

Category	: International Rice Research Conference
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Keyword 1	: Biotic stress tolerance
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Title of Entry	: The Economic and Food Security Impacts of Bacterial Panicle Blight Alleviation in the USA
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Bacterial Panicle Blight (BPB) is a concern in combating global food insecurity given the disease can lead up to 70% yield losses when susceptible cultivars are grown in environments favorable to the disease. Infections cause rotting of the grain and reductions in grain filling and grain quality. Thus BPB has the ability to both reduce grain yield and grain quality. These losses increase the global rice price and reduce consumer welfare and food security. Rice is the staple crop for more than half the world's population so any reduction in BPB would have substantial beneficial effects on consumer and producer livelihoods. While the literature is rich on the economic impacts of breeding programs for rice, there is a lack of research on the economic impacts of rice maintenance breeding programs for BPB. We therefore ask the counterfactual question: What benefits would be realized by producers (higher yields) and consumers (lower prices) if all cultivars sown in the United States were BPB resistant? To explore this question, data were collected from (1) county level rice varietal yields (with associated BPB susceptibility ratings) and seeded areas in the Mid-South (the largest rice growing area in the United States) for 2002–2014, (2) simulated BPB infection rates based on historical infection data, and (3) simulated infected hectares as well as simulated yield loss based on historical BPB yield-loss data. From these data we will estimate the additional rice volume that would have been available in the absence of BPB for 2002–2014. This estimated additional supply from BPB resistance will then be entered into the RiceFlow model to answer the counterfactual question: What would the implications for rice production have been if BPB had not been present? Notably, the RiceFlow model generates domestic and global estimates of changes in rice price given an increased supply as well as changes in consumer and producer welfare. These estimates will provide

important information on the importance of BPB to policy makers, donors, stakeholders, and breeding programs around the world.

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