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ABSTRACT

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HOST-INDUCED GENE SILENCING FOR THE CONTROL OF FUSARIUM HEAD BLIGHT IN WHEAT FIELDS

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Fusarium head blight (FHB) is one of the most serious and hazardous crop diseases worldwide. The main consequence of FHB is that trichothecene mycotoxins, such as deoxynivalenol (DON), accumulate in the grain, presenting a health risk to humans and animals. In Southern Brazil, where 90% of Brazilian wheat is grown, severe FHB epidemic years occur at a minimum of every 4 or 5 years. Legal limits have been set on the DON levels permitted in harvested grain used for different purposes. However, even moderate FHB years are highly problematic causing the lack of available safe grain for use either on farms or for sale into the market. For low-income Brazilian farmers, FHB disease reduces the standards of living of farmer's families and that of their local communities. There is a pressing need to develop novel and effective FHB control options. Here we will introduce our new bilateral BBSRC-Embrapa collaborative project (started November 2016) in which we intend to take a novel whole fungal genome and disease modelling guided approach to develop a pipeline of genetically modified wheat genotypes harbouring hairpin T-DNA constructs, which can silence *Fusarium* spp. genes critical for wheat infection via host-induced gene silencing (HIGS). We also intend to determine the plant and fungal mechanisms that control the HIGS phenomenon.

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