

October 13, 2010

TO: Nebraska Wheat Board

FROM: Stephen Wegulo, Department of Plant Pathology

TOPIC: 2009-2010 Annual Report - Mitigating Winter Wheat Losses Caused Diseases

Accomplishments:

Screening Wheat Lines. To improve the disease resistance of Nebraska wheat cultivars, our program determines the resistance or susceptibility of the most advanced lines to leaf rust, stem rust, and Fusarium head blight by screening them in the greenhouse and field. In 2009/2010, more than 2,000 lines were screened for resistance to leaf rust, stem rust, and Fusarium head blight.

Evaluation of wheat lines/cultivars for resistance to virus diseases. We participated in the screening of wheat lines/cultivars for resistance to virus diseases, specifically wheat streak mosaic virus and Triticum mosaic virus. The screening was led by Drs. Gary Hein, Robert Graybosch, and Satyanayana Tatineni.

Wheat Disease Surveys. In May and June 2010, we conducted several wheat disease surveys in south central and southeastern Nebraska and in the Nebraska Panhandle. Stripe rust was widespread throughout the state. Septoria leaf blotch was also widespread. Fusarium head blight occurred to moderate levels in isolated areas and fields in southeast, south central, and southwest Nebraska. Other diseases observed during the surveys were loose smut, tan spot, and Septoria glume blotch.

Outreach. An important goal of our program is to disseminate information on wheat diseases to growers, crop consultants, extension personnel, and the public. This information can be used to better manage wheat diseases and hence improve yields and profits. We accomplished this goal by publishing articles and timely disease updates in Crop Watch, a University of Nebraska-Lincoln Extension newsletter. We also disseminated information during wheat field days in June 2010.

Refereed publications. Several refereed journal papers were published (or submitted) from work that was directly or indirectly funded by the Wheat Board. These publications are listed below:

1. Hernandez Nopsa, J. F., Baenziger, P. S., Eskridge, K. M., Dowell, F. E., Harris, S. D., and Wegulo, S. N. 2010. Effect of cultivar on the relationship between Fusarium head blight severity and deoxynivalenol concentration in winter wheat. *Plant Dis.* (submitted).
2. Wegulo, S. N., Bockus, W. W., Hernandez Nopsa, J., De Wolf, E. D., and Eskridge, K. M. 2011. Effects of integrating cultivar resistance and fungicide application on Fusarium head blight and deoxynivalenol in winter wheat. *Plant Dis.* (accepted).
3. Wegulo, S. N., Zwingman, M. V., Breathnach, J. A., and Baenziger, P. S. 2011. Economic returns from fungicide application to control foliar diseases in winter wheat. *Crop Protection* (submitted).
4. Tatineni, S., Graybosch, R. A., Hein, G. L., Wegulo, S. N., and French, R. 2010. Wheat cultivar-specific disease synergism and alteration of virus accumulation during coinfection with *Wheat streak mosaic virus* and *Triticum mosaic virus*. *Phytopathology* 100:230-238.