FACTS AND FIGURES

Major Crops under Biotech Research in Uganda



Effects of Banana Bacterial Wilt

Banana Quick Figures (Kilimo Trust report, 2012; BBW poster)

- 13+ million Ugandans consume banana as main food
- Percentage of farmers growing banana is estimated at 75%
- Revenue earnings per annum of US$ 440 million
- Percentage of total national agricultural revenue attributed to banana is 22%
- Average yield loss attributed to Banana Bacterial Wilt (BBW) is 71.4%
- Estimated annual loss due to BBW is US$ 299.6 million worth of banana output valued at farm gate prices
- Bacterial diseases in plants have no chemical treatment



Effects of Brown Streak Disease

Cassava Quick Figures (C:AVA report, 2012; VIRCA)

- +10 million Ugandans consume cassava as main food
- Percentage of farmers growing cassava is estimated at 75%
- Annual production is 6.7 million compared to 30 million tonnes
- Cassava brown streak disease (CBSD) is the main cause of yield losses
- CBSD was present in 51 out of 54 districts surveyed in 2014
- Estimated annual loss due to CBSD is US$ 24.2 million
- Like other viruses, vaccination is the best option



Effects of maize stem borer

Maize Quick Figures (WEMA-Uganda)

- Percentage of farmers growing maize is estimated at 86%
- Total revenue earnings was US$ 51million (BoU, 2015)
- Farmer average yield is 2.7 t ha-1 compared with researcher-managed yield of 9 t ha-1
- Up to 30% yield loss attributed to stem borers (Molo et al. 2013) Drought causes estimated losses of about US$ 19.4 million
- Total economic benefits from adopting GM Maize estimated at US$ 25.4 million



NEWEST rice

Rice Quick Figures (AfricaRice, 2011; IFPRI Policy brief [in press])

- Total production is estimated at 115,000 MT of milled rice
- Total annual consumption is estimated at 175,000 MT of milled rice
- In-country production resulted in imports drop saving about US$30 million in foreign exchange earnings annually
- Soil related stress alone reported to cause estimated losses of about US$ 6.2 million annually
- Total economic benefit estimated at US$ 19.9 million for adopting low nitrogen and drought tolerant GM rice

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Effects of sweetpotato weevil

Sweetpotato Quick Figures (Nankayike, 2014; IFPRI Brief [in press])

- Percentage of farmers growing banana is estimated at 45
- Uganda is the largest producer of sweetpotato in Africa
- Farmers' fields average yield are 4.2 t ha-1 compared to 25 t ha-1 produced by China
- Potential total yield loss due to virus diseases are 98%
- Economic losses due weevil infestation is estimated at US$ 6.7 million
- Biotech research is being conducted for both constraints
- US$ 16+ million economic gain estimated from adoption of GM sweetpotato

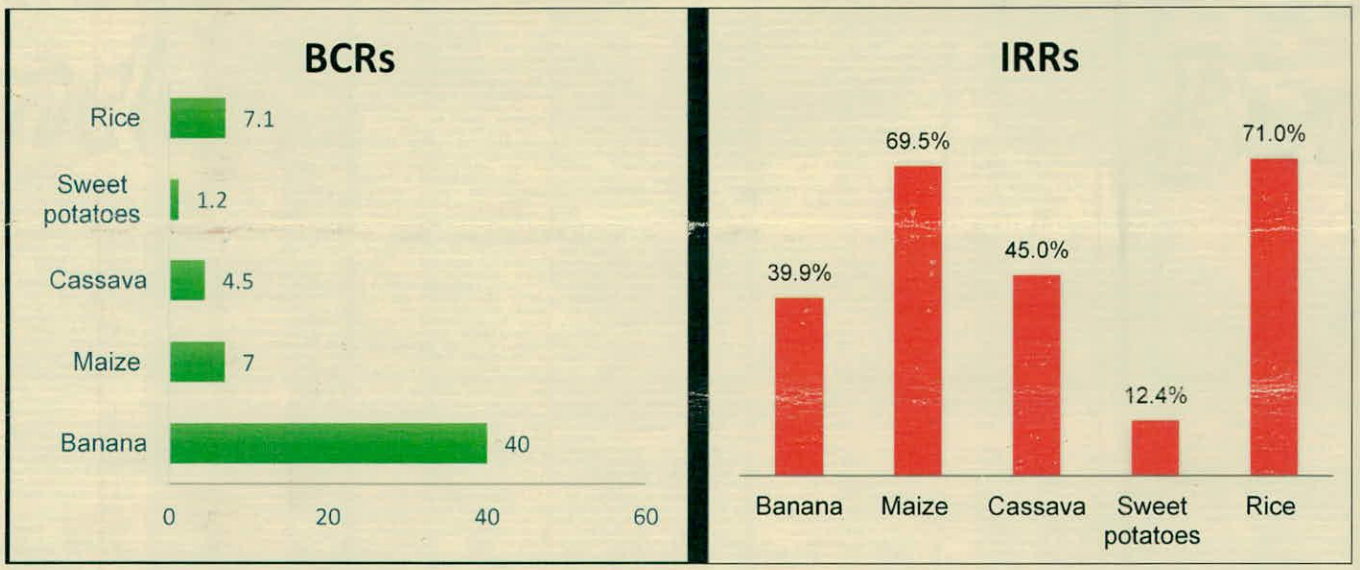

Figure 1: Benefit Cost Ratios (BCRs) and Internal Rates of Returns (IRRs) of GM Crops in Uganda (2016-2025). Source: IFPRI Policy Brief (in press)

The BCRs are positive and greater than one; hence the GM products from these crops, when introduced will lead to increase in production efficiency. The internal rates of returns (IRRs) are highest in rice because the crop has a shorter reproductive cycle thus it can be planted 2-3 times a year and it takes a shorter time to break-even. The BCRs and IRRs are lowest in sweetpotato. The analysis considered only weevil effects but other major constraints like viruses were not considered.

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