

Fear of Science: Africa's major challenge

Uganda is one of the countries in Africa that continue to lose opportunities to overcome challenging agricultural production constraints that could be best addressed using genetic modification (modern biotechnology).

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Africa's failure to embrace science innovations and to trust research findings has been found to be the main reason behind the continent's low agricultural production, poverty, hunger, and undernourishment. Writing in the online Genetic Literacy Project newsletter under the topic "Agricultural Economics Today", dated January 29 2025, Wandile Sihlobo, has stated, "Africa lags behind much of the world in embracing crop biotechnology, and the result is mass undernourishment."

In an earlier article published in the same newsletter dated 3rd January, 2025, Wandile Sihlobo had asked the question: "China is embracing genetically modified crops; Africa, what are you waiting for?" In today's times of climate change, can we afford not to change some of our approaches and strategies? African agriculture is faced with a number of challenges, including soil depletion, pests and diseases, climate change, a fast growing population to feed, poverty, and low uptake of science innovations, resulting in poor yields and undernourishment.

There is a tendency by many leaders in Africa to pay more attention to providing money hand-outs to struggling smallholder farmers as a way of capital for them to start commercial agriculture. This practice probably wins more political favour within the electorate but, on its own, it does not remove persistent pests and incurable crop diseases.

Acceptance of seed breeding

It does not increase drought tolerance in crops, nor does it enhance nutrition or multiply crop yields. Sihlobo argues that much of the recent increase in African agricultural output has primarily been due to an expansion in planted area rather than crop yield boost.

Most African countries are still slow in accepting seed breeding technologies including genetic modification (GM) and biotechnology.

According to Uganda Biotechnology and Biosafety Consortium (UBBC), genetically modified crops have the potential to boost food, fuel and fibre production in Uganda which will accelerate economic growth and boost foreign exchange earnings. It can put an end to the dreaded Banana Bacterial Wilt Disease that is steadily wiping out one of our major food crops. It can stop Cassava Brown Streak Disease. Bio-fortified GM crops can help reduce malnutrition in the country by people eating vitamin A and iron (Fe) enhanced bananas.

TRUST

Most African countries are reluctant to copy what wealthy countries such as India, China, USA, and others are doing to become wealthy and they go to them seeking loans and grants hoping to develop their own economies without fully embracing the work methods of their lenders and donors. We refuse to trust science and the technologies arrived at as a result of science research and we wait to pay for manufactured products from the countries that trust science.

Some people claim that consumption of GM crops has a negative impact on human health, but according to Uganda Biosciences Information Centre (UBIC), the World Health Organization (WHO), the Food and Agricultural Organization (FAO), the American Medical Association (AMA), European Food Safety Association and a broad range of scientists agree that GM foods currently on the market are as safe as the non-GM foods.



A farmer examines a banana plant destroyed by the Banana Bacterial Wilt Disease.
PHOTO/MICHAEL J. SSALI

Biotechnology can directly contribute to minimizing economic losses arising from crop disease epidemics such as banana bacterial wilt and cassava brown streak disease which are now ravaging the country. Biotechnology can lead to massive cotton production as it has done in India and China.

Writing in the *Daily Monitor*, of October 9 2015, Dr Wilberforce Tusheemeirwe, formerly Director General of National Agricultural Research Organization (NARO) said, "The big population increase is set to dramatically raise the demand for food supplies. Yet our food crops are facing extinction and there are no known ways of effectively dealing with the new pests and diseases other

than the use of biotechnology." It is no use throwing money in the form of what is today known here as Parish Development Model or Emyoga at struggling poor farmers faced with incurable crop diseases and using poor quality planting materials.

Buying irrigation equipment, fertilizers, or pesticides will not help a farmer to overcome banana bacterial wilt disease and nematodes or cassava brown streak disease.

Viral diseases

Farmers continue to lose a lot

of money on pesticides fighting the bollworm in cotton growing, fighting the stem borer in maize and late blight in Irish potato. This does not help reduce poverty and hunger.

According to NARO, growing sweet potatoes is problematic due to a viral disease and our rice production is impeded due to lack of nitrogen use efficiency and salt tolerance (ubic.nacrr@gmail.com).

Farmers and policy makers need more education about the advantages of planting improved seeds and how to reduce the impact of drought and climate

change on agriculture. It is not only start-up capital for farmers that can increase crop production, rather more investment in agricultural research and acceptance of its findings will really help matters.

Uganda is one of the countries in Africa that continue to lose opportunities to overcome challenging agricultural production constraints that could be best addressed using genetic modification (modern biotechnology).

Most countries using modern biotechnology must respect the Cartagena Protocol on Biosafety which is an international agreement aiming to ensure safe handling, transportation, and usage of modern biotechnology products.

Some years ago Uganda took interest in using modern biotechnology to boost agriculture and opened up state of the art laboratories in various NARO institutes across the country to conduct genetic modification research on such crops as cassava, Irish potato, rice, maize, sweet potato, and banana.

Many successes were achieved but to this day the Ugandan farmers have not been able to benefit from the research findings by planting GM crops because Uganda has failed to come up with the Biotechnology and Biosafety Law as required by the Cartagena Protocol. Yet this is a technology that has transformed agriculture in such countries as South Africa, India, Burkina Faso, and Sudan. It is a technology that has recently been taken up in Kenya, Nigeria, and Ghana as one of the best options for dealing with deadly pests.

Major challenges

Other countries such as the USA, Canada, India, Australia, Brazil, Argentina, Pakistan, Paraguay, Uruguay, Bolivia, Myanmar, Mexico, Spain, Cuba, Bangladesh, Portugal, Romania, Chile, Costa Rica, Colombia, Czech Republic, Philippines, Honduras and Slovakia along with very many other countries have embraced the growing of genetically modified crops. (Global Status of Commercialized Biotech/GM Crops by Clive James).

A simple Google search indicates that Uganda's cotton production faces major challenges including high costs of imported inputs, low farmer profitability, weak value chains, pest/disease issues, climate vulnerability, competition, lack of cohesion, and policy gaps like GMOs, leading to declining interest and low exports with low yields.

Cotton was once upon a time one of our major foreign exchange earners and our textile and apparel industry was at its peak but today it is declining while other countries, including our neighbour, Kenya are reaping the benefits of growing GM cotton.

Again, says Clive James, "GM cotton was introduced in the USA and Australia for the first time in 2006 and was widely grown by 2014. In that year, biotech (GM) hybrid cotton in India, the largest cotton growing country in the world, occupied 11.6 million hectares of approved GM cotton despite almost optimal levels of adoption which reached 95% in 2014."

TIP
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