Project No. 80-Z1 (New)

Cooperator:
University of California
Department of Chemical Engineering
Berkeley, California 94720

Project Leaders: Dr. Harvey W. Blanch — Phone (415) 642-1387
Dr. Charles R. Wilke — Phone (415) 642-4324

Project: Brush Utilization
Alcohol Production from Brush

Objectives: (1) To demonstrate the technical feasibility of hydrolysis of almond brush to sugars, and the subsequent fermentation of these sugars to ethanol; (2) to provide an economic evaluation of the processing scheme. Coupled with this evaluation will be the development of a process flow sheet for large scale operation.

Progress: Almond brush is comprised of three major components, cellulose, hemicellulose and lignin. Both of the sugar components, the cellulose and hemicellulose, can be hydrolyzed to their respective monomers, glucose and xylose (predominately), which can be subsequently fermented to ethanol. This alcohol can be blended with gasoline to produce "gasohol" for use as a transportation fuel. The production of gasohol from agricultural residues, such as almond brush, is the main objective of this research.

At the University of California, Berkeley, an ongoing project supported by the Department of Energy and the National Science Foundation has been investigating process design studies on production of ethanol as a fuel from biomass and waste material.

Plans: In order to accomplish the goals of the research additional support from the State Solid Waste Management Board in the amount of $25,000 to $30,000 will be needed. Participation in this project by the Almond Board will indicate their general support for the program and it seems reasonable to assume appropriate funding can be obtained from the Solid Waste Management Board. Therefore, this project is contingent on securing funds from the state since it could not be undertaken without additional support.

The final goal of the proposal will be to provide a process flow sheet and economic estimates for a scheme to hydrolyze almond brush to sugars, and convert these sugars to alcohol by fermentation. This design would enable a farmer to examine the feasibility of converting almond brush to alcohol for use as a tractor or automobile fuel. With the process flow diagrams, he could either undertake construction himself, or hire contractors.

Almond Industry Participation $2,500