



# Effect of Foliar Fungicides on Hard Red Winter Wheat Grain Yield

Casey J. Andrews and Jeff T. Edwards

Department of Plant and Soil Sciences, Oklahoma State University, 368 Ag Hall, Stillwater, OK 74075



## Introduction

- Over 2.3 million hectares of hard red winter wheat are sown annually in Oklahoma. Nationally, Oklahoma accounts for 14 percent of the total wheat hectareage sown annually.
- Environmental conditions, soil fertility, insects and disease can decrease yield potential as well as reduce grain quality.
- Major foliar diseases of wheat include *Puccinia striiformis* (Stripe Rust), *Puccinia recondita f. sp. Tritici* (Leaf Rust) and *Erysiphe graminis f. sp. Tritici* (Powdery Mildew).



Stripe Rust



Leaf Rust



Powdery Mildew

## Objectives

- Determine the effectiveness of foliar fungicides in protecting winter wheat grain yield and quality.
- Determine break even yield needed to justify fungicide application in Oklahoma.

## Materials and Methods

- Seed of 10 wheat varieties commonly grown in Oklahoma were sown 15 October 2006 and 25 October 2007 at the North Central Research Station in Lahoma, Okla.

## Materials and Methods (con't.)

- Experimental design was split-plot arrangement of a randomized complete block design with four replications.
- Fungicide-treated plots received 125 g ha<sup>-1</sup> propiconazole plus 74 g ha<sup>-1</sup> azoxystrobin (1 L ha<sup>-1</sup> Quilt) delivered in 140 L ha<sup>-1</sup> water 17 April 2007 and 28 April 2008 at Feekes GS 9.

## Results

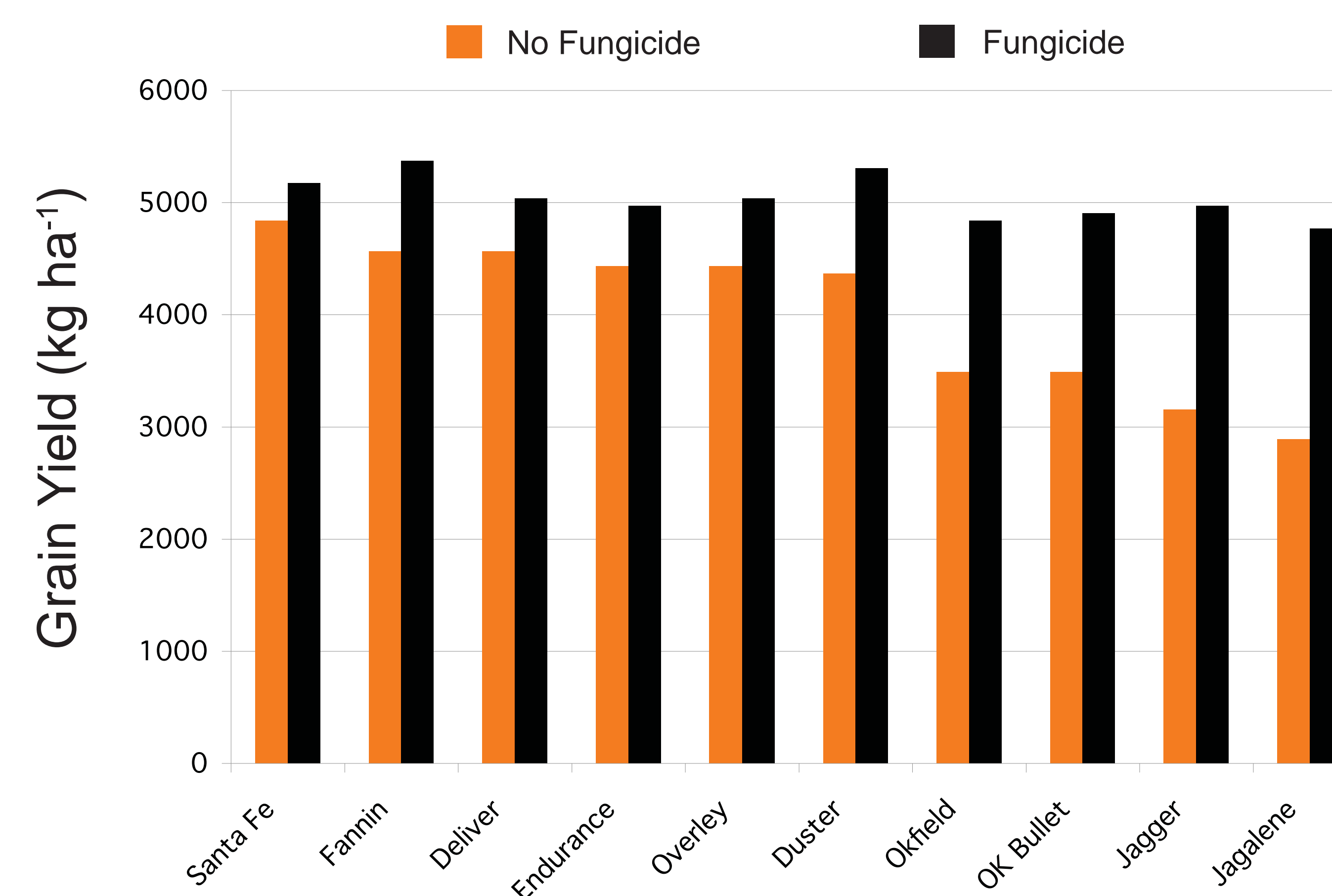


Figure 1. Winter wheat yield response to foliar fungicide treatment during 2007-08 growing season.

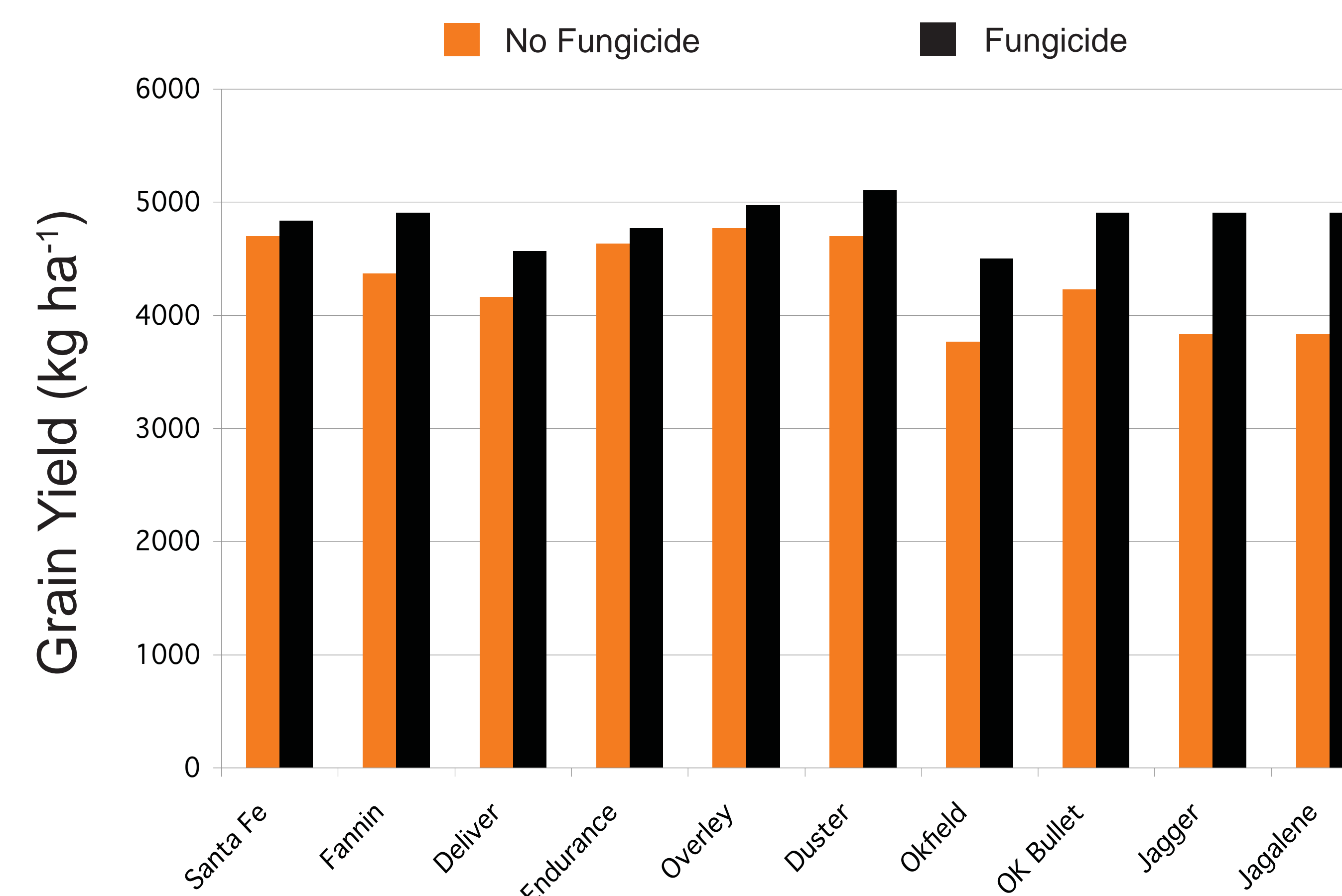


Figure 2. Winter wheat yield response to foliar fungicide treatment during 2006-07 growing season.

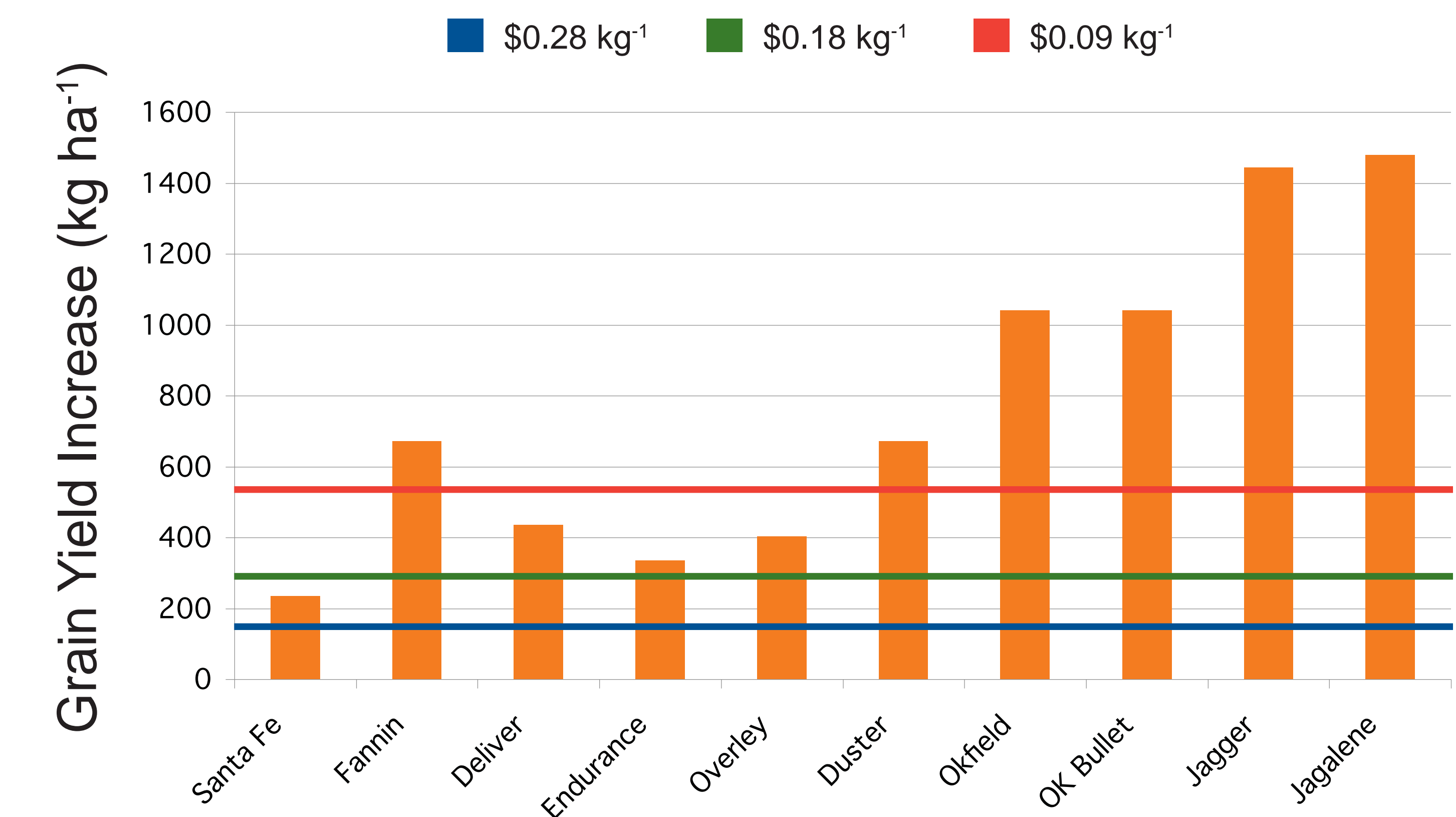


Figure 3. Break-even yield increased for fungicide application to wheat at \$0.28 kg<sup>-1</sup> (\$7.50 bu.), \$0.18 kg<sup>-1</sup> (\$5 bu.) and \$0.09 kg<sup>-1</sup> (\$2.50 bu.) selling prices of wheat. (Break-even yield calculated using a \$48.61 ha<sup>-1</sup> fungicide cost, not including application cost.)

## Results (con't.)

- All wheat varieties tested met or exceeded the break-even yield requirement to the \$0.28 kg<sup>-1</sup> wheat selling price. Fungicide application to some varieties was not profitable at the \$0.18 and \$0.09 kg<sup>-1</sup> selling prices (Fig. 3).
- The application of foliar fungicides might be warranted in the southern Great Plains when a susceptible variety is sown, wheat grain prices are favorable, and yield potential is good (Fig. 1 and 2).

## Conclusions

- All wheat varieties tested met or exceeded the break-even yield requirement.
- The application of foliar fungicides might be warranted in the southern Great Plains when a susceptible variety is sown and yield potential is good.

## For more information

Casey Andrews  
 Graduate Student  
 Department of Plant and Soil Science  
 Oklahoma State University  
 casey.andrews@okstate.edu