



U.S. Department of
Agriculture
National Institute of
Food & Agriculture



**Project Title: Investigating Fungal Degradation of Switchgrass
in a Controlled Storage Environment**

DR. MARK WILKINS

Project Goal

The primary goal of this project is to develop and optimize an integrated switchgrass storage fungal pretreatment system, which could aid in lignin removal and reduce the severity of subsequent thermochemical pretreatment processes, which currently are necessary for preparing switchgrass from enzymatic hydrolysis.

The following objectives are to: 1) develop realistic laboratory *Pleurotus ostreatus* growth conditions on loose switchgrass, in terms of storage time, moisture content and fungal spawn loading that can be translated to square bale storage conditions; and 2) determine the effect of *P. ostreatus* growth on the release of glucose from loose and baled switchgrass after liquid hot water pretreatment and subsequent enzymatic hydrolysis.

Expected Project Outcomes

- Reduced pretreatment severity and energy use while achieving fermentable sugar yields similar to those achieved in previous studies using conventional thermochemical pretreatment methods.
- Reduced production of inhibitory compounds compared to previous studies using conventional thermochemical pretreatment methods.
- Development of operating parameters and techniques to apply fungal pretreatment during grass storage at a commercial biorefinery.



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