

## **EFFECT OF OAT GENOTYPE ON OCHRATOXIN-A ACCUMULATION FOLLOWING GRAIN INOCULATION WITH *PENICILLIUM VERRUCOSUM*.**

Bandana Dhungana<sup>1</sup>, Shaukat Ali<sup>1</sup>, Emmanuel Byamukama<sup>1</sup>, Padmanaban Krishnan<sup>2</sup>, and  
Melanie Caffe-Treml<sup>1\*</sup>

<sup>1</sup>Department of Agronomy, Horticulture and Plant Science, <sup>2</sup>Dairy and Food Science  
Department, South Dakota State University, Brookings, SD 57006.

Ochratoxin A (OTA) is a carcinogenic mycotoxin produced by some mold and its consumption can cause damages to kidneys and liver. Human intake of OTA can occur through direct consumption of contaminated cereal food products but also from consumption of meat products from animals fed with contaminated grains. In temperate region, OTA is mainly produced by *Penicillium verrucosum*. Infestation with the fungus can occur in the field and/or in storage. When infested grain is stored at high moisture, high level of OTA can be produced by the fungus. While monitoring and controlling grain moisture at harvest and during storage is an efficient method used to minimize the risks of OTA contamination in grain, weather conditions may restrict harvest at optimal grain moisture content. The use of oat varieties resistant to OTA would provide an additional strategy to lessen the risks of OTA contamination. Our objective was to determine if oat genotypes differ in level of OTA accumulation in their grains following infestation with *P. verrucosum*. Grain from twelve oat cultivars grown in seven environments (year-location combination) were inoculated with an OTA producing strain of *P. verrucosum* and incubated at 22.5°C with a water activity of 0.90 for 7 weeks. Combined data analysis from all seven environments showed that there were significant differences among oat cultivars for OTA accumulation. Cultivars Horsepower, Colt, and Goliath had lower OTA accumulation compared to the remaining cultivars. Several grain characteristics, including proportion of plump groats, groat percent, and grain test weight were positively correlated with level of OTA accumulation. Overall, these results indicate that it should be possible to develop oat varieties with reduced OTA accumulation.