

NOTICE OF RELEASE OF KS04WGRC45 LEAF RUST RESISTANT HARD WHITE WINTER WHEAT GERM PLASM

The Agricultural Research Service, U.S. Department of Agriculture, and the Kansas Agricultural Experiment Station announce the release of KS04WGRC45 hard white winter wheat (*Triticum aestivum* L.) germ plasm with resistance to leaf rust (caused by *Puccinia triticina* Eriks) for breeding and experimental purposes. Scientists participating in this development were B. Friebe, D. L. Wilson, W. J. Raupp, and B. S. Gill, Department of Plant Pathology, Kansas State University, Manhattan, Kansas; and G. L. Brown-Guedira, USDA-ARS Plant Science and Entomology Research Unit, Department of Agronomy, Kansas State University, Manhattan, Kansas.

KS04WGRC45 is homogeneous for resistance to leaf rust at the seedling and adult plant stages. KS04WGRC45 is an F₃-derived line from the cross 'Heyne*2 // TA5586' (Chinese Spring-mono1B/ Chinese Spring-DA *E. trachycaulus* 1H^t). Leaf rust resistance of the germ plasm is derived from *Elymus trachycaulus* (Link) Gould ex Shinnery accession TA12052. Chromosome 1H^t was transferred from TA12052 to Chinese Spring wheat during the production of a set of wheat-*E. trachycaulus* chromosome addition lines. The Robertsonian translocation T1H^tS·1BL consisting of the short arm of the *E. trachycaulus* chromosome 1H^t translocated to the long arm of wheat chromosome 1B was recovered in the offspring of a plant double-monosomic for chromosomes 1H^t and 1B. This translocation stock designated TA5586 was crossed twice to the hard white winter wheat cultivar Heyne. The BC₁ and BC₂ progeny were screened for their reaction to leaf rust with race PBJL, which is virulent on the recurrent parent Heyne (infection type (IT) = 4, large uredinia, lacking chlorosis or necrosis). The BC₂F₂ families derived from resistant plants were again screened for leaf rust resistance and one family was selected with IT = 2 (small to moderate size uredinia with chlorosis). The 12 BC₂F₃ lines derived from this family were analyzed by genomic *in situ* hybridization and one line homozygous for the translocation chromosome T1H^tS·1BL was selected as KS04WGRC45.

When evaluated in the field under heavy inoculum pressure at Manhattan, KS, in the 2003–04 growing season, a trace of leaf rust was detected on adult plants of KS04WGRC45. The recurrent parent Heyne had a susceptible reaction covering approximately 30 % of the leaf area. Intermediate infection types (IT = 2+, moderate size uredinia with chlorosis) were observed on seedlings of KS04WGRC45 and TA5586 when evaluated with *Puccinia triticina* races MCRL and TNRJ and a collection from the field in Manhattan, KS, in 2003. High infection types of 3–4 (moderate to large uredinia, lacking chlorosis or necrosis) were observed on seedlings of Heyne and Chinese Spring with all the races of leaf rust tested.

Small quantities (3 grams) of seed of KS04WGRC45 are available upon written request. We request that the appropriate source be given when this germ plasm

contributes to research or development of new cultivars. Seed stocks are maintained by the Wheat Genetics Resource Center, Throckmorton Hall, Kansas State University, Manhattan, KS 66506-5502. Genetic material of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including the development of new cultivars.