

# MANAGEMENT OF FUSARIUM HEAD BLIGHT IN WHEAT USING SELECTED BIOLOGICAL CONTROL AGENTS AND FOLIAR FUNGICIDES, 2002

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## OBJECTIVES:

Evaluate selected foliar fungicides and biological control agents (BCA) for potential use in soft red winter wheat Fusarium head blight (FHB) management programs in Kentucky. Also, to generate data as a cooperator in the 2002 National Fusarium head blight Uniform Fungicide and Biocontrol Trial.

## INTRODUCTION:

FHB is a significant disease concern in all wheat and barley producing regions of the United States. FHB epidemics are rare in Kentucky, but each year some fields are severely damaged by the disease. Currently, the only options available for the management of FHB are the use of cultural practices that encourage escape from disease. These include the use of multiple planting dates and varieties representing different flowering dates and periods. Moderate resistance is also available in several different wheat varieties, but severe FBH will occur under conditions that favor FHB. Preliminary studies conducted in various states indicate that foliar fungicides and BCA's may be capable of providing safe, effective and economical management of FHB. Nonetheless, specific and consistent data are lacking in regards to which products and rates are most suitable for use in FHB management programs. The National FHB Uniform Fungicide and Biocontrol Test was established as a means of addressing this deficiency in data. This test involves cooperators at various locations across the county, the use of a standard set of promising treatments, and a reasonably standardized testing protocol. Each

state, including the one in Kentucky during 2002, also evaluates unique treatments of local interest.

## MATERIALS AND METHODS:

The test site was established at the University of Kentucky Research and Education Center in Princeton, KY. The core set of treatments evaluated was determined by collective agreement of the scientists involved in the National FHB Uniform Fungicide and Biocontrol Test. Treatments included a variety of foliar fungicides and two BCA's. An additional fungicide treatment of local interest was also included at the Kentucky trial location. The test site was planted in a conventionally-tilled seed bed on October 22, 2001. Plots were maintained according to standard crop husbandry practices for soft red winter wheat production in west Kentucky. The wheat variety planted was 'Patton'. This variety expresses FHB "Type 2" resistance, which is resistance to spread of FHB within a spike. Maize was the previous crop grown in the test site.

Plots were inoculated on April 1, 2002 with sterilized, cracked corn infested with a mixture of several highly pathogenic isolates of *Fusarium graminearum*, the primary causal agent of FHB. Test plots were mist-irrigated according to a strict regime in order to encourage the causal fungus to produce infectious spores and infect the test plots. Between inoculation and the onset of flowering, plots were mist-irrigated for two hours daily, between 7 pm and 9 pm. Following the onset of flowering, plots were mist-irrigated eight times each day for 15 minutes each misting cycle. Fungicides were applied to plots on April 30, 2002 when the crop was in the early flowering. Treatments were applied using a CO<sub>2</sub>-propelled hand-held sprayer delivering at 40 PSI in 18-20 GPA. The spray boom was equipped with twinjet XR8001 nozzles oriented at a 60-degree angle forward and backward. FHB incidence, severity, and field severity data were obtained by collecting, and visually rating, 100 heads from each test plot. Plots were harvested with a small plot combine and grain yield and test weight were calculated. Deoxynivalenol (DON) levels were determined for 50-gram grain subsamples collected from each test plot. DON analyses were conducted at the Michigan State University Don



@: Inc = FHB incidence in plots; Sev = Average severity for infected spikes; Plot sev = average FHB severity across plot. \* = Visually “scabby” kernels. \*\* = Seed colonized by *Fusarium* spp. + = Vomitoxin  
#Means followed by a common letter are not significantly different P=0.05, Student- Newman- Keuls; ns=no significant differences.