2021 Prairie Grains conference

Bringing Back the Bread

AURI, MWR&PC research investigates digestibility of wheat

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Many sourdough products sold in stores aren't sourdough. An indicator of whether or not bread is sourdough comes down to three key ingredients, salt, flour and yeast. Sourdough labels with a laundry list of ingredients generally aren't sourdough.

Close your eyes. Imagine the smells of your favorite dinner. Perhaps it's ham, potatoes, corn. Now imagine the same dinner without bread.

Home-cooked, delicious bread.

For many people across the U.S., this is reality. While approximately 1% of the population has celiac disease, a chronic digestive and immune disorder that damages the small intestine brought on by eating foods containing gluten, many more suffer from gluten sensitivity.

The Agricultural Utilization and Research Institute (AURI), in partnership with the Minnesota Wheat Research & Promotion Council (MWRPC) and the University of Minnesota, was awarded an Agricultural Growth, Research, & Innovation (AGRI) Crop Research Grant from the Minnesota Department of Agriculture (MDA) to fund a two-year study on gluten sensitivity.

"Gluten sensitivity is real, and people want to enjoy savory breads, comfort pastas and decadent desserts, said Charlie Vogel, MWRPC executive director. "Figuring out the AND of that statement holds tremendous market potential and quality of life for individuals. This research and supporting grant are so important, not only for the consumer, but for the entire industry."

The study, done in conjunction with the Agricultural Utilization Research Institute (AURI), the University of Minnesota's College of Food, Agricultural and Natural Resource Sciences and its Regional Sustainable Development Partnership, and Back When Foods, Inc., aims to better understand wheat digestibility by looking at fermentable oligo-, di-, monosaccharides and polyols (FODMAP) and amylase-trypsin inhibitors (ATI) and the role each plays in digestion. The overall study hopes to answer a few questions: Is breeding an issue? Can processing reduce negative impacts? What is a pathway for the industry to implement the research?

UMN wheat breeder Dr. Jim Anderson presented an update at the Prairie Grains Conference in December. Anderson has been working to answer the breeding question.

In his research, Anderson compared the FODMAP and ATI levels of 46 heritage wheats (grown before 1970) and 142 modern wheats with a good representation from each decade but with an emphasis on recent varieties. Some of the results were encouraging while others were head scratchers.

"The difficulty is FODMAPS are likely controlled by several small genes," Anderson said. "There's no clear path. It doesn't mean we can't breed for them, but it'll take some time to figure out."

The study has shown some positives in ancient grains, such as Einkorn and Emmer, which could be beneficial for growers of these grains.

Dr. Micahel Ganzelle, a professor at the University of Alberta well known for his work in this arena, was very blunt with the attendees.

"The thing that really changed over the last 100 years," he said, "it's not the wheat, it's not the farmer or the breeders, it's the processors."

The work Dr. George Annor, UMN Assistant Professor, Dept. of Food Science and Nutrition, and Brian LaPlante, owner of Back When Foods, are doing to understand processing is also important. Together, they have studied more than 600 samples of sourdough from the St. Paul and St. Cloud areas. There is a belief that longer, traditional processing of bread allows time for the FODMAPs and ATIs to break down.

As a pathway forward to implementation, AURI is looking at creating a verified sourdough process much like Monash University in Australia, which boasts a low-FODMAP Certified program.

Whether a person has celiac disease, has a true intolerance for gluten crops, or is a fad eater, LaPlante says establishing a consistent, trustworthy program is critical.

"Process verified is so important," LaPlante said. "We can't blur the lines here for consumers.

AURI Business Development Director Harold Stanislawski notes that a verification process will soon be needed due to innovative products from LaPlante and fledgling companies like Three Farm Daughters artisan pasta.

"We will have a few companies enrolled early in this that will truly have low-FODMAP products that consumers are looking for," he said.

Learn more about the study at auri.org/access-auri-services/partnerships/agri/