

## **Fit for purpose: Economic impacts, regulations and R&D of genetically modified and genome edited crops in low and middle Income countries**

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### **Abstract**

The presentation will examine the role of policies and regulations and their impact on fit to purpose for agricultural bioinnovations with an emphasis in low and middle income countries (LMICs). The presentation will accomplish this task by summarizing the experience with the economic impact assessment of genetically modified crops in LMICs, while describing how economic impacts may change with genome editing approaches. The presentation will use the examples of resistance to maize lethal necrosis in maize and late blight resistant potato in East Africa as examples of economic impact assessment of genome editing approaches. The presentation will address issues related to the cost compliance, time delays, and regulatory uncertainty as related to innovation and regulatory and innovation processes. The experience with economic assessments in the published peer reviewed literature has shown that in average GM crops have provide economic benefits to adopting producers but there expected variations at the producer, crop, trait and locations. Genome edited MLN resistant maize and LBR potatoes can provide economic benefits to adopting producers in East Africa. Economic benefits can be impacted by increases in R&D and regulatory costs, but a more significant impact are time delays. Increases in compliance costs can be relevant to the public sector and small and medium size enterprises which may attempt to develop new biotechnologies in LMICs. Efforts will need to be paid to secure proper coordination at the R&D and regulatory stages to avoid unnecessary delays. Regulatory uncertainty can affect the flow of ag bioinnovations by introducing uncertainty into the investment decision making process. If developers cannot attach a probability to a innovation process, and impact may be reduced investments overall.

**Key words:** economics, policies, regulations, impact assessment, genome-editing