

# Ethanol Production from Corn Fiber Separated after Liquefaction in the Dry Grind Process

## Background/objective

Valorization of the recalcitrant lignocellulosic fraction of feedstock is key to maximizing the value derived from bioethanol crops such as corn. While starch is easily hydrolyzed to monomeric sugars, plant fiber remains unconverted during saccharification in the conventional dry grind process and is therefore an abundant untapped resource. In this study, researchers compare the impacts of hot water or wet disk milling pretreatments with elevated cellulase enzyme applications on ethanol yield from corn fiber.

## Approach

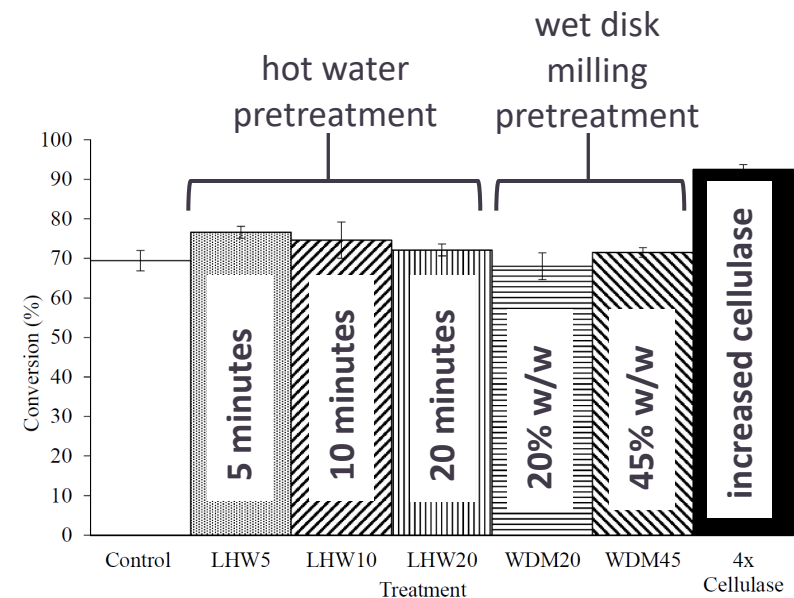
- ❖ Ethanol yield from corn fiber was compared between three hot water pretreatments (5, 10, 20 min), two wet disk milling pretreatments (20% and 45% w/w), and an increased (4x) cellulase treatment.

## Results

- ❖ Although five-minute hot water pretreatment resulted in higher ethanol yields than the other pretreatment options, increasing cellulase alone generated greater ethanol yield than any of the pretreatment options tested.

## Significance

- ❖ Corn bioethanol production is a well-developed process, making it an ideal model system in which to elucidate the impacts of different pretreatment and fermentation conditions on ethanol yield.
- ❖ This work informs future efforts to incorporate other more fibrous feedstocks into commercial bioethanol production.



**Conversion of fiber to ethanol achieved with different pretreatments vs. an elevated cellulase treatment.**