

MWRPC Receives MDA Grant for Game Changing Research

With an ever-increasing number of consumers moving to a gluten-free or low-gluten diet, there has been a noticeable impact on the demand and consumption of wheat-based products. So much so, per capita consumption of wheat flour according to USDA declined from about 147 pounds in the mid-1990s to around 132 pounds in 2017. However, both of these figures are still well below per capita consumption levels of roughly 225 pounds in the late 1870s. Studies indicate the recent culprits are gluten proteins and anti-nutrients such as amylase-trypsin inhibitors (ATI), and fructans (a component of fermentable oligo-di-monosaccharides and polyols-FODMAPs) in wheat because they are triggers of Celiac disease and Irritable Bowel Syndrome (IBS).

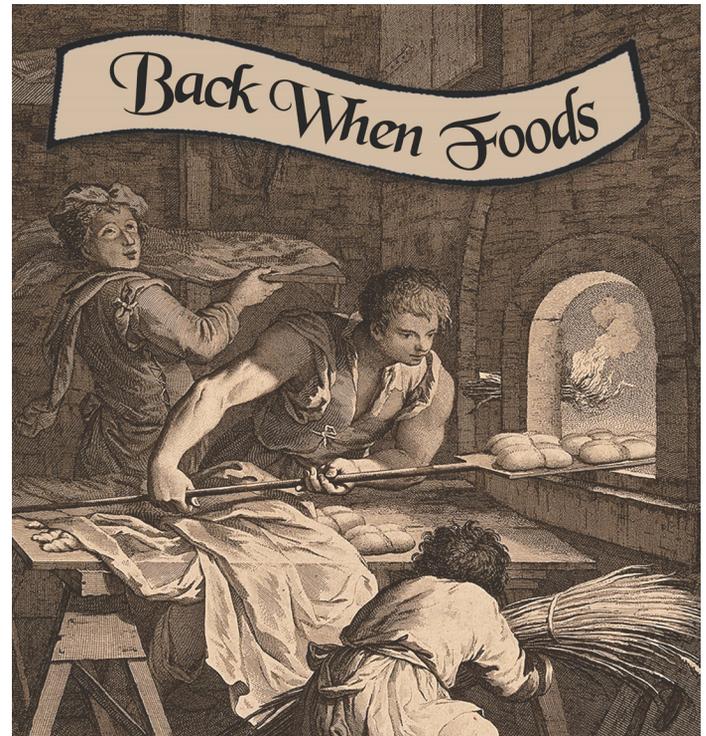
In the future, however, many of these consumers may have an alternative to living gluten free thanks to a \$215,000 Agricultural Growth, Research, and Innovation (AGRI) Crop Research Grant awarded to the Minnesota Wheat Research and Promotion Council (MWRPC). These grants, awarded by the Minnesota Department of Agriculture (MDA), provide funds for applied crop

research that will improve agricultural product quality, quantity, or value and focus on areas with the greatest opportunity and potential for economic impact.

MWRPC, along with project partners, will use the grant to support a new study, which could have wide-ranging effects on Minnesota's wheat industry by investigating opportunities to potentially reduce wheat digestibility concerns through the identification of wheat varieties with naturally low "anti-nutrient" levels for breeding purposes and to explore fermentation as a processing technique to reduce FODMAPs in wheat food products.

Titled *Wheat Variety and Sourdough Product Analysis for Anti-Nutrient Levels Related to Digestibility*, the research project will pursue three objectives:

1) Characterizing and identifying variants of genetic markers for FODMAPs and ATI activity in ancient, heritage and modern wheat varieties, which will generate new and critical information about the levels of FODMAPs and ATI activity



in these varieties. This is foundational information that currently does not exist, so even the earliest steps of the research will shed light on a previously unexplored topic. In addition, this objective will lead to the generation of genetic markers for individual FODMAPs and ATI activity for future breeding efforts.

2) Exploration of fermentation as a technique to reduce FODMAPs and

ATI quantities in finished products, including bread. In achieving this objective, researchers will generate information on the effects of sourdough fermentation processes on the levels of FODMAPs and ATI in end products for selected wheat varieties. A 2018 review on "Use of Sourdough in Low FODMAP Baking" published by Dr. Jussi Loponen of Fazer Group in Finland and Dr. Michael G. Gaenzle of the Department of Agricultural, Food and Nutritional Science, University of Alberta, in Edmonton,



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Canada indicates the sourdough bread-making process offers a means to develop natural and fiber-rich low FODMAP bakery products for IBS individuals and thereby help them to increase their dietary fiber intake.

3) Establishing a pathway to implement research outcomes to industry, which is just as critical to the outcome as the research data. By conducting formal outreach to stakeholder groups, including growers, entrepreneurs, and business owners, and sharing the knowledge gained from the project,

it's possible to fast-track new products utilizing the information and processes discovered through the research. These new products could play a significant role in restoring and growing the per-capita consumption of wheat-based products to levels not seen in decades.

Should the research team, which includes representatives from MWRPC, the Agricultural Utilization Research Institute, the University of Minnesota and its Regional Sustainable Development Partnership, and Back When Foods Inc., achieve its objectives,

the results could lead to a positive financial impact for the state's wheat growers.

Because some experts believe the gluten-free market could reach as much as \$1 billion in 2020, achieving the goals of this research project means growers could take back some of that market share. The result would be significant, but more importantly would help provide sustainable, financial growth within the wheat industry through new market opportunities.

Thanks to the MDA's support via its grant, wheat

growers may see a new ray of sunshine in an otherwise cloudy horizon. Or maybe more—this research has the potential for meaningful, long-term evolution for one of Minnesota's most important commodities. For this reason, it's not hyperbole to say this research could be a game changer for the entire industry and open a whole new segment of consumers that was once unavailable.

To stay up-to-date on the progress made by the research team, be sure to read future editions of *Prairie Grains Magazine* or visit smallgrains.org.

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