

Wheat Genetics Resource Center Industry/University Cooperative Research Center

Problem/Issue Statement

Established in 2013, the Wheat Genetics Resource Center Industry/University Cooperative Research Center (WGRC IUCRC) at Kansas State University joins public and private partners to mobilize genetic diversity to enhance wheat yield and meet food security needs. Researchers at the WGRC IUCRC deliver novel genes, derived from wild wheats, to public and private breeding programs. These genes combat challenges facing wheat farmers, such as hot and dry climate conditions, pests, and disease, to ensure a stable and profitable wheat supply that keeps up with global demand. The WGRC IUCRC also targets genes related to consumer-demanded nutritional, flavor and textural profiles. Beyond scientific deliverables, the WGRC IUCRC provides a transdisciplinary, applied and fundamental research environment to train the future leaders of crop improvement research.

- Temperature increases are projected to decrease wheat yields by 20-30 percent.
- Demand for wheat is expected to increase by 60 percent over the coming decades.
- The current trend of wheat yield cannot meet the projected global demand in 2050.

Request Description

Kansas State University requests \$1,000,000 per year for five years to be matched by industry investors and the National Science Foundation. The funding will go toward the core research program of the WGRC IUCRC:

- Managing wheat germplasm
- Mining the wheat gene pool
- Wheat phenotyping for drought
- Wheat genetic stocks and introgression platform, and
- Graduate student training.

This core research program enhances the value of the WGRC wild wheat collection to the user community, leading to rapid development of new, high-yielding wheat varieties and value-added food products.

Request Goals and Expected Outcomes

The WGRC IUCRC provides novel genes to breeders to develop wheat varieties for farmers that can resist pressures such as disease, water, nutrient, and energy scarcity, and climate change.

The core research program of the WGRC IUCRC has three main missions to address challenges facing the global wheat supply:

- 1) *Collect, conserve, and utilize germplasm in crop improvement:* The Center has delivered the germplasm release Wsm3 which is a gene offering a novel source of resistance to Wheat Streak Mosaic Virus. This disease caused \$75 million in damage to wheat crops in Kansas in 2017 and \$109 million in 2006.
- 2) *Create and promote the exchange of materials, technology, and new knowledge in genetics and biotechnology:* The WGRC IUCRC team has produced 28 publications and 2 patents/invention disclosures.
- 3) *Train undergraduate, graduate, and postgraduate students and visiting scientists:* WGRC has mentored 16 Master's students, 27 Ph.D. students, and 22 post-doctoral fellows, in addition to having hosted more than 60 visiting scientists from all over the globe.

Appropriations Subcommittee

Agriculture, Rural Development, Food and Drug Administration, and Related Agencies

Request Type

Funding Request Bill Language Request