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The Impact of Bt Cotton on Farmers' Health in Pakistan

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Abstract:

Despite substantial research on the economic impacts of Bt cotton, there is still limited work on the technology's impacts on human health, particularly the impacts associated with reductions in pesticide use. Using household and biophysical survey data collected in 2013-14, this study provides the first evidence of a direct association between Bt expression and farmers' health benefits in Pakistan. We employ a cost-of-illness approach and double-hurdle model to estimate the relationship between Bt cotton and health costs incurred by a representative sample of cotton farmers. Double hurdle estimates show that farmers' self-reported adoption of Bt technology could not reduce pesticide induced cost of illness due to inconsistencies between their Bt beliefs and levels of Bt expression in a developing country context. Results with more effective Bt gene expression drawn from laboratory tests show that Bt expression is associated with 33 percent reduction in the cost of illness. Extrapolating the results to the entire Bt cotton area in Pakistan reveals that 1 $\mu\text{g/g}$ increase in Bt expression is associated with health cost savings of US\$ 0.82 million. Hence, better seed regulation and monitoring of seed quality would enhance Bt technology's health effects, which could have important implications for farmers' overall welfare.

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