

## Wheat

In the field of wheat research, plant breeding and genetics – providing new and improved varieties of wheat for Washington producers – comprises the largest percentage (33% five-year average) of the Washington Grain Commission's annual wheat research budget. WGC support extends to disease and insect control research, wheat quality research, and production management. WSU wheat breeders are breeding new varieties of wheat that excel in agronomics and end-use quality. At the same time, Orville A. Vogel Endowed Chair in Wheat Breeding and genetics scientist Kulvinder S. Gill is contributing his molecular genetics expertise to the breeding programs.

The WGC's budget for wheat research has grown steadily over the past 25 years. Milestones include establishing the Vogel Endowed Chair, the Cook Endowed Chair and matching support for the construction of a new greenhouse on the WSU campus, all funded by grower dollars through the WGC.

(Vogel Chair) Activities include supporting ongoing wheat-related research at Washington State University. Wheat research focusing on breeding and genetics, diseases and insects, crop management and wheat quality are all critical to keeping eastern Washington growers the most competitive in the world. The WGC and WAWG host and participate in the annual Wheat Research Review, held in February, where WSU and USDA scientists present research proposals to growers for their consideration. The Wheat Research Review is grower-run and grower-led, with final funding allocation decisions made by the WGC board of directors. Wheat grower participation in this event is crucial and strongly encouraged.

The WGC established the O.A. Vogel Endowed Chair in Wheat Breeding and Genetics by initiating an endowment in 1991, to honor Orville Vogel's accomplishments and contributions to the Washington wheat industry and the world. His germplasm went on to fuel the Green Revolution through Norman Borlaug's program at the International Maize and Wheat Improvement Center (CIMMYT).

In 2002, Kulvinder S. Gill, Ph.D, a molecular geneticist formerly with the University of Nebraska-Lincoln, was appointed to fill the Vogel Chair. Gill will establish a research program in molecular and genetic analysis of traits that affect wheat development, productivity and quality. He will also play a key role in the development of new wheat varieties by assisting WSU and USDA-ARS wheat breeders and their programs. The original endowment by the WGC and the Washington State Legislature of \$500,000 each has now grown to \$2 million.

(Cook Chair) The WGC also established the R. James Cook Endowed Chair in Wheat Research at WSU in 1998, with a \$1.5 million endowment. This chair was created to strengthen research and graduate education in the plant, soil, and microbiological sciences at WSU. Cook was a world-renowned USDA-ARS plant pathologist who researched root diseases of wheat and barley. In 2006, Scot Hulbert, Ph.D. was selected to fill the Cook Chair. Hulbert, who grew up in Mount Vernon, Washington, was hired to his current position from Kansas State University in Manhattan, Kansas.

## **Current Wheat Research Projects Funded by the WGC**

<u>Breeding and Genetics</u>	<u>Scientist</u>
• Soft White Winter Wheat Breeding	
• Spring Wheat Breeding	
• Hard Red/White Winter Wheat Breeding	
• Prebreeding and Genetic Mapping	
• Precision Breeding	
• Marker-Assisted Backcrossing – Clearfield Wheat	Kulvinder Gill
• Varieties for High Rainfall / Irrigated	Robert Zemetra
• Winter Hardiness	Kim Campbell
• Club Wheat Breeding	Kim Campbell
• Wheat Varietal Evaluation	Steven Guy
• Genotyping	Deven See
• Deep Planting Emergence	Bill Schillinger
• Biotech for Wheat Improvement	
• Forward Breeding	Kulvinder Gill
• Double Haploid Lab	Kulvinder Gill
• Drought Tolerant Wheat	Camille Steber
• GMO Wheat	Kulvinder Gill
<u>Wheat Quality</u>	
• Wheat Quality Evaluation	Craig Morris
• Quality of Varieties	Craig Morris
• Washington Wheat Quality Program	Byung-Kee Baik
<u>Diseases and Insects</u>	
• Rust Research	Xianming Chen
• Root – Lesion Nematode	Richard Smiley
• Strawbreaker Foot Rot and Cephalosporium Stripe Rust	Tim Murray
• Wheat Head Army Worm	Keith Pike

- Enhancing Resistance to Snow Mold
- Management of Diseases
- Hessian Fly
- Tolerance to Fusarium

Tim Paulitz

Tim Paulitz

Kim Campbell

Kim Campbell

### **Production Management**

- Weed Management
- Herbicide Tolerance

Ian Burke

Ian Burke