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U.S. Department  
of Transportation



Project Title: ***Simultaneous Starch and Cellulose Hydrolysis for Whole Stalk Processing of Sweet Sorghum***

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**Summary:**

Sweet sorghum's high productivity, low input requirements, and versatility make it an attractive feedstock for energy production. It contains high levels of carbohydrates in the form of directly fermentable sugars, starch, and cellulose. In order to maximize carbohydrate production from all three forms, a whole stalk process will be evaluated for sweet sorghum.

The proposed process includes physical pretreatment of the stalks by either a twin screw press or a mechanical refiner for fiber development followed by simultaneous hydrolysis of starch and cellulose.

Specific objectives include

- 1) Evaluate a twin screw press in a dual role of juice extraction and bagasse pretreatment
- 2) Optimize conditions for simultaneous hydrolysis of starch and cellulose in the bagasse and
- 3) Evaluate the use of a mechanical refiner for sweet sorghum bagasse pretreatment.

A whole stalk process is potentially more beneficial because carbohydrate yields can be doubled when the conversion of cellulose and starch is considered in addition to the directly fermentable sugar, and because the process is more versatile and can be used with other complementary feedstocks in a dual feedstock system.



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