

Cold plasma vs fungicide: exploring options to manage Fusarium head blight and mycotoxin accumulation in wheat grain in the field

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Biography:

Maninder Kaur is a PhD student at Murdoch University, researching the application of cold plasma technology to postharvest cereal grain to manage Fusarium graminearum contamination and associated mycotoxin production. Her work is supported by a Department of Primary Industries and Regional Development scholarship and supervised by Daniel Huberli (DPIRD) and Kirsty Bayliss from Murdoch University, Australia.

Abstract:

Outbreaks of fusarium head blight (FHB) are a threat to the cereal grain industry worldwide. The major cause of concern is the accumulation of mycotoxins, the toxic secondary metabolites produced by Fusarium in cereal grain. In vitro trials found that cold plasma significantly reduced the growth of Fusarium graminearum, a primary FHB pathogen, on postharvest wheat grain. Therefore, a field trial was conducted to compare the efficacy of two pre-sowing wheat seed treatments, cold plasma and a fluquinconazole fungicide, on FHB disease severity. The impact of the treatments on postharvest wheat grain quality was assessed, including the quantification of fungal biomass and Deoxynivalenol (DON) by qPCR and ultra-high-performance liquid chromatography. A postharvest cold plasma treatment was also performed to determine if this might reduce the fungal biomass and DON content in the wheat grain. The results of the trial will be presented, and their implications discussed.

