



(Left) The plants of the Southwestern U.S. are adapted to harsh dry climate. (Center) At TTU we have the expertise that covers the entire spectrum of research needed to develop these technologies. (Right) Castor has unique adaptation to the salty soils found across the arid South West of the U.S.

Desert Biofuel: Southwest Biofuel Production

Large areas of the Southwestern U.S. would be ideally suited for one or more of the five renewable energy production technologies being developed at Texas Tech

The Challenge:

The arid and semi-arid climate of this region has delayed the development of commercially applicable biofuel production technologies suited for the vast land resources of the South Western U.S. Most previous biofuels research has focused on plants that are either utilized primarily for human food, animal feed, or that are not well adapted in the warmer, dryer climates of the Southwestern U.S. The five technologies being developed at Texas Tech (lignin, algae, oilseeds, wastes, and plant starches) will allow feedstocks production and liquid fuel processing on over 20 million acres of marginal lands across this region.

The Proposed Project:

The combination of the right biofuel production technology with a comprehensive systems approach will allow public agencies in this region to contribute to increased energy independence. At TTU we have the expertise that covers the entire spectrum of research needed to develop these technologies ranging from the ecological impact of harvesting native plants for biomass, cultivation of drought tolerant crops, optimization of chemical processing, end use evaluation, and life cycle analysis at each step from field to fuel. In addition, we are enhancing the value of these fuels through the utilization of excess solar and wind power to chemically reduce and enhance the energy level of the “Desert Fuels.”

Project Impact:

The seven Western States (AZ, CO, NM, NV, TX, UT, and WY) with significant arid or semiarid areas have over 569 million acres of arid or semiarid lands. The federal government controls 36% of this total area (203 million acres). The overall objective of this research is to generate the feedstocks, production strategies, fuel processing, and developmental analyses necessary to allow over 20 million acres of Federal Lands in the Western U.S. to produce 1.6 billion gallons of renewable fuels annually. These technologies would meet the target of 20% energy self sufficiency while reducing dependence on fossil fuels, providing rural communities an additional industrial enterprise, and reducing the carbon footprint of the entire region. Sustainable production of “Desert Fuels” on public lands will allow the production of premium fuels with minimal impacts on existing food or animal feed crop output.

What the Project Director Says about Supporting the Proposed Project:

“I want to thank the Texas delegation for their support of this project,” said Dr. Auld, Rockwell Chair of Plant Genetics at TTU. “This project will develop the technologies necessary to allow the Southwestern U.S. to help significantly reduce our nation’s dependence of imported liquid fuels.”