

It Takes Some PhDs to Bake a Cake

OCTOBER 08, 2019

By Michael Anderson, USW Assistant Director, West Coast Office

Reading the directions on the back of a cake mix box and adding the ingredients step by step may seem simple enough but it is no easy feat to ensure the consumer ends up with a consistent cake from box to box. How do baked good brands stay the same store to store, how does a cake get its perfect lofted middle, how do crackers keep their shape? The answer is simple: from science. Yet the means of getting there is anything but simple.

Two familiar names leading the discussion on U.S. wheat quality characteristics and versatility through education and training are [Dr. Jayne Bock](#), Technical Director, and [Dr. Lingzhu Deng](#), Food Scientist, of the [Wheat Marketing Center](#), Portland, Oregon.



Dr. Jayne Bock, Technical Director, Wheat Marketing Center

Both Dr. Bock and Dr. Deng have food science backgrounds and roots in farming. Dr. Bock grew up in Kansas where her family had a wheat farm and Dr. Deng grew up helping her uncles on their rice farm in Southern China. Deng said that the poor growing practices in the area inspired her to find a better way which as an accomplished cereal scientist, she has.



Dr. Lingzhu Deng, Food Scientist, Wheat Marketing Center

These scientists say they enjoy research and academia, which is key to a job tasked with improving end-product quality. Their role at the Wheat Marketing Center is to improve the understanding of wheat functionality and end use characteristics. They assist overseas customers with hands-on opportunities, allowing visiting technical teams to objectively judge the quality and functionality of a given product.

Many markets that purchase U.S. wheat are well developed with a sophisticated knowledge of what characteristics they are looking for. Those customers however, may be interested in new food trends and the ingredients needed to produce them.

Technicians from markets where demand for wheat foods is still less developed may not be as aware of the importance of functionality as it relates to end-product quality or cost. Bock and Deng are eager to help customers develop the answers they seek.



Dr. Lingzhu Deng is a Food Scientist at the Wheat Marketing Center.



Many experienced bakers know that quality products start with quality flour. Flour from a strong, extensible hard wheat is great for bread, but a mellower soft wheat makes the best cake flour. High ash content may make good bread products, but you do not want it in your cake. Selecting the right flour ingredient is complicated, so it makes sense that it takes highly trained PhDs to help build the practical knowledge needed for any type of product.



Dr. Jayne Bock discussing wheat quality and sustainable production at the 2019 USW World Staff Conference.

As wheat food demand sets new records across the globe almost every year, businesses look for ways to make more products that are attractive to more consumer market segments. Automation has become an increasingly important component of the baking industry and, as bakers try to keep up with and expand demand for their products, knowledge of wheat quality characteristics and consistency becomes more important.

There is a lot of thought that goes into something that seems as simple as a cake or a pizza. At the Wheat Marketing Center, it takes two PhDs plus a successful support staff to help keep the wheat flour and foods industry advancing and help U.S. wheat customers around the world develop a more sophisticated understanding of ingredients and processing. It is an understanding that Dr. Bock and Dr. Deng are eager to share.