Production Of Sustainable Butanol Biofuel From Corn Stover

(Technical Report)

Land for food or fuel: the struggle over biofuel policies

(Sociotechnical Research Paper)

An Undergraduate Thesis Portfolio
Presented to the Faculty of the
School of Engineering and Applied Science
In Partial Fulfillment of the Requirements for the Degree
Bachelor of Science in Chemical Engineering

by

Jason Thielen

May 9, 2024

Contents

Preface

Production of Sustainable Butanol Biofuel from Corn Stover

Land for food or fuel: the struggle over biofuel policies

Prospectus

Preface

How can biofuels best serve energy transitions goals globally? The demands for food and fuel have come into competition in the last twenty years. This controversy has been highly divisive.

Non-food biomass sources may serve as second-generation biofuel feedstocks that do no compete with food supplies. Biofuels may be synthesized from biomass using fermentation. Biofuel production currently focuses on ethanol. Butanol production would offer a superior material for use as a biofuel. A fermentation process creating biobutanol from corn stover is a possible process.

The food and fuel industries both demand agricultural products as inputs. Defenders of biofuels characterize them as necessary alternatives to unsustainable fossil fuels. Their critics, however, condemn biofuels as the products of carbon-intensive synthesis processes that are themselves unsustainable and that also imperil the fragile food supplies that vulnerable populations depend upon.