

# Incremental Innovation in the Milling Industry: A Panel Discussion

Jayne E. Bock<sup>1</sup> and Jess Sweley<sup>2</sup>

At first glance it seems oxymoronic to couple innovation and the milling industry. After all, the process itself has changed little over the millennia: milling is the sequential processes of particle size reduction and separation. Our means of achieving the final product have become more efficient with the advent of roller mills and automation, but the core principles have remained the same.

This is, of course, the opinion of outsiders. Few people outside of day-to-day milling operations realize the incremental innovation taking place within the industry. We sent out a brief survey to some of the key leaders in the industry to generate a panel discussion on the innovation taking place within their respective companies. The following is an abbreviated transcript of our discussion. [Click here](#) to read the complete transcript.

## Q. How does your company define innovation? What role does innovation—small or large—play in your company's strategy?

*Ruedi Weiss, Director of Sales – Grain Milling, Bühler:* Innovation has been at the very center of Bühler's activities for more than 150 years, from the earliest days of mechanized food production to today's ever-evolving digital world. The company invests as much as 5% of its turnover in research and development each year, and works in close collaboration with customers, suppliers, start-ups, and leading academic institutions to continually drive innovation and help meet its ambitious sustainability goals.

*Jennifer Robinson, VP Corporate Quality Assurance, Bay State Milling Company:* At this time when consumer needs and demands are changing faster than ever, driven by the availability of information and technology, innovation is incredibly important to Bay State Milling. We look at innovation as a means for us to stay ahead of those changing needs, while adhering to our strategic intent of powering the next generation of plant-based foods that offer healthful and affordable choices for consumers. We believe that all employees have a role in innovation at Bay State Milling, and we foster a culture where people have the freedom to bring ideas to the table.

*Kent Juliot, VP Research, Quality and Technical Services, Ardent Mills:* Innovation plays a large role in our strategy at Ardent Mills. It's in our DNA and a key part of our vision. Innovation is expressed in many areas at Ardent Mills, such as 1) side-by-side customer collaborations to bring new products and right solutions to the marketplace; 2) traditional breeding and genetics programs; 3) R&D and culinary explorations of

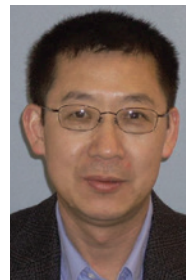
## Panel Members



**Janice Best**  
Director of Product Development and  
Technical Services Canada, Ardent Mills



**Kent Juliot**  
VP Research, Quality and Technical Services,  
Ardent Mills



**Gang Guo**  
Director of Wheat Research and Quality,  
Ardent Mills



**Jennifer Robinson**  
VP Corporate Quality Assurance, Bay State  
Milling Company

**Angela Ichwan**  
Senior Director and Technical Lead,  
The Annex by Ardent Mills

**Ruedi Weiss**  
Director of Sales – Grain Milling, Bühler



**Laurie Scanlin**  
R&D Culinary Manager, Ardent Mills

new ingredients; and 4) novel operational and food safety improvements internally and with vendor partnerships.

## Q. What mind-set or attributes tend to characterize successful innovation in the milling industry?

*Jennifer:* The mind-set that helps drive success for us is not confining ourselves to the limits of the milling industry. We also remind ourselves that we are an agriculture-based company, and we look to the seeds that drive agriculture for sources of innovation, in addition to processing technologies. At the end of the day, everything we do is for customers and consumers, and we always consider their voices in our innovation work.

<sup>1</sup> Wheat Marketing Center.

<sup>2</sup> Conagra Brands.

*Kent:* Our core values help us bring our vision to life every day, enabling us to make a positive impact on our customers, communities, team members, and partners. We stay relentlessly curious about people, how things work, and the environment. Ardent Mills team members are constantly learning, reinventing, and challenging ourselves to do better.

**Q. Do you have any examples of how incremental improvements or operational enhancements at your company have led to improved business performance?**

*Jennifer:* We recently conducted our second Cultivating Excellence Awards celebration. Annually, the various Cultivating Excellence teams from across the organization submit their completed projects for award consideration in four categories. We have seen the projects progress in sophistication and delivered results as our associates apply more of the Lean Six Sigma philosophy. Some examples of incremental improvements and operational enhancements that have led to improved business performance include

- Year-over-year reduction in packing costs across the company.
- Significant improvements in yield in one facility where the team linked Six Sigma techniques with the art of milling.
- Use of Six Sigma tools by a team to reinvent our commercialization process to significantly improve the speed of delivering a new product to the customer.
- Reinvention of the sales funnel by our sales organization to decrease the amount of time from potential customer status to purchase order.
- Use of tools at one facility to accomplish “zero landfill waste,” which achieved community recognition.

*Angela Ichwan, Senior Director and Technical Lead, The Annex by Ardent Mills:* It is our goal to have an innovation culture in which innovation can come from any level of the organization—to have employees looking for incremental improvements and enhancements in our everyday tasks. This has resulted in improved overall equipment effectiveness (OEE) at each of our community mills.

**Q. How do you measure the input, workflow, and output of innovation in your company? What does the process of innovation look like in your company? What are some of the key indicators that you have utilized and found successful for measuring innovation?**

*Ruedi:* Investment needs, revenue (or savings) generation, and jobs creation are the key indicators for measuring innovation within Bühler. [Our strategic partnerships] alone have so far raised more than US\$2 billion, generated more than US\$900 million in revenue, and created more than 65,000 jobs.

*Laurie Scanlin, R&D Culinary Manager, Ardent Mills:* A key indicator of success is based on our customer’s success. If our customers succeed with innovation, and we are able to bring our customers innovative grain-based solutions, then we succeed. Internally, we prioritize projects and frequently reevaluate to meet our customers’ needs.

An area that is tied closely with innovation is our capital expenditures. It has a linear path of scoping, approval, installation, and measured outcomes compared with the initial expectations.

This process requires each part of the supply chain to work together to achieve the expected results.

*Jennifer:* We use metrics and scorecards to measure success against innovation projects. The final metric is not always revenue based—it may be learning, staff development, or incremental product improvements.

**Q. Are there any examples of “disruptive innovation” in milling today?**

*Ruedi:* The key driver of innovation across all sectors is digitalization. Bühler sees digitalization as a key enabler and genuine driver of value. When harnessed properly, the potential of digital innovations is immense, not just in dramatically cutting waste, downtime, operating costs, and energy use, but also in improving quality, safety, and productivity and boosting the bottom line.

*Gang Guo, Director of Wheat Research and Quality, Ardent Mills:* An example of “disruptive innovation” in milling is Ultragrain<sup>®</sup> High Performance (HP) [flour]. Ultragrain HP is the first in a generation of whole grain flours with baking advantages such as stronger gluten, higher absorption, and improved processing, including baking performance, which results in lower formulation costs. Breads made with Ultragrain HP have the potential to reduce the added vital wheat gluten requirement by 50% or more compared with traditional whole wheat flour for the same loaf volume and performance.

Another example is Ardent Mills SafeGuard Treatment and Delivery System. It is not just a product or a process, it’s a proprietary, comprehensive, integrated solution that extends flour food safety assurance from our plant to our customers. It’s the only functional flour on the market with up to a 5-log validated pathogen reduction that can be customized based on specific product requirements.

*Jennifer:* The milling process encompasses a wide array of processes and capabilities, from supply chain management to flour yields and feed deployment. We find innovation in milling by looking to the inputs or the seeds that we mill. HealthSense<sup>™</sup> and SowNaked<sup>™</sup> are examples of disruptive innovation in milling—delivering nutrient-dense ingredients without changing the milling process per se with HealthSense and enabling less processing and a more sustainable oat supply with SowNaked.

Outside of product development, we have experienced recent success in a collaborative technology application with Perten’s doughLAB. The new application allows a customer to receive an aligned rheological value across multiple supply sources, resulting in an elevation for the entire industry. This partnership demonstrates how innovation can be the outcome of taking a fresh look at an existing solution and deploying it in a new way.

**Q. How do you view “failure” as it relates to innovation? When is it part of the process, and when is it unacceptable?**

*Ruedi:* Failure is part of the innovative process, but it has to be minimized. To avoid failure, most of our innovative initiatives are developed in phases and pass through several control gates. Such gates serve to validate the business plan behind each innovation. Many projects are rejected, forcing innovation teams to elaborate more consistent plans or to abandon them.

# On the Leading Edge in Grain Science

## AACC International's Official Approved Methods of Analysis



AACCI's *Methods of Analysis* stand at the forefront of the grain industry. More than 350 methods, spreadsheets and collaborative trial reports have been produced by the 23 AACCI technical committees and are continuously updated online. This, coupled with interactive guidelines, videos, and other enhancements ensures the highest, most consistent standards for your products.

### Most recent updates include...

- A new method that contributes to uniform flour production in experimental milling using the Chopin CD1 laboratory mill
- A new method to measure  $\beta$ -glucan viscosity using the Rapid Visco Analyzer (RVA)
- A new visual supplement and procedural guide for determining total (gasometric) carbon dioxide in baking powder
- A new spreadsheet for calculating statistical figures in NIR Analysis
- High-speed mixing rheology of wheat flour using the doughLAB
- A new method to quantify total carotenoid content in cereal grains and flours
- Two new methods to determine gluten content to Codex Alimentarius standard



*Janice Best, Director of Product Development and Technical Services Canada, Ardent Mills:* If we fail, we want to fail fast and on a small scale. We aim to learn from our mistakes and try not to repeat failures or to invest our resources in projects with low ROI (return on investment). Failing is part of innovating throughout our company and acceptable early in the process. Failure is not learning from failing.

*Jennifer:* Failure to try is unacceptable. Failure is a means by which people learn, and therefore, it is supported as part of our innovation culture—the earlier in the process, the better. It is often said, “Your first loss is your best loss.” Lessons learned, pick up, and move on.

As the industry has been dominated by a number of acquisitions and consolidations over the past several years, traditional millers are endeavoring to find their niche in the cereal world. Searching out new ways to do things has been an integral part of Bay State Milling for 119 years, which is a credit to the acceptance of risk and consequences through five generations of family ownership.



**Jayne E. Bock** is the technical director at the Wheat Marketing Center and an adjunct professor at the University of Guelph. Her expertise is in grain and flour quality, gluten structure-function, and the influence of bran on product structure and quality in whole grain products. She has worked extensively with wheat breeders, agronomists, millers, and food processors on multiple collaborative projects in these areas. Her current work is at the interface of academia and industry, finding solutions for emerging issues in the

milling and baking industries. Jayne earned her B.S. and M.S. degrees from Kansas State University and her Ph.D. degree from the University of Wisconsin-Madison. Jayne is an AACCI member and can be reached at [jbock@wmcinc.org](mailto:jbock@wmcinc.org).



**Jess Sweley** is the vice president of research and development at Conagra Brands, where he is responsible for the company's product development and culinary teams. He has worked in the food industry for almost 20 years in various positions at Frito-Lay, Kraft, and TreeHouse Foods, prior to his current role at Conagra. Jess holds both his B.S. degree in biological systems engineering and Ph.D. degree in food science and technology from the University of Nebraska and is also a graduate of the Masters of Engineering Management program at Northwestern University. He serves as an adjunct faculty member in the Department of Grain Science & Industry at Kansas State University.