



April 2015

Major Crops under Biotech Research in Uganda

Facts and Figures



Supported by NextGen Cassava Breeding Project.

Contact Us

Uganda Biosciences Information Center (UBIC)
National Crops Resources Research Institute, Namulonge
P.O. Box 7084 Kampala, Uganda
Phone: 0414 573016
Email: ubic.nacrr@gmail.com
www.ugandabio.org
ugandabiosciencesinformationcenter@ugandabio.org
UBICnaCRR

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
- Biotech is identified as the best option for solving BBW



Effects of Banana Bacterial Wilt

- Percentage of farmers growing maize is estimated at 86%
- Total revenue earnings was US\$ 51million (BoU, 2015)
- Farmer average yield is 2.7 tonnes per hectare compared with researcher-managed yield of 9 tonnes per hectare
- 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 benefit from adopting drought tolerant and insect resistant maize is estimated at US\$ 25.4 million

Maize Quick Figures

(WEMA-Uganda)



Effects of maize stem borer



Effects of Cassava 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 for prevention
- Biotech is identified as the best option for solving CBSD



NEWEST Rice

Rice Quick Figures

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

- Total production is estimated at 115,000 Metric Tonnes of milled rice
- Total annual consumption is estimated at 175,000 Metric Tonnes 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 from adopting low nitrogen and drought tolerant rice is estimated at US\$ 19.9 million



Effects of Potato Late Blight

Irish Potato Quick Figures

(FAOSTAT, 2013; Byarugaba et al., 2013; Haverkort et al., 2008)

- In 2015, demand for potato was up to 1,000,000 metric tonnes
- Potato is grown by over 300,000 smallholder households, producing a total of 800,000 tons on 112,000ha
- Late blight of potato is one of the most devastating diseases causing up to 60% yield loss
- Uganda losses of up to US \$128 million annually due to late blight
- Late blight is difficult to control because it has become resistant to fungicide
- Breeders have identified biotech as a feasible option for developing resistance to late blight



Effects of Sweetpotato Weevil

Sweetpotato Quick Figures

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

- Percentage of farmers growing sweet potato is estimated at 45%
- Uganda is the largest producer of sweet potato in Africa
- Average from farmers' fields is 4.2 tonnes per hectare compared to 25 tonnes per hectare produced by China
- Potential total yield loss due to virus diseases is 98%
- Economic losses due to weevil infestation is estimated at US\$ 6.7 million
- Biotech research is being conducted to address both viruses and weevils
- US\$ 16+ million economic gain is estimated from adoption of weevil and virus resistant sweet potato

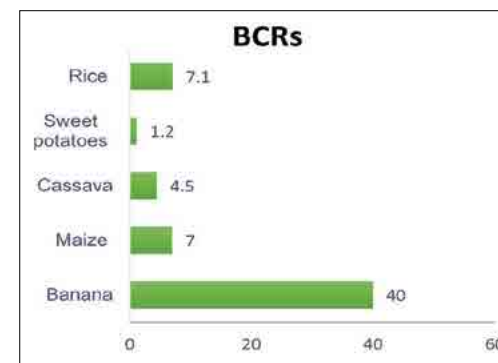
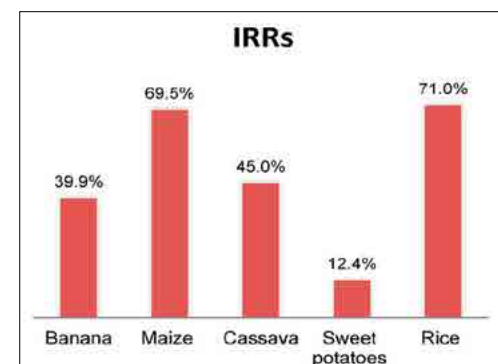


Figure 1: Internal Rates of Returns (IRRs) and Benefit Cost Ratios (BCRs) of Biotech Crops in Uganda (2016-2025). Source: IFPRI Policy Brief (in press)

The BCRs are positive and greater than one, hence the biotech 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 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.