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Research Category: **MGMT** **Duration of Award: 1 Year**

Project Title: Evaluation of Biological Agents for FHB and DON Control.

PROJECT 1 ABSTRACT

(1 Page Limit)

The Yuen laboratory will evaluate biological control agents as part of the Uniform Biocontrol Trials. Its participation will provide information regarding the efficacy of biological treatments and biological-chemical combinations in control Fusarium head blight and deoxynivalenol accumulation in hard red winter wheat.

The following procedures, which follow recommended for protocols for Uniform Fungicide and Biological studies, will be used. There will be two experiment sites (experiments), one at the Agronomy research facility in Lincoln, NE. The second, at UNL Agricultural Research and Development Center (ARDC) near Mead, NE, is located approx. 40 miles north of Lincoln and is distinguished from the Lincoln site by its soil type and by weather patterns (typically windier and greater precipitation in the summer than Lincoln). A different hard red winter wheat cultivar will be planted at each site. These will be commercially available cultivars adapted for the southeastern Nebraska region. 'Overland'- moderately scab resistant – will be planted at Lincoln; 'Camelot' –scab susceptible- will be planted at ARDC. At each site, there will be six (5 ft × 10 ft) replicate plots per treatment arranged in a randomized complete block design. There will be 2'-wide planted borders between plots to minimize spray drift to treated plots. In the absence of crop residue from the previous season to provide natural inoculum, corn kernels infested with *F. graminearum* will be distributed uniformly through the test site at least two weeks before flowering. A minimum of eight treatments will be tested. Overhead sprinkler or mist systems will be placed in the plots and operated to provide 16 hours of continuous leaf wetness each night for 2 weeks following the initiation of anthesis. Disease data to be collected from each experiment include head severity (% spikelets infected per diseased head) and incidence (% heads infected per plot) determined from 40 heads per plot around 3 weeks after anthesis. Plot severity, or index, will be calculated from these data. Plots will be harvested for determination of total yield, 200 kernel weight, and incidence of Fusarium-damaged kernels. Samples from each plot will be sent to a USWBSI-funded laboratory for analysis of mycotoxin content.