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## **WHEAT BLAST: PROGRESS IN ELUCIDATING ITS ECOLOGY AND DEVELOPING STRATEGIES FOR CONTROL**

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Wheat blast, caused by the *Triticum* pathotype of *Magnaporthe oryzae* (MoT), is an emerging disease considered to be a limiting factor to wheat production and regarded as very difficult to control. Wheat producers in blast endemic regions of Bolivia, Brazil, and Paraguay are managing the disease with limited information on MoT ecology and epidemiology. Availability of sources of resistance and information on fungicide efficacy for this disease are also limited. Given the status of wheat blast as a high consequence plant disease, studies are being performed to understand the ecological factors associated with blast outbreaks and to develop effective management strategies. The evidence presented in this seminar is derived from experiments conducted under Biosafety Level-3 conditions in the U.S., as well as field conditions in Bolivia and Brazil. Experiments in the U.S. and Bolivia were conducted to elucidate the importance of basal leaves in disease etiology. Inoculations of wheat seedlings showed that certain cultivar and isolate combinations caused more disease on old wheat leaves than young expanding leaves. Under optimum conditions, MoT had the potential to produce tens to hundreds of thousands of conidia on small amounts of wheat basal leaves. A mean of 1.7 million conidia were produced on 1 g dry basal leaves of a highly susceptible cultivar under optimum conditions for sporulation. Conidia production on leaves coincided with spike emergence under both greenhouse and field conditions. Although additional studies are needed to understand the significance of auto-infection in the wheat blast pathosystem, preliminary studies in the field in Bolivia have shown that, in the absence of foliar fungicides, blast might be able to progress from older to youngest leaves as the season progresses. In Bolivia, a prominent breeding program has included phenotyping efforts to select for wheat blast resistance at both the leaf and head stages. According to our results from field research, several foliar fungicides had activity against wheat head blast, but Picoxystrobin + Cyproconazole in Bolivia and Thiophanate-methyl + Mancozeb and Mancozeb in Brazil were most effective at reducing head blast severity and increasing yields. The data reported in these studies should contribute to better management of the wheat blast disease in the future.

Keywords: wheat blast; brusone; ecology; management