



# **Xylo-Oligosaccharide Process Development, Composition, and Techno-Economic Analysis**

## **Cooperative Research and Development Final Report**

**CRADA Number: CRD-12-483**

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Richard Elander

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## Cooperative Research and Development Final Report

In accordance with Requirements set forth in Article XI, A(3) of the CRADA document, this document is the final CRADA report, including a list of Subject Inventions, to be forwarded to the Office of Science and Technical Information as part of the commitment to the public to demonstrate results of federally funded research.

**Parties to the Agreement:** General Mills Operations, LLC

**CRADA Number:** CRD-12-483

**CRADA Title:** Xylo-Oligosaccharide Process Development, Composition, and Techno-economic Analysis

### **Joint Work Statement Funding Table Showing DOE Commitment:**

| <b>Estimated Costs</b> | <b>NREL Shared Resources</b> |
|------------------------|------------------------------|
| Year 1                 | \$00.00                      |
| Year 2                 | \$00.00                      |
| Year 3                 | \$00.00                      |
| TOTALS                 | \$00.00                      |

### **Abstract of CRADA Work:**

The purpose of this cooperative work agreement between General Mills Inc. (GMI) and NREL is to determine the feasibility of producing a valuable food from agricultural waste streams, at an advantaged cost level relative to similar existing ingredients. The scope of the project includes pilot-scale process development, compositional analysis, and techno-economic analysis.

### **Summary of Research Results:**

Target products were produced in continuous reactor systems at the 1-ton per day scale. Product specificity was sufficiently high to warrant further optimization and investigation. Additional work was performed to evaluate solid liquid separation properties of treated slurries, as well as methods of reducing product ash content. Ultimately, a means of producing target-range products at desirable specificity with low mineral ash content from agricultural waste products was demonstrated. The feasibility of the process was confirmed by preliminary techno-economic analysis.

### **Subject Inventions Listing:**

NREL ROI No. 13-09, filed as US Provisional No. 62/091,389, entitled "Production of Novel Fiber Products from Biomass," on December 12, 2014.

**Report Date:**

10/20/2015

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