



Sun Grant Western Regional Center

Oregon State University

New Life Cycle, Sustainability and Economic Analysis of Cellulosic Ethanol from Grass Straw in the Pacific Northwest

Ganti Murthy, Oregon State University (2009-2011)

OVERVIEW

Conversion of cellulosic feedstocks into liquid biofuels is critically dependent on the processing technology. Various pretreatment technologies have been developed for cellulosic feedstocks to facilitate enzymatic hydrolysis and fermentation. Choice of pretreatment technology, while dependent on feedstock, is also a function of energy use, capital costs, downstream processing and possible environmental impact. Dr. Murthy seeks to answer these questions through the development of engineering and economic models, as well as life cycle analysis of the conversion of grass straws to cellulosic ethanol. This study will provide information on using Pacific Northwest biomass in a sustainable, economic and environmentally friendly manner.

Progress to Date

Three grass straw samples (tall fescue, bent and annual rye grass) were provided by industry co-PI Bill Rose and have been analyzed for C5 and C6 sugars, lignin, ash and moisture contents. Data sheets obtaining life cycle analysis data were prepared. The sheets will be sent to Mr. Rose for the addition of agricultural production data.

A peer reviewed publication has been submitted to ASABE (Kumar, D. and Murthy, G.S. 2010. Effect of grass straw composition and pretreatment processes on ethanol yields in Pacific Northwest U.S.).

Collaborators

Christine Kelly and Michael Penner, Oregon State University (co-PIs)

Bill Rose, Rose Agri-Seed

Funding Sources

- U.S. Department of Transportation, Research and Innovative Technology Administration
- Cost share: Oregon State University



Contact: Ganti Murthy, Biological and Ecological Engineering, Corvallis, OR

541-737-6291, murthy@enr.orst.edu

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