

**TAINING AFRICA'S HERITAGE:
WAMBUGU, GATES FOUNDATION AND DUPONT'S GM SORGHUM
PROJECT**

A Briefing Paper

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BACKGROUND

On the 15 June 2006, the Executive Council (EC), a statutory body established by the Genetically Modified Organisms Act comprising six government departments (science and technology, agriculture, trade and industry, health, labour, and environmental affairs and tourism) turned down the Council for Scientific and Industrial Research's (CSIR) application to conduct laboratory and greenhouse experiments on genetically modified (GM) sorghum. This decision was taken against the backdrop that Africa is the centre of origin for sorghum where (including in South Africa) a large number of sexually compatible weeds, wild relatives strains and races of cultivated sorghum occur. In this regard, the EC cited concerns regarding the risks "pertaining to possible impact as a result of gene flow on bio-diversity".¹

The EC specifically requested that the CSIR characterise sorghum species in South Africa with particular regard to examining sexual compatibility, geographic distribution, climatic requirements and importance to bio-diversity, including nutritional characterisation of the different species of sorghum in S.A.

Derek Hanekom, the deputy science and technology minister said in August 2006 that the South African government might well reconsider its stance if the CSIR could demonstrate to the council that the sorghum is suitably contained.²

In September 2006, an application was re-submitted in the name of the CSIR Biosciences to conduct an assessment of GM sorghum that has been engineered to express a high-lysine storage protein from barley.³

This new application provides for the use of a level 3 containment facility. Upon examination by the ACB, not only does the application fail to address the various concerns raised by the EC, we have found it to be extremely sketchy and based on wholly inadequate, erroneous and unsubstantiated scientific information. It appears as if the aim of the application is to forge ahead with the GM sorghum experimentation at all costs, including the wholesale contamination of Africa's prized sorghum heritage.

¹ Hanekom, D. (2006) Cautiously sowing the seeds of change. 2 August. Business Day.

² <http://www.businessday.co.za/articles/topstories.aspx?ID=BD4A243447>

³ CSIR Biosciences. Application for Contained use of Genetically Modified Organisms (GMOs) in South Africa. Africa Bio-fortified Sorghum (ABS) Project. 17/3/1-CSIR-06/005. non-CBI

Wambugu, Bill and Melinda Gates Foundation, and Dupont' Role in the Development of GE Sorghum

Florence Wambugu, well known for the disastrous GM sweet potato project in Kenya, sits on the Science Board of the Grand Challenges in Global Health, the initiative created by the Bill and Melissa Gates Foundation (BMGF).⁴ Wambugu's African Harvest Foundation, in collaboration with DuPont Crop Genetics Research (Pioneer HiBred International) has been granted \$16.9 million by the BMGF to conduct research on Nutritionally-Enhanced Sorghum for the Arid and Semi-Arid Tropical Areas of Africa. This project has been given the moniker, the Africa Biofortified Sorghum (ABS) Project. Already under this grant, in partnership with the CSIR in South Africa, a genetically engineered new variety of sorghum containing increased levels of the amino acid lysine has been produced.⁵ The stated aim of the ABS Project is to "develop sorghum with improved food quality by enriching it for essential amino acids (part of the protein component of the diet), and later by increasing its content in essential vitamins (vitamin A and E)"⁶ and to do so by the application of genetic modification. The outcome of this project would be the development of a Super Sorghum.⁶

Still knocking on a closed door....

Despite successful litigation by South African based NGO, Biowatch South Africa regarding the public's right to information regarding GM regulation and risk assessment data, the public continues to be denied vital information to conduct a proper assessment, including such basic information as the molecular description and characterisation information. The ACB has not been able to make a full and complete assessment of the application since the bulk of the pertinent information is contained in Annexures, copies of which were denied to us. The engagement by the public with the applicant needs to be made on the basis of complete and accurate information being made to it and in accordance with the court order made in the Biowatch litigation.

Contamination of Africa's wild relatives of Sorghum

Nevertheless, what the applicants could not hide from public scrutiny is that they are unable to provide any references to scientific peer reviewed journals of the various safety

⁴ Grand Challenges in Global Health. Scientific Board. <http://www.grandchallengesgh.org/board.aspx?SecID=260>

⁵ Grand Challenges in Global Health. Nutrient-Rich Plants. <http://www.gcgh.org/subcontent.aspx?SecID=390>

⁶ SuperSorghum.org. The ABS Consortium. The Project. <http://supersorghum.org/project.htm>

claims they make regarding the impacts of their GM sorghum on the biosystem. Indeed, the applicants state that the opportunities for out-crossing to cultivated sorghum and to wild relatives of sorghum are **highly unlikely** (page 2) because of the level 3 containment facility that is proposed for the release.

The distinct impression gained from the application is that the impacts of the release of the transgene are negligible—a view not supported by the published literature.

During February 2005 Schmidt and Bothma reported on a crop-to-crop gene flow risk assessment study conducted in South Africa, with *Sorghum bicolor* subsp. *bicolor* to estimate the impact of transgenic sorghum in (South) Africa.⁷ This study was funded by the Agricultural Research Council at which Bothma is employed. The field trial was conducted at on the 4000-ha ARC research farm Roodeplaat close to Pretoria. A central sorghum field (30 x 30 m) was planted with male fertile donor plants and surrounded by eight arms planted with male sterile recipient plants at a distance of 13 to 158 m from the central field. Gene flow was found to be high within the first 40m and whilst low beyond this point, regardless gene flow was detected even at the 158 m point.⁸

In South Africa we have the presence of fully fertile crop wild relatives and the weedy relative johnsongrass [*S. halepense* (L.) Pers.], which may form hybrids with crop sorghum. Johnson grass is classified as one of the world's most noxious weeds.

The authors concluded that the fact that gene flow takes place and the presence of these weedy and wild relatives provides strong evidence that introgression of genetically modified- (GM)-sorghum into crops and crop wild relatives will take place once GM sorghum into crops and crop wild relatives will take place once GM-sorghum is deployed.

CONCLUSION

The South African Sorghum gene flow study raised very serious concerns of introgression of GE-sorghum into wild relatives. The South African government is obliged in terms of its national and international obligations under pertinent multilateral environmental agreements such as the Cartagena Protocol on Biosafety, to protect biodiversity, refuse the application. Some activities just cannot be permitted and should

⁸ Schmidt, M. & Bothma, G. (2006) Risk Assessment for Transgenic Sorghum in Africa: Crop-to-Crop Gene Flow in *Sorghum bicolor* (L.) Moench. *Crop Sci.* 46:790-798

be regarded as NO GO options, such as the release of GM sorghum into greenhouses. The risks posed by GM sorghum to sorghum wild and weedy relatives cannot be tolerated at all and the granting of a permit will be tantamount to a licence to taint Africa's heritage.

Ultimately, Wambugu et al's ABS project is being developed for commercial release and will have to undergo field trials. If the original objection of the EC made on 15 June 2006 was based on concerns regarding containment and possible adverse effects on local varieties, any further development or re-consideration of the application must be forestalled by this very concern itself. Containment now in a level 3 containment facility will not negate these concerns for field trials and the risks to local varieties will remain.
