# From Invader to Innovator: Bioplastic Synthesis From Carrizo Cane to Keep Laredo Beautiful

Quiroz, Austlynn (School: Joseph W. Nixon High School)

Carrizo Cane, an invasive species affecting the health of Webb County's Rio Grande River and other southern U.S. waterways, presents significant ecological challenges. Instead of focusing on the costly and often ineffective eradication of Carrizo Cane, this study explores its potential as a raw material for bioplastics, offering a sustainable alternative to single-use plastics. The research investigates the synthesis of bioplastic from Carrizo Cane starch (sugars), with a focus on four primary objectives: (1) developing a bioplastic using PolyLactic Acid (PLA) from Carrizo Cane, (2) evaluating its potential for plastic injection molding and forming processes, (3) assessing its biodegradability. The study demonstrates that Carrizo Cane can be synthesized into a viable bioplastic, providing an innovative environmental and material sustainability solution. Multiple trial samples were tested to assess the bioplastic's chemical and physical properties, its molding formability, and its potential for decomposition. Findings suggest that the bioplastic not only addresses local ecological concerns but also offers a promising alternative to conventional plastic products. This research highlights the potential to repurpose an invasive species into a resource, contributing to waste reduction and eco-friendly material development. With further refinement, this solution could inspire similar initiatives in other regions, combining environmental stewardship with sustainable innovation.

**Awards Won:**