



Improving End-use Quality of Wheat

This project improved the quality of existing and new wheat varieties, giving growers more profitable choices, helping U.S. wheat compete in domestic and international markets, and providing a stable supply of high quality wheat products for industrial partners and consumers.

Who cares and why?

There are many varieties of wheat, each with unique traits that influence its quality and how it can be used. Because they have diverse uses for wheat, different industrial partners prefer specific varieties. In the Pacific Northwest (PNW), about 85% of the wheat is exported, mostly to Asian and Middle Eastern countries where it is made into noodles, cookies, steamed breads, flat breads and other similar products. The total market value of U.S. wheat exported to Asian countries alone is estimated at over \$400 million per year; however, exports have been declining over the last 20 years because of increased competition from Australia, Canada and eastern European countries. In order to remain competitive, PNW producers need to be continually improving overall grain quality and developing innovative wheat varieties. This requires a clear understanding of how wheat quality is affected by genetics and agricultural practices, such as tilling, fertilizing, and processing. The farming community and wheat industries must collaborate to set quality standards and make sure that technologies and practices protect wheat quality. If wheat quality is not improved, U.S. wheat producers will not be able to provide a steady supply of high quality wheat for industrial partners and consumers.



Most Western states test new wheat varieties during on-farm trials to determine how they are affected by environmental conditions and how well they could adapt to different farm settings. Above, Jianli Chen stands in fields of University of Idaho varieties. Photo by Cindy Snyder. Below, Bon Lee conducts bread baking tests in the Wheat Marketing Center lab. Measurements of texture and other qualities tell wheat breeders and industrial partners which wheat varieties are best suited for baking. Photo by Andrew Ross.



What has the project done so far?

This project has created a multidisciplinary committee that has shared wheat quality information among growers, researchers, and industrial partners. Using standardized testing methods that they developed, WERA-1009 scientists have evaluated wheat quality and measured how it is affected by specific plant genes, environmental factors, and grower practices. Over the last five years, the group has developed and released a number of unique new varieties of spring and winter wheat that have been top-yielding and have demonstrated excellent pest resistance, extreme weather tolerance, and desirable traits, such as better coloration and softness. Many of these varieties have become the most planted wheat varieties in western states. For their accomplishments, WERA-1009 received the WAAESD Award of Excellence in Multistate Research in 2012.

Impact Statements

Engaged scientists and domestic and foreign industrial partners in research and development that led to improved wheat quality.

Reduced economic losses due to poor crop yield and/or quality and enhanced wheat production's resilience to climate change by developing and releasing new wheat varieties that are high yielding, drought tolerant, disease resistant, and/or have desirable traits for diverse uses.

Improved farmers' understanding of how their agricultural practices impact the ways their wheat crops can be used, thus helping them select higher quality varieties, use best management practices, and ultimately earn more for their crops.

Promoted domestic and international wheat trade by using knowledge about the quality and uses of different wheat varieties to predict how they will behave in markets and by increasing the overall acreage of valuable wheat varieties across the western region.

What research is needed?

Environmental conditions are constantly changing, as are customer needs. The median income level of Asian and Middle Eastern countries is increasing, which translates into increased demand for existing and new wheat products. Additional research on the genetics and environmental factors that affect wheat quality is needed so that the wheat industry can continue to adapt to climate change, new pests and changing customer needs. All western states are encouraged to participate in wheat breeding and testing programs. There is also need to begin investigating how different qualities of wheat affect human health.

Want to know more?

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Compiled and designed by Sara Delheimer



With the exception of soft red wheat, all classes of wheat are grown in the Western region. Photo by Rob Valkass, Flickr.