**Grain Processing Research**

The Department of Food Science and Technology Grain Processing Research is focused on toxin removal, food preservation, food consistency, raw material transformation, byproduct utilization, process modeling, and energy and water optimization.

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**Research Topics**

**DR. ROLANDO FLORES**  
foodsci.unl.edu/rflores  
Research oriented toward the utilization, optimization and development of foods and new uses for grains and other agricultural products and their by-products. Modeling and optimization of particle reductions and fractionation of cereals in food processing operations.

**DR. RANDY WEHLING**  
foodsci.unl.edu/wehling  
Research is focused on development of analytical methods for cereal grains, oilseeds, and their products, and on the relationship between the chemistry of the cereal grains and their end use qualities. Cereals and oilseeds research is oriented to the development of rapid and non-destructive analytical methods for grains and cereal/oilseed products using molecular vibrational spectroscopy, including near-infrared (NIR), mid-infrared and Raman spectroscopy techniques.

**DR. CURTIS WELLER**  
foodsci.unl.edu/weller  
Research responsibilities are in value-added processing of agricultural commodities and physical properties determination. Concentration of research effort related to cereal grains has been on refining of grain sorghum to recover its starch, protein and lipid fractions, and utilization of the fractions in value-added applications (e.g., functional foods, nutraceuticals, and degradable films). Additionally, Dr. Weller has engaged in numerous projects addressing post-harvest loss and food waste.

**DR. VICKI SCHLEGEL**  
foodsci.unl.edu/schlegel  
Research focuses on the synergistic interplay of health promoting agents (nutraceuticals) in whole grains within their own complex matrix and when delivered in other food systems. The diverse biochemical composition is evaluated using a multi-level platform, that includes gas chromatography, high performance liquid chromatography, mass spectrometry, capillary electrophoresis, and nuclear magnetic spectroscopy.

**DR. RICHARD GOODMAN**  
foodsci.unl.edu/goodman  
Research focus is on evaluating potential risks of food allergy and celiac disease that might be occur due to the introduction of specific dietary proteins through food processing or the introduction in new genetically modified crops. Bioinformatics evaluation of the novel proteins against sequences of known allergens and celiac inducing proteins, specific serum IgE binding studies and testing the stability of proteins in a pepsin digestion model are primary prediction tools.
## RESEARCH TOPICS

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<tr>
<th>Researcher</th>
<th>Research Focus</th>
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<td><strong>DR. DEVIN ROSE</strong></td>
<td>Research is aimed at improving the quality and health-promoting properties of cereal grains and their products, with particular emphasis on whole grains and dietary fibers. Approaches are to: 1) determine how differences in chemical and physical properties of grains influence end-use quality; 2) identify whole grains and grain components with potentially health-promoting properties using in vitro and in vivo approaches. Supervises the UNL Grain Processing Lab.</td>
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<td><strong>DR. HEATHER HALLEN-ADAMS</strong></td>
<td>Research includes many aspects of Fusarium graminearum (Fusarium Head Blight pathogen) biology, with an emphasis on wheat infection, production of mycotoxins, wheat by the fungus, mycotoxin detection and quantification in post-harvest and post-processing grain products (wheat, maize), and latent seedborne infection.</td>
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<td><strong>DR. ANDRÉIA BIANCHINI</strong></td>
<td>Research area is focused on Food Safety, with a strong component in the safety of grains and cereal based products related to pathogens and mycotoxins. Areas of interest include applied research on the evaluation of ingredients, assessment of processes and development of strategies to reduce/prevent contamination of final products with mycotoxins and bacterial pathogens.</td>
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<td><strong>STEVE WEIER</strong></td>
<td>Research includes extrusion and food processing technologies, scale up, and grain extrusion. Manages the Food Processing Center Pilot Plants.</td>
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