LSU AgCenter Coastal Plants Program

Aerial Application

Rapid and Economical Coastal Marsh Revegetation

Aerial deployment technology is being developed by the LSU AgCenter to provide versatile, rapid, and economical revegetation with minimal ground involvement in both natural and newly created marshes. Various aerial applicators, such as a fixed-wing airplane, helicopter, or airboat, can be used. Recent advancement in the coastal engineering technology has resulted in a significant increase in marsh creation. Aerial planting can be incorporated into the coastal engineering technology to provide technological break-throughs in coastal restoration and erosion control.

Aerial planting is a new approach to coastal marsh revegetation technology. Using a fixed-wing airplane, an acre of marshland can be seeded in less than 15 seconds. Therefore, hundreds of acres can be planted in a single-day operation. In the past several years, the LSU AgCenter has conducted extensive aerial planting experiments in the Bayou DuPont marsh-creation site near Belle Chase, LA, on bare soil in Lake Pontchartrain, and in newly constructed marshes in Marsh Island. Healthy and robust smooth cordgrass population can be produced in the seeded areas in only a single season, about 6 months after seeding, providing rapid stabilization.

Aerial seeding is a versatile approach with virtually no limitation in accessing any locations in the coastal regions, including the most remote ones with minimal involvement on the ground. Aerial planting is best suited for marsh-created project sites that are typically dominated by fluid, low-strength soils where on-site travel and planting can be very difficult. At the end of dredging operations, the seed can be delivered aerially as soon as the fluidity and strength of deposited soils can adequately support the biomass of the growing plants. Rapid revegetation will provide maximum protection for these newly constructed marshes. It can also help prevent the establishment of invasive species on these exposed sites.

Hand-transplanting of vegetative forms is labor-intensive and slow. More than 24 man-hours are needed to hand-transplant an acre of marshland. Transportation can also be challenging because the majority of Louisiana's coastal wetland restoration projects are in remote sites where access is limited to boats and other watercraft. In more

remote areas, the level of difficulty increases and planting speed reduces dramatically. The current cost estimate of hand-transplanting per acre is approximately $2,700/A to cover cost of plugs, labor, and logistics. As the target areas become more remote and less accessible, the cost increases exponentially. The cost estimate of aerial seeding is around $750/A and will not vary as much with location of the planting. Since the presence of people and ground equipment are not required in aerial seeding, the potential unintended environmental disruption or problem can be avoided.

Coastal engineering, such as the beneficial use of dredged materials, is advancing significantly, resulting in a tremendous increase in speed and size of new marsh constructions. Aerial planting fit well with large scale restorations to potentially help create technological break-throughs in coastal restoration.

Anyone interested in potential partnerships, collaborative agreements or other participation in the LSU AgCenter Coastal Plants Program may contact Dr. Herry Utomo (hutomo@agcenter.lsu.edu).

For more information, visit our website: LSUAgCenter.com/CoastalPlants

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