

UNDERSTANDING THE EVOLUTION OF FUNGICIDE RESISTANCE IN FIELD POPULATIONS OF THE WHEAT BLAST PATHOGEN FROM BRAZIL: CAN WE LEAN LESSONS FOR FUTURE DISEASE MANAGEMENT?

Some plant diseases are becoming very difficult to control due to lack of host resistance cultivars and limited availability of fungicide products for crop protection. Fungicide resistance, tighter regulations and a slowing pipeline of new products are reducing the range of available chemical classes. This leads to greater dependence on fewer active ingredients with fungicide modes of action, subsequently, increases the selective pressure for further cases of resistance. In order to increase the shelf life of new and currently available fungicide actives, "evolution-smart" (i.e., guided) integrated pest management strategies are needed. This project will focus on the plant pathogen *Pyricularia graminis-tritici* (Pygt), the causal agent of wheat blast, an important fungal disease in Brazil that is very difficult to control, with several groups of fungicides (e.g. sterol demethylase, quinone outside and succinate dehydrogenase inhibitors) became (or having become) ineffective. To improve wheat blast control, a better understanding of the disease epidemiology, the fungicide sensitivity/resistance status and new disease management strategies are needed. In this project we will focus on all three aspects using the latest spore trapping technology, fungicide phenology and genotyping sensitivity/resistance assays as well as a fungicide target protein expression system, enabling to investigate the impact of target mutations on enzyme function and fungicide binding. These tools are generic and can be applied for other plant pathogens.

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