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PROJECT 1 ABSTRACT

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The infection of barley with *Fusarium* infected barley presents a number of concerns to food processors, maltsters and brewers and the livestock industry. Principal among these is the possible presence of the fungal toxin deoxynivalenol (DON). Barley with high levels of DON may be unsuitable for consumption by humans and some livestock. As a consequence the grain industry routinely analyzes for DON, when *Fusarium* infection is suspected. However, recent reports of bound deoxynivalenol (DON) in barley and wheat are a cause for concern, as by definition, bound DON is that which escapes detection by the routine analytical methods. The evidence that suggests bound DON may be released into the free form under some food processing conditions, or in digestion raises concerns that the potential toxicity of samples is being underestimated. Plants have been shown to have the ability to detoxify DON by binding it to glucose, and this mechanism has been proposed as a possible source of plant resistance to *Fusarium*. The objectives of this project are to determine the prevalence of bound DON in commercial samples of barley that have been infected with *Fusarium* and to determine how differences in plant resistance to *Fusarium* impact the levels of total and bound DON.