are lower in elevation than other states because of a high erosion rate, which makes sea oats survival rates lower as well. Still, the plant does a better job than others at reducing the impact of storms.

"The beauty of the plants is that you can put them in, and after a few years huge sand dunes develop around them," said Knott.

Knott has explored 100 varieties of sea oats collected from the Gulf Coast and the Carolinas, and identified four that performed well in normal environments after major hurricanes. After field testing, some varieties will be released to the public and be available for restoration practitioners.

One previously released sea oats variety, “Caminada” is well-adapted to Louisiana’s climate and, as a result, is used extensively throughout the state. But, as with the smooth cordgrass, using only one variety is not preferred.

The LSU AgCenter’s Coastal Plants program says it is the only program in the nation developing improved plant varieties for coastal restoration. Its work is on the forefront of plant restoration techniques.

“Plants are the key to restoring natural ecosystems and saving our wetlands,” said Knott.

They are also essential to protect communities, residents, and infrastructure when powerful storms reach the Louisiana.