Project Abstract

Project Title:	Fungicide Combinations and Genetic Resistance for FHB and DON Management	
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In this funding cycle, the goal of this proposal is the continuance of integrated management (IM) and uniform fungicide (UFT) trials that would allow us to evaluate new combinations of AIs either as pre- or tank-mixtures or as sequentially applied treatments. For the wheat IM trial, we will conduct inoculated experiments consisting of two cultivars with different levels of resistance to FHB subjected to at least five fungicide treatments, all applied at Feekes 10.5.1, plus two untreated checks. The objectives and expected outcomes of this FHB Management Coordinated Project (MGMT_CP) are to:

1) Evaluate the integrated effects of fungicide treatment and genetic resistance on FHB and DON in wheat and barley, with emphasis on new combination fungicides, Prosaro Pro® and Sphaerex®.
2) Compare the efficacy of Prosaro Pro and Sphaerex to that of Prosaro®, Caramba®, and Miravis Ace®.
3) Generate data to further quantify the economic benefit of FHB and DON management programs.
4) Generate data to validate and advance the development of FHB risk prediction models.

Two new fungicides, Prosaro Pro, a mixture of two DMIs (prothioconazole and tebuconazole) and an SDHI (Fluopyram, Pyridinyl-ethyl-benzamide), and Sphaerex, a mixture of two DMIs (metconazole and prothioxonazole) are being promoted for the control of FHB and other diseases of small grain crops. Both Sphaerex and Prosaro Pro were recently registered for use in wheat. As is commonly the case, these new products will likely be marketed at higher prices than Prosaro (tebuconazole + prothioconazole) and Caramba (metconazole), the current industry standards for FHB management, and are being developed as replacements for the latter two fungicides. Therefore, the obvious questions being asked by stakeholders and researchers are whether the efficacy of these new fungicides against FHB and its associated mycotoxins, particularly DON, will be high enough to justify the added cost, and whether they are just as or more effective than current industry standards.

Designated fields for FHB screening and fungicide trials will be planted with wheat and barley trials at the Aberdeen R&E Center in a randomized complete block design in order to address the goals of both IM and UFT experiments. Appropriate fungicide treatments will be applied after inoculation with macroconidia of fungal isolates. Plots will be rated, harvested and assessed for effectiveness of treatments.