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



**Project Title: Decreasing Severity of Switchgrass Pretreatment through Wet Storage and Biological Pretreatment**

## DR. MARK WILKINS

### Project Goal

Biorefineries face logistical issues due to the low bulk density of lignocellulosic biomass. Storage facilities must have large capacities to store feedstocks for a minimum of six months to ensure a continuous operation. Hence, the major goal of this project is to overcome the issues of physico-chemical pretreatment and reduce cost by adapting a holistic approach of exploiting a part of storage time for a biological pretreatment process.

### Project Outcomes

- The team completed compositional analyses on all from square bales and 8 samples from round bales.
- In square bales, extractives content was greater at the bottom of the bales than in the middle and top of the bales, which was indicative of more fungal and other biological activity occurring in the top of the bale that was exposed to more air resulting in more activity. The extractives largely consist of sugars that are easily digested by fungi and other organisms.
- Glucan content was less in the bottom of the bale than at the top and middle.
- In round bales, extractives content was lower in mushroom-treated bales than in control bales, which was which was indicative of more fungal and other biological activity occurring in the mushroom treated bales, which was expected.
- Currently, the team is doing controlled studies in a laboratory environment to determine mushroom loading and moisture contents for a future bale study in a controlled environment.



#### PI: Dr. Mark Wilkins

Oklahoma State  
University  
*Biosystems and Agricultural  
Engineering*

#### Co-PI:

**Dr. Michael Buser**  
Oklahoma State  
University  
*Biosystems and Agricultural  
Engineering*

#### Co-PI:

**Dr. Danielle Julie Carrier**  
University of Arkansas  
*Biological and Agricultural  
Engineering*

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