

## WSU Seeking Patent on Disease-resistant Wheat

WSU is seeking international patent protection on Scarlet Rz1, a new spring wheat genotype believed to be the first to have resistance to Rhizoctonia root rot, a yield-limiting root disease found world-wide. The soil-borne fungal disease can cut wheat yields by as much as 30 percent when conditions favor it.

The new wheat genotype is a mutation of the variety Scarlet developed and released by WSU interim spring wheat breeder Kim Kidwell in 1998. Scarlet-Rz1 was created by a chemical mutation, and is not considered to be a genetically modified organism.

Camille Steber, a USDA-ARS geneticist, and Kidwell treated Scarlet wheat seeds with a chemical mutagen, which causes mistakes to occur in DNA sequences. The mistakes can sometimes lead to creation of valuable new genes. Victor DeMacon, a senior scientific assistant in Kidwell's lab, tested the mutant seedlings for resistance to Rhizoctonia root rot in the greenhouse. One exhibited tolerance.

The team of researchers, in collaboration with Patricia Okubura, a USDA-ARS research geneticist, confirmed that resistance was conferred by a single gene. The utility of the gene has not been fully determined but in the future researchers hope to clone the gene and transfer disease resistance to other wheat varieties.



"This is the first wheat genotype that we know of that has tolerance to [Rhizoctonia root rot]," said Kim Kidwell, interim spring wheat breeder and associate dean of academic programs for WSU's College of Agricultural, Human, and Natural Resource Sciences. "It's a major problem in direct seeded spring wheat production. We've just started to present data publicly, and people are interested in it because the disease is a serious yield-limiting factor in Australia as well as here, and we don't have any means of controlling the disease aside from tillage."