

Western Wheat Quality Laboratory (WWQL), Pullman, Washington



MISSION

The overall mission of the WWQL is to enhance wheat quality and utilization. This mission is advanced in five ways:

1. Gene discovery and elucidating the fundamental basis of wheat grain quality;
2. Defining the utilization and end-product requirements of wheat and flour;
3. Developing the methodology of wheat quality assessment'
4. Developing genetic stocks and germplasm; and
5. Assessing and interpreting end-use quality of experimental wheat breeding lines and cultivars.

CURRENT OBJECTIVES

- Identify and facilitate the manipulation of genetic variation in western wheat, especially soft white, relative to kernel texture, arabinoxylans, starch, and polyphenol oxidase, in cooperation with breeders and geneticists.
- Develop, modify and evaluate technologies and methodologies for measuring wheat kernel texture, arabinoxylan composition, gluten quality, and polyphenol oxidase.
- Identify and manipulate the biochemical constituents of wheat to improve the nutritional functionality of grain and flour, especially with regards to dietary fiber and anti-oxidants. Develop rapid methods to detect improved milling and flour quality in commerce.

BACKGROUND

The WWQL was established in the early 1940s and is housed on the campus of Washington State University in a modern 13,500 square foot facility. The WWQL has formal responsibility for the eight western states of Alaska, Arizona, California, Hawaii, Idaho, Nevada, Oregon and Washington. The lab also serves the Utah State University wheat breeding program. These states have a combined wheat production of nearly 400 million bushels, just under one-fifth of total U.S. production. The primary market class of the region is

soft white, spring and winter, club and common types are grown. 'Western White' is an important export sub-class. Also Hard Red Winter, Hard Red Spring, Hard White and Durum are grown in the region. The region exports the majority of its wheat, and the Pacific Rim is of particular importance and focus.

CURRENT STAFF AND RESOURCES

Currently the WWQL is led by Drs. Craig F. Morris (Director) and is supported with 9 ARS staff, including Support Scientist Doug Engle.

LABORATORY IMPACTS

Nearly all wheat varieties grown in the Western States have been co-developed by the Western Wheat Quality Lab (WWQL). The WWQL conducts full milling and baking analyses on approximately 5,000 experimental breeding lines per year and has made notable contributions in the areas of wheat grain quality including genetics of kernel texture, starch biosynthesis, polyphenol oxidase, and arabinoxylan content of grain and flour. WWQL personnel developed and registered the first waxy wheat cultivar in the U.S., and led the development of soft kernel durum wheat. The WWQL leads the Pacific Northwest Wheat Quality Council, the U.S. Wheat Associates' Overseas Varietal Analysis Project-Soft White and Club, and the 'G&E' Studies for the Washington, Oregon, and Idaho Wheat Commissions.

CONTACT

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