

Butanol: A superior biofuel

A. What is this research project?

Butanol is an important transportation fuel that has more energy content than ethanol. It can be used in the existing gasoline supply and distribution lines, has higher octane number than ethanol, and can be mixed with gasoline in any proportion. It is also a valuable chemical feedstock. Butanol may be produced through fermentation of corn, molasses, and other starchy crops using *Clostridium beijerinckii* P260 or other solventogenic cultures. The focus of this research project is the conversion of agricultural residues such as wheat straw to butanol.

B. What problem does it address?

- Butanol can be produced from annual crops such as corn, rice, barley and other starchy crops.
- Due to the prohibitive cost of grains and cereals, use of lignocellulosic residues is recommended.
- Economically available agricultural biomass hydrolysates have been used for production of this biofuel.

C. How is the project different from or how does it enhance other projects?

- Development of an economically-viable process for alternative transportation fuels is essential due to the steady rise in gasoline prices.
- This work enhances the economics of butanol production.

D. What are the potential benefits of partnering with ARS on this research?

ARS provides expertise in biomass pre-treatment and fermentation biotechnology. The technology has been developed on laboratory scale and it is suitable for larger scale.

E. Who are the potential customers?

Economic production of butanol from wheat straw by fermentation will benefit farmers and the butanol and biofuel industries.



Stage of Development

The process of butanol production from wheat straw is being scaled-up to larger bioreactors. Laboratory scale data have been published.

Moving Forward

Scale up to larger bioreactors is required. We seek industry partners to scale-up this technology followed by commercialization.

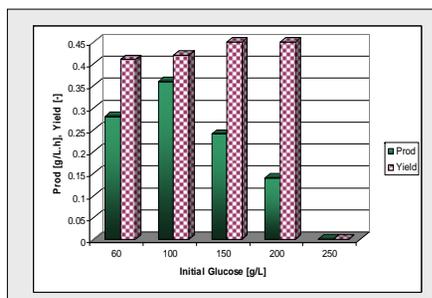


Researchers

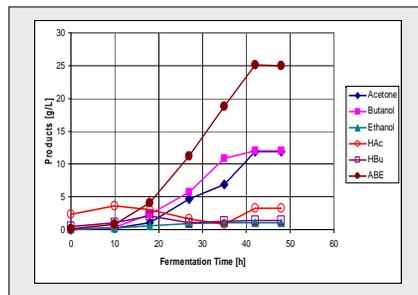
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Acetone-butanol-ethanol yield & productivity



Acetone-butanol production from wheat straw

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