

PETITION FOR WESTERN COORDINATING COMMITTEE
AUTHORIZATION

Number: WCC-81

Title: Systems to Improve End-Use Quality of Wheat

Duration: October 1, 2001 - September 30, 2006

Description and Justification: Wheat quality is defined by its diverse end-uses. Wheat's unique chemistry and processing attributes, as well as tradition, has led to many market classes and specialized industries. Researchers from many scientific disciplines, both public and private, are studying ways to improve the quality components of all market classes of wheat. The farming community, milling and baking industries, and the entire wheat industry recognize the need to coordinate quality improvement efforts. The WCC-81 is a multi-disciplinary committee set up to exchange information on wheat quality among growers, researchers and industry. Its primary goal is to use industry input to focus public research efforts and to educate growers, researchers and industry about the newest research tools, cultivars and product specifications relevant to wheat quality.

Objectives:

1. Coordinate approaches for the development of all types of wheat grown in the PNW for both domestic and export end uses.
2. Facilitate information exchange between research groups and industry representatives on end use quality needs for all market classes of wheat.
3. Evaluate the quality of regional nursery entries and improve strategies and procedures for quality evaluation.
4. Use regional nursery data to identify genotype by environment interactions as they influence variations in end use quality.
5. Utilize molecular and biochemical tools to improve end-use quality of adapted cultivars.

Expected outcomes:

Coordination of approaches for the development of all types of wheat grown in the Western Region

With the exception of soft red wheat, all market classes of wheat are grown in the Western region. The historical target values and accepted ranges for many quality parameters are fairly well established. Others are less clear and none are completely static as industry processes and products continue to evolve. The milling and baking industry, through its large-scale tests can provide important guidance to the research community. The USDA/ARS Wheat Quality Lab and the Wheat Marketing Center can translate these needs and information to small,-scale tests, so that breeders can implement procedures and information into cultivar improvement efforts. Further coordination of breeding efforts can be accomplished by identifying environmental areas conducive to high quality wheat production for specific market classes. Expertise, superior germplasm and optimal production areas can then be combined to meet market needs and opportunities.

Facilitate information exchange

Information exchange between interdisciplinary research groups and industry is largely accomplished at the yearly WCC81 meeting. Informal exchanges also occur among research groups and with industry throughout the year. A Web site could be established to facilitate information exchange in the interval between meetings.

Evaluate the quality of regional nurseries

Analysis of Regional nursery samples by the USDA/ARS Wheat Quality Lab provides quality information on a standard set of lines grown across a wide variety of environments. This information not only enables the breeder to know how widely adapted his or her lines are with respect to quality, but also could inform industry as to which cultivars have promise for their purchasing area. The relatively large amount of seed per cultivar generated by the regional nurseries allows the USDA/ARS Wheat Quality Lab to conduct more extensive quality evaluations.

Identify genotype by environment interactions

The influence of GxE on end-use quality can be established using regional nursery samples as well as yield trial seed from each breeding program. Individual laboratories will conduct small sample evaluation for protein quality (SDS sedimentation or SRC lactic acid), color (using ppo tests or minolta values on noodle sheets), test weight and kernel hardness, etc. This information can be shared at either the annual meeting or on the Web.

Utilize new biotechnology techniques

The whole biotech area is becoming more useful to the developers of wheat cultivars. Molecular markers are becoming available that may pinpoint quality traits that can only be determined by extensive testing, i.e., baking a loaf of bread or a cookie. Synthetic hexaploid wheat using improved durum varieties and wild D genome species are providing new genetic sources for quality improvement. Already some low polyphenol oxidase lines have been identified from these materials. Educational plan:

Annual meetings will continue to provide a major opportunity for educational outreach and exchange between industry and research. The WCC-81 will meet in conjunction with the Pacific Northwest Wheat Quality Council and the Pacific Northwest Division of the AACCC. The Pacific Northwest Wheat Quality Council is an industry centered group that meets to discuss quality issues and collaborates on cultivar testing. Interaction with this group has proved to be enlightening and invaluable. For example, Nabisco has developed a set of solvent screening procedures to characterize soft wheat quality. Researchers throughout the Western Region now have access to this technique.

Along with research and industry, the participation by growers and their representatives at the state wheat commissions at the annual meeting either by individual farmers or their representatives on the state wheat commissions. This input by growers to the committee should be encouraged. It is important for farmers to understand the end products and markets available for their crops and how their cultural practices and varietal choices impact these products. Researchers communicate the information gathered at the WCC-81 meeting with growers at field days, in growers meetings and through technical bulletins. More involvement by quality lab personnel in these activities should occur. If a web page is developed, this would further broaden the audience and make the information more timely.

Participants

Official Representatives:

Representative Name	Institution or Agency	Scientific Expertise
Ed Souza	University of Idaho	Wheat Breeder and Geneticist
Robert Zemetra	University of Idaho	Wheat Breeder and Geneticist
Debra Habernicht	Montana State University	Manager Cereal Quality Laboratory
Jim Peterson	Oregon State University	Wheat Breeder
Mary Verhoeven	Oregon State University	Spring Wheat Breeder
David Hole	Utah State University	Wheat Breeder and Geneticist
Craig Morris	USDA-ARS Wheat Genetics, Quality Physiology and Disease Research Washington State University	Wheat Quality Chemist
Kimberlee Kidwell	Washington State University	Spring Wheat Breeder
Kimberly Campbell	USDA-ARS Wheat Genetics, Quality Physiology and Disease Research Washington State University	Club Wheat Breeder and Geneticist

Describe efforts to include individuals from appropriate agencies:

The reports and discussion at the joint WCC-81, Pacific Northwest Wheat Quality Council, and American Association of Cereal Chemists PNW Section meetings are very informative and the interaction among the wheat researchers and representatives from the milling and processing industries is extremely beneficial to both groups. Members of WCC-81 are a very dedicated group of scientists and, from evidence at this meeting, significant progress continues to be made toward improving the milling and processing quality of wheat to meet market demand, and the millers and processors seem satisfied with the research activities.

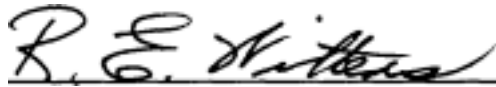
Operational Structure:

WCC-81 Officers:

1997

Chair:	Craig Morris	Western Wheat Quality Lab
Chair-elect:	Kim Kidwell	Washington State University
1998		
Chair:	Kim Kidwell	Washington State University
Chair-elect:	Mary Verhoeven	Oregon State University
1999		
Chair:	Mary Verhoeven	Oregon State University
Chair-elect:	Debra Habernicht	Montana State University
2000 (elected pending renewal)		
Chair:	Debra Habernicht	Montana State University
Vice Chair:	Jim Peterson	Oregon State University

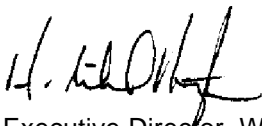
Signatures:



Administrative Advisor



Date



Executive Director, Western Directors Association

Date