

# The Status of Genetically Modified Organisms (GMO) in Cameroon-A mini Review

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## 1. Introduction

One of the main applications of modern Biotechnology that has evoked a lot of public debate is recombinant DNA technology that has led to the development of Genetically Modified (GM) animals, micro organisms and plants including food crops. Although all living organisms have undergone genetic modification in the course of their evolution, plants modified by means of Modern Biotechnology ie recombinant DNA technology merit particular attention, because new traits are deliberately introduced from one species to another in contrast to natural selection which is a slow random process. On the other hand classical plant breeding which also results in genetic modification is considered to be acceptable since it is not open to the transfer of genes between species.

Proponents of Modern Biotechnology hold that the creation of GM products is nothing more than mimicking nature, and consequently they see no reason why GM crops and foods should be rejected *apriori*. Opponents of GM technologies and products hold that deliberate genetic modification may create varieties that are harmful to human health and the environment. The United States, followed by countries like Brazil, Argentina, China and South Africa have embraced the GM technologies and authorized the cultivation and marketing of GM crops including maize, soy beans and cotton. The vast majority of European Union countries have expressed great reservations on GM crops, and many of them have put a moratorium on GM crops. African countries on the other hand have split into two opposing camps. Whilst countries like South Africa and Burkina Faso have

authorized the cultivation of GM crops, others like Malawi and Zambia have rejected GM food aid and the cultivation of GM crops.

Cameroon falls within the group of countries that is proceeding cautiously towards acceptance of GM technologies and their products. Recently Cameroon authorized the importation of GM maize for consumption. The remaining sectors of the present review will deal with of the current status of Modern Biotechnology including the use of GM techniques in Cameroonian agriculture

## 2. The situation of Cameroon in the use of biotechnology/molecular biosciences and GM in breeding

Most of the work on the application of Biotechnology and molecular biology techniques to agriculture has taken place in Cameroon government research institutes and state universities.

In the 1986 the precursor of the Cameroon government Institute, IRAD established a Biotechnology laboratory in Ekona with the help of USAID and used in vitro culture techniques to produce seedlings/plantlets for yams, and cocoyams. It later established a laboratory and experimental station at Njombe in collaboration with the French Government owned institute CIRAD for the production of banana plantlets. Simultaneously in 1986 with funds from the Cameroon Government and some international organizations (ISP, USAID, EU) we set up the Biotechnology Center ,Nkolbisson, at the University of Yaounde (now Yaounde 1). This center concentrated on the application of Recombinant DNA technology and hybridoma technology to the study of tropical diseases

including onchocerciasis, malaria and tuberculosis.

The Plant Section of the Biotechnology Center did some work on in vitro cultures of cocoyams, but did not carry out any genetic modifications. Dr. Nwaga and colleagues prepared Rhizobial and Mycorrhizal fertilizers for use in environmentally friendly farming. In early 2000 palm seedlings were produced by Dr Bell an alumnus of the BTC using regular plant breeding techniques at the IRAD station, Disangue, in the Littoral region of Cameroon.

In 2004 we set up the procedures for detection of GM food and feeds at the Biotechnology Unit, University of Buea, with funds from the Ministry of Environment, Nature Protection and Sustainable Development, which also accredited the Biotechnology Unit as a Reference Laboratory for GMO testing. However, we have done only one set of tests so far, since demands for tests are not high due to public reticence against the use of GM crops.

### **3. The Role of the Public Sector in providing oversight and supervision of the use of GM technologies.**

The Government of Cameroon has enacted the following legal instruments for the control of Biotechnology and its applications in the country:-

- Cameroon signed and ratified the RIO Convention on Biodiversity On the 19/10/1994
- Cameroon signed and ratified the Categena protocol On the 11/09/2003
- In 2003 Cameroon enacted Law No. 2003/006 to lay down regulations governing Biotechnology in Cameroon
- Cameroon is aware of the Nogoya protocol of 2010 for the equitable distribution of the fruits of biotechnology research, but has not yet ratified it.
- In 2012 Cameroon through an Order of the Prime Minister set up the National Bio-Safety Committee, which approved the for the first time the cultivation of Bt cotton . The company authorized to carry out this experimental planting was SODECOTON.

### **4a. The role of the private sector and non-governmental organizations**

The private sector and partnerships are not yet very active in the application of Modern Biotechnology, although as stated above the first authorization to cultivate a GM crop (GM cotton) was given to a para-public company.

The Cameroon Academy of Sciences, (CAS), which is officially registered as an NGO has been very active in sensitizing the public about Biotechnology as a whole, and GMOs in particular. In 2004 CAS organized a meeting of stakeholders on GMOs, which ended with a cautious endorsement of the use of GMOs subject to the application of the precautionary principle. In 2005 CAS hosted the African Science Academies Development Initiative (ASADI-2) conference (now known as Annual Meeting of African Science Academies, AMASA) which dealt with the important question of food security in Africa. In one of its recommendations, ASADI-2 called for the exploitation of the opportunities offered by GMO's in improving food security. A recent National forum on food security convened by CAS, however, did not make any direct mention of GMO's in its final recommendations to the Government. The thrust of the document was that other non-controversial methods could be employed to enhance food security in Cameroon.

### **4b. The role of extension of services**

To the extent that the application of Biotechnology in agriculture is limited to Classical Biotechnology, and does not yet include modern biotechnology (with capacity for the creation of GMOs), the extension services of the Ministry of Agriculture have concentrated on their traditional tasks, which include advising farmers on agricultural techniques, providing seeds, advising on pest control and post harvest losses etc . They need to be sensitized so that when the time comes they too can advise farmers on GMOs.

### **5. Current regulatory procedures**

- In Cameroon the main regulatory instrument is the Biotechnology law of 2003 cited above and
  - Decree n° 2007/737 of 31 May 2007 fixing modalities of application of law n° 2003/006 of 21 April 2003
- These documents address in some detail the major concerns about the handling of GMO's created by

the methods of modern biotechnology at all stages. The Government of Cameroon has also designated the Ministry of the Environment, Nature Protection and Sustainable Development to follow-up the implementation of the Biotechnology Law and issues concerned with Recombinant DNA, genetic modification, genetically modified animals, plants, micro organisms and viruses.

The Ministry of Scientific Research and Innovation (MIRESI), on the other hand, is in charge of overseeing national research policy and granting permission for organizations to conduct research of any kind in Cameroon. Government institutes that conduct medical and agricultural research are under the supervision of MINRESI

The Ministry of Agriculture and Rural Development oversees the agricultural sector, but its role in the control of GMO's is not clearly defined. Thus any application for the introduction of GMO's would need the clearance of all three ministries mentioned above, since the National Biotechnology Agency provided for by the Biotechnology Law of 2003 has not yet been set up.

### 6. The role of External Influences

Cameroon benefitted from the financial and technical support of the United Nations Environmental Fund (UNEF) in preparing the Biotechnology Law of 2003. The USAID facilitated a workshop on review, licensing and release of GMOs. The EU and Green Peace experts participated in various seminars and workshops highlighting the pros and cons of the use of GMOs. On the balance the highly publicized campaigns against the GMOs has slowed down progress towards adopting GMO's in Cameroon. Although the Biotechnology Law of 2003 the first authorization of a GM crop for experimental cultivation was given nine years later in 2012.

#### The way forward

The uses of GMOs present both opportunities and challenges that should be carefully considered before adopting or rejecting them in Africa. The adoption or rejection of GM crops, food and feeds should be based on scientific evidence that considers the quality of the products, not just the method of its production. Consequently African countries need to build capacity to conduct research, follow up the developments in Modern Biotechnology and to develop this technology for her own good. African countries should go beyond the ratification of treaties and adoption of laws to regulate the use of biotechnology and set up

National bodies to control these applications as is the case with advanced countries. The private sector, extension workers and NGOs should be sensitized and informed of the real potentials of biotechnology and its applications in health, agriculture and the environment. Development partners like the European Union can assist Africa in capacity building in this domain through strengthening African universities and research institutes to conduct research in agricultural biotechnology and in setting up regulatory agencies for monitoring and risk assessment of biotechnological applications in health, agriculture, environment and industry.

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Received: 25/11/2012

Accepted: 21/12/2012