Top Ten Facts about Biotech/GM Crops in Uganda, 2014

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1. 2015 is the 12th year of successful GM agricultural research for development in Uganda

- The Government of Uganda through the National Agricultural Research Organisation (NARO) has conducted active and progressive genetic modification (GM) research to address national development challenges since 2003
- Ugandan scientists have developed and tested crops improved through GM science to address more than 15 production and nutrition challenges
- Crops under improvement through GM science include banana, cassava, maize, sweet potato, rice, ground nuts and millet

2. Human and infrastructural capacity for biotech research in Uganda increasing

- Fifteen (15) public and private research institutions have adequate capacity and are conducting biotechnology based agricultural research in Uganda – Three public institutions are conducting GM research in priority crops
- 145 scientists in Uganda are actively involved in biotechnology research and development activities in Uganda
- Biosafety capacity has been strengthened in research institutions and in regulatory agencies to ensure safe and responsible development of GM science

3. The Government of Uganda is committed to strategic utilisation of biotechnology for national development

- The Government of Uganda approved the National Biotechnology and Biosafety Policy in 2008 to rationalise biotechnology research and development activities in addressing national development challenges
- The policy seeks to 'contribute to national goals of poverty eradication, improved healthcare, food security, industrialisation and the protection of the environment through the safe application of biotechnology
- The Government has committed more than 20 billion shillings and sufficient human resource in the past 15 years to optimise benefits of biotechnology in agriculture through strategic research and development

4. Biosafety is priority in biotechnology developments in Uganda

- Through the National Biotechnology and Biosafety Bill 2012, the Government of Uganda recognises the paramount importance of biosafety (practices and procedures to ensure safe application of biotechnology) in biotechnology research and development activities
- The Bill provides an institutional framework and regulatory systems to ensure the safe and responsible advancement of biotechnology in Uganda
- The Government established the National Biosafety Committee under the Uganda National Council of Science and Technology in 1995 to provide oversight over GM science in the country. The Bill will further strengthen the enforcement of biosafety in Uganda.

5. Biotechnology will benefit Ugandan farmers and economy

- Recent research shows that GM crops under trial in Uganda will increase productivity of key staple crops (banana, cassava, sweet potato, maize, and rice) by 25-60% depending on the crop and challenge solved. This will contribute to food and income security in Ugandan households
- Bacterial wilt resistant banana will boost the economy by an estimated USD 300 million annually with the bulk of these benefits accruing to farmers directly
- Biotech crops can stimulate industrial transformation in textiles, biofuels, biopharming, starch-based industries, and bioplastics.

6. Biotech crops under research in Uganda are key staple food crops

- Banana: A key staple crop for more than 20 million people. Challenges addressed include: bacterial wilt, nematodes, weevil infestation, and nutritional deficiency
- Cassava: Staple for more than 10 million people. Key challenges being addressed are Cassava Brown Streak disease and Cassava Mosaic Disease
- Maize: a major staple for urban populations. Drought effects and stem-borer infestation are the main challenges being addressed using GM science

7. Uganda is most advanced country in field testing of GM crops in sub-Saharan Africa1

- Uganda has conducted more than 20 separate field trials of GM technologies since 2007
- Uganda has the most crops under field trial in the region – cassava, maize, banana, sweet potato, and rice
- Research is at advanced stages and products for farmers are plausible for many of the traits under research

8. Farmers in Uganda yet to access GM crops for planting

- No GM crop variety has been released in Uganda since the commercial introduction of GM crops in the world 20 years ago
- Farmers in Uganda cultivate more than 1000 varieties of different crops developed through conventional breeding
- GM crops cultivated in the world include alfalfa, maize, sugar beet, sugarcane, summer squash, eggplant, canola, cotton, common beans, soybean, papaya, potato, and apple

9. Biotechnology will form the future of advancements in science

- Biotechnology will be utilised to produce smarter crops to address the country's increasing population needs
- GM science is being tested to develop climate change-ready crops for key staple food crops such as cassava, maize, and banana
- Agricultural biotechnology will become increasingly integrated in developing health products (bioactive compounds, medicine and vaccines), in industrial development, and in environmental remediation.

10. All GM crop research and developments activities are by Government of Uganda

- All field and laboratory research activities involving GM technology are being conducted by the National Agricultural Research Organisation, a mandated research agency of the Government of Uganda.
- There are no hidden royalty fees or encumbrances in GM crop products under development
- The Government continues to test GM products alongside conventional breeding research wherever there is strategic comparative advantage to use either

NB: Researchers are continuously addressing the public's key concerns on biotechnology.

- Biotech researchers have conducted Knowledge, Attitudes, and Perceptions survey to assess the public's knowledge on the technology
- Some of the fears presented by the public have been addressed. See "**A hard look at GMOs**" which addresses some common concerns **http://www.nature.com/news/case-studies-a-hard-look-at-gm-crops-1.12907**

[1]Except Republic of South Africa

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