

## GM: Africa's opportunity

By Walter Alhassan,  
Created 2003-10-01 23:00

**openDemocracy:** What does biotechnology offer to Africa?

**Walter Alhassan:** Unlike [Liz Orton](#) [0], I believe that GM technology is one of the components of biotechnology which holds out the biggest promise for solving Africa's [food security](#) [1] problems.

It is a tool which, if judiciously applied alongside other institutional interventions, will overcome Africa's food security constraints. The power of GM technology lies in its ability to move desirable genes across the species barrier to enable the recipient organism cope with various stresses (insect, bacteria, virus, fungus, nematode or other parasites, soil fertility, drought). The technology also identifies and concentrates desirable genes within a species – but this feature of GM is not the main source of controversy over new techniques.

It is, rather, the transfer of genetic material across species boundaries which raises ethical (non-scientific), health (allergies) and environmental concerns. The environmental concerns relate to unintended crossing of the modified organism (say a crop of maize) with a wild relative or cultivated variety such as the farmer's variety (landrace). This phenomenon – known as gene flow or genetic erosion – can reduce biodiversity.

Before a GM product is released it undergoes stringent biosafety tests to ensure that these risk factors are addressed to a large extent. A permit must be granted by a [National Biosafety Committee](#) [2] to the applicant who wishes to introduce a genetically modified organism into a country either through importation or development of the organism within the country. A risk assessment is done based on evidence demanded and supplied by the applicant such as the influence on related species (gene flow or hybridisation, health trials including evidence of non-allergenicity).

The development of the GM product is done under strict biosafety conditions as provided by the biosafety laws and framework of the country. This will require that until the product is cleared for release it be handled under containment or quarantine facilities in the laboratory and in the field. Even when the product is cleared some legislation require that it be labeled.

Because of lack of information and the consequent fear of the unknown some countries have introduced stringent precautionary legislation to control and in some case deny access to this very powerful tool which finds use in agriculture, industry, health and the environment. It is worth stressing that GM intervention is the last resort when traditional methods are either intractable or will take too long to accomplish. It is a *complement* to traditional technology and does not *replace* it.

**openDemocracy:** What has been the extent of public debate on GM technology in Africa?

**Walter Alhassan:** Due to the current low level of awareness the current level of emotionally-charged debate seen in the developed countries is not seen in Africa. Indeed, African farmers who have heard what GM technology is doing for other farmers often ask to test the products.

In my recent survey *Agrobiotechnology Application in West and Central Africa (2002 [3])* for the International Institute of Tropical Agriculture (*IITA [4]*) I visited countries in West and Central Africa, farmers in *Cote d'Ivoire [5]* demanded to test Bt cotton and to use it if it proved efficacious. Currently, *Burkina Faso [6]* is field testing Bt cotton. It is the only country in West Africa currently testing a GM product on the field. *Nigeria [7]* is poised to start the testing of genetically modified cassava against devastating viral diseases. *South Africa [8]* has already commercialized Bt maize and cotton. *Kenya [9]* is currently field testing Bt maize under open quarantine. More countries in Africa are poised to join the bandwagon.

The major concern for an impending biotechnology revolution in Africa is with trade. The bulk of trade in agricultural commodities is with Europe which does not appear to favour trade in GM food products. There is the fear of a trade embargo following the introduction of GM agricultural commodities in Africa.

**openDemocracy:** What GM products are being used now in Africa? What benefits do you see?

**Walter Alhassan:** GM products in use in parts of Africa are Bt maize (against stem borers) and Bt cotton (against cotton boll worm). There is a drastic reduction in the amount of agro-chemicals needed to produce these crops. This greatly reduces the impact on the environment from the collateral damage caused by pesticides against beneficial insects (pollination and biological control) and possible toxicity to farmers from handling pesticides. The cost of pest control is cut considerably through direct reduction of cost of the pesticide and saving of labour in pesticide application.

Other products in line to benefit from GM technology are cowpeas (prone to insect attack), cassava (cassava mosaic virus) and bananas/plantain (Black Sigatoka). Other crops are cocoyam (prone to root rot) and coconut (lethal yellowing disease). Malnutrition from micronutrient deficiency (iron, Vitamin A, zinc) has been the scourge of children under five pregnant women. Biotechnology is to be used to assist in the rapid identification of genes carrying traits for these micronutrients and to concentrate them in food crops.

South Africa is the only country in Africa actively commercialising Bt maize and cotton as far back as 1998. The advantage is a reduction in production cost through a diminished use of pesticides with the attendant hazard to human health and the environment alluded to earlier. The use of Bt maize has been associated with a reduction in the incidence of aflatoxin which is a potent toxin produced by a fungus. Infestation often starts from the field and worsens under storage. Countries such as Uganda (banana), Kenya (maize, cotton, sweet potato), Burkina Faso (cotton), Nigeria (cassava) and Egypt (tomatoes) are in the field testing stage for the products indicated against their names.

**openDemocracy:** How are African states going to secure access to new biotechnologies? And what safeguards will there be for farmers, consumers and the environment?

**Walter Alhassan:** To ensure that African countries access these technologies, frantic efforts are taking place to build up their biotechnology capacities and to develop the necessary biosafety protocols [10]. While South Africa, Egypt and Zimbabwe already have the necessary laws in place, Kenya, Nigeria, Cameroon and the Cote d'Ivoire have draft laws at the point of legislation.

Many African countries are signatory to the [Cartagena Protocol on Biosafety](#) [11] of the UN Convention on Biological Diversity. This Convention governs the movement of GM products across national boundaries. All countries of Africa are building the necessary capacity in biotechnology to be able to apply the tool as appropriate in developing their own products or assessing the safety of GM products developed from outside.

Agencies like the [Rockefeller Foundation](#) [12], [USAID](#) [13] and [UNEP/GEF](#) [14] are helping African countries to develop the infrastructure needed to make use of biotechnology.

The necessary capacity must be built to ensure that African scientists living in an environment of chronic food deprivation can be their own spokespersons as to whether GM or non-GM technology is the way forward for their countries. This capacity cannot readily be built if African countries are constantly harassed and intimidated with trade [barriers](#) [15] if they should opt for GM technology. African biotech capacities should be built up to the point of being able to produce and maintain GM and non-GM product lines without cross-contamination to the satisfaction of trade partners.

Africa missed the [green revolution](#) [16], which was to a large extent input-intensive. GM technology minimises the use of inputs. Africa, with its rich biodiversity, cannot afford to miss out on the GM revolution.

---

**Source URL:**

[http://www.opendemocracy.net/ecology-africa\\_democracy/article\\_1515.jsp](http://www.opendemocracy.net/ecology-africa_democracy/article_1515.jsp)

**Links:**

- [1] <http://news.bbc.co.uk/2/hi/science/nature/1985543.stm> target=\_blank
- [2] <http://216.239.59.104/search?q=cache:U4aAAepb29oJ:www.unep.ch/biosafety/Uganda-State-of-developments.pdf+National+Biosafety+Committee+&hl=en&ie=UTF-8> target=\_blank
- [3] <http://www.iita.org/info/Agrobiotech.pdf> target=\_blank
- [4] <http://www.iita.org> target=\_blank
- [5] <http://www.cia.gov/cia/publications/factbook/geos/iv.html> target=\_blank
- [6] <http://www.cia.gov/cia/publications/factbook/geos/uv.html> target=\_blank
- [7] <http://www.cia.gov/cia/publications/factbook/geos/ni.html> target=\_blank
- [8] <http://www.sansor.org/features/biotechinsa1101.htm> target =\_blank
- [9] <http://www.gene.ch/genet/2001/Sep/msg00081.html> target=\_blank
- [10] <http://www.iita.org> target=\_blank
- [11] <http://www.biodiv.org/biosafety/default.aspx> target =\_blank
- [12] <http://www.rockfound.org/display.asp?Context=1&Collection=1&Preview=0&ARCurrent=1> target=\_blank
- [13] [http://www.usaid.gov/locations/sub-saharan\\_africa/](http://www.usaid.gov/locations/sub-saharan_africa/) target=\_blank
- [14] <http://www.unep.ch/biosafety/> target=\_blank
- [15] <http://www.iht.com/articles/93153.html> target=\_blank
- [16] [http://www.wikipedia.org/wiki/Green\\_revolution](http://www.wikipedia.org/wiki/Green_revolution) target=\_blank



Copyright © Walter Alhassan, . Published by openDemocracy Ltd. You may download and print extracts from this article for your own personal and non-commercial use only. If you teach at a university we ask that your department make a donation. Contact us if you wish to discuss republication. Some articles on this site are published under different terms.