

**0203-YU-112 Biocontrol of Fusarium head blight.**

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PROJECT ABSTRACT

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Biological controls are needed to augment varietal resistance and fungicides for management of Fusarium head blight (FHB) on wheat and barley. *Lysobacter* C3 (previously reported as *Stenotrophomonas maltophilia* C3) is a bacterial biocontrol agent that was found in greenhouse tests to reduce the severity of FHB on wheat. In addition to being taxonomically and ecologically different from other bacteria known to affect FHB, C3 is an attractive candidate for development as a biocontrol agent in that it has been shown to have field efficacy against several foliar pathogens. In addition, considerable ecological research on C3 has led to strategies for enhancing efficacy, and C3 has been found to have both antagonism and induced resistance as mechanisms of action. The objectives of this study are to determine the potential for using C3 to control FHB in the field and to evaluate the interaction of C3 and spring wheat genotypes on Fusarium head blight control. C3 will be evaluated for control of FHB in four field locations in Nebraska, Ohio, and South Dakota (2 sites). C3 will be applied at anthesis to wheat cultivars that differ in resistance to FHB to obtain data as to the effects of combining biocontrol using C3 with host resistance. Disease severity, seed yield, seed quality and deoxynivalenol content in kernels will be assessed in all locations. Greenhouse experiments will be conducted to test the hypothesis that C3 interacts with wheat genotype in the control of FHB, with induced resistance by C3 being more effective in some cultivars over others depending upon their level of inherent resistance to FHB. Using heat-inactivated cultures of C3, whereby antagonism is disabled, the control of FHB via induced resistance can be assessed. Application of non-heat-treated cultures will allow examination of the total effects of antagonism and induced resistance. These treatments, and a control, will be compared on a selection of 12 spring wheat cultivars that represent the range of susceptibility/resistance to FHB. Disease severity and deoxynivalenol production will be measured in all of the treatment-cultivar combinations.