

**Report on the USWBSI-Funded – Uniform Fungicide Tests 2011:
Effects of Triazole and Strobilurin Fungicides on Fusarium
Head Blight and Associated Mycotoxins.**

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INTRODUCTION

Foliar fungicide application is a component of an integrated management system to control Fusarium head blight (FHB) of wheat and the associated mycotoxin deoxynivalenol (DON). From multi-state research trials, Prosaro and Caramba fungicides applied at Feekes growth stage (FGS) 10.5.1 have been shown to be the most effective fungicides for controlling FHB and DON, but there is still room for improvement. Some fungicides used to control leaf diseases in the strobilurin class have been shown to increase DON levels in harvested grain, but this information is not available for all strobilurin fungicides. In addition, the effect of triazole + strobilurin and successive strobilurin followed by triazole fungicide applications on DON levels in grain are not known. The objectives of this multi-state research program were to:

1. Evaluate experimental fungicides for control of FHB and DON.
2. Evaluate different strobilurin fungicides for their effect on DON.
3. Evaluate strobilurin + triazole mixtures and successive strobilurin followed by triazole applications for their effect on DON.

MATERIALS AND METHODS

Field trials were established in Arkansas, Illinois, Indiana, Maryland, Michigan, Minnesota, North Dakota, South Dakota, New York, and Wisconsin. Five wheat market classes were represented in these trials (durum, hard red spring, hard red winter, soft red winter, and soft white winter).

Experimental fungicide. The experimental fungicide, A9232D at 7 fl oz/A, was evaluated for control of FHB and DON and compared to a non-treated control and the standard treatments Caramba at 14 fl oz/A (metconazole) and Prosaro (tebuconazole + prothioconazole) at 6.5 fl oz/A. All treatments were applied at FGS 10.5.1.

Strobilurin fungicides. Headline at 6 fl oz/A (pyraclostrobin), Quadris at 6 fl oz/A (azoxystrobin), and Evito at 2 fl oz/A (fluoxastrobin) were applied at FGS 10.5 and were compared to a non-treated control for DON.

Strobilurin + triazole mixtures and successive strobilurin, triazole applications. Stratego YLD at 4 fl oz/A (trifloxystrobin + prothioconazole), Quilt or Quilt Xcel at 10.5 fl oz/A (azoxystrobin + propiconazole), and Twinline at 9 fl oz/A (pyraclostrobin + metconazole) were applied at FGS 10.5. A successive treatment of Headline at 6 fl oz/A (FGS 9) followed by Caramba at 14 fl oz/A or Prosaro at 6.5 fl oz/A (FGS 10.5.1). These treatments were compared to the non-treated control for DON.

RESULTS

Experimental fungicide. The experimental fungicide A9232D did reduce FHB and DON at some locations, but generally was not as effective as the standard fungicides Caramba and Prosaro (Figs. 1 and 2).

Strobilurin, strobilurin + triazole mixtures, and successive strobilurin, triazole applications. When applied alone, all strobilurin fungicides increased DON compared to the non-treated control in at least one location (Fig. 3). Strobilurin + triazole mixture fungicides also increased DON compared to the non-treated control in at least one location. When a triazole fungicide (either Caramba or Prosaro) was applied at Feekes 10.5.1 after a Headline application at Feekes 9, the spike in DON generally was negated.

CONCLUSIONS

1. The experimental fungicide A9232D shows potential for control of FHB and DON, but generally was not as effective as current “standards” Caramba and Prosaro.
2. Applications of strobilurin fungicides and strobilurin + triazole fungicides increased DON compared to the non-treated control at some locations.
3. The potential increase in DON associated with a single pyraclostrobin (Headline) application at Feekes 9 generally was negated when that treatment was subsequently followed by an application of a triazole fungicide (Caramba or Prosaro) at Feekes 10.5.1.

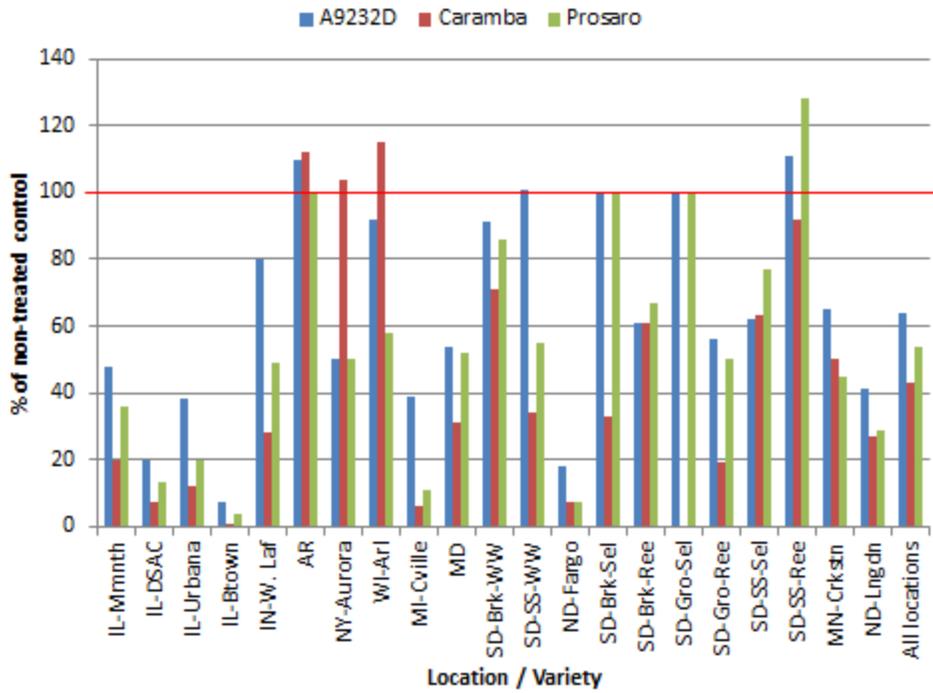


Fig. 1. Effect of experimental and standard fungicides applied at Feekes 10.5.1 on FHB index.

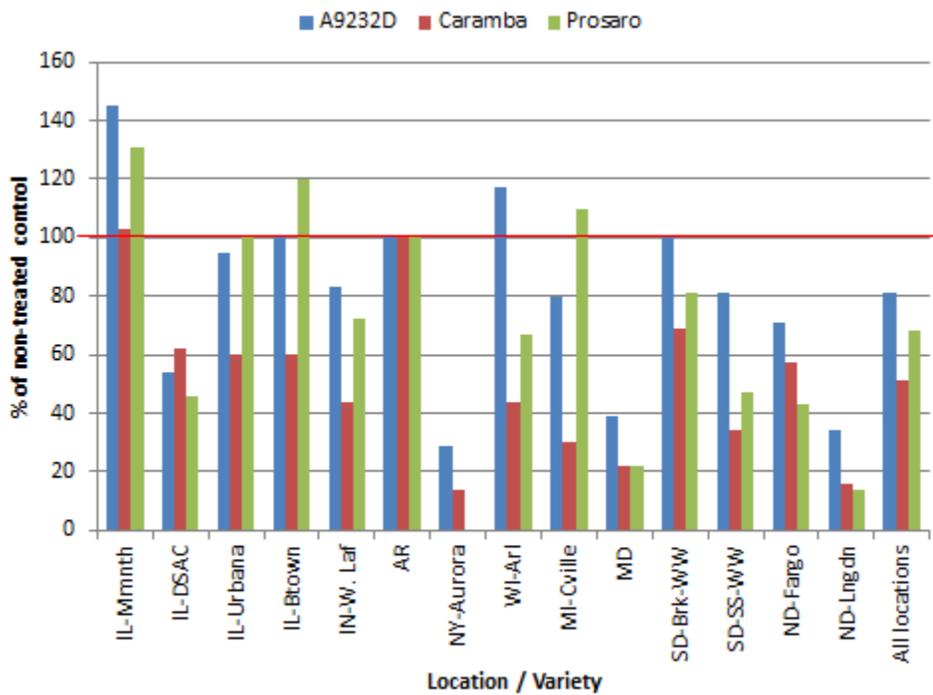


Fig. 2. Effect of experimental and standard fungicides applied at Feekes 10.5.1 on DON (nivalenol at the Arkansas location).

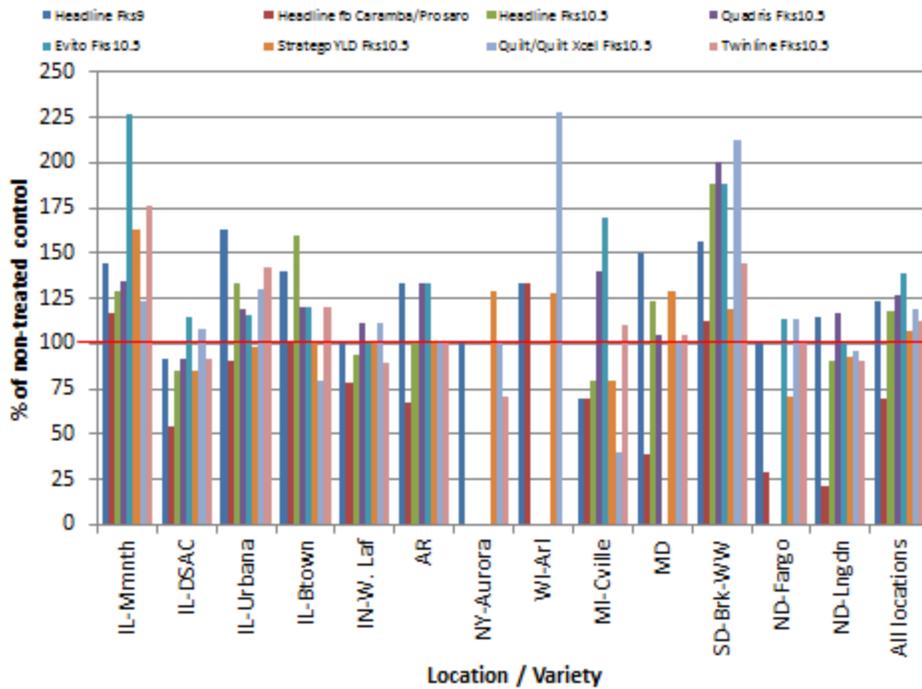


Fig. 3. Effect of strobilurin fungicides, strobilurin + triazole fungicides, and successive strobilurin – triazole fungicide applications on DON (nivalenol at the Arkansas location).