28 February 2011

The African Centre for Biosafety submission on Socio-economic impacts - Article 26 of the Cartagena Protocol on Biosafety

Attention: Ahmed Djoghlaf

Please receive information on three cases of socio-economic impacts of GM crops in South Africa. We hope that these will enrich the forthcoming discussions on this matter.

- **Commercial Release of Tuber-moth resistant potato (SpuntaG2) Denied**
  Attached: executive summaries of:
  - Potential economic benefits of a genetically modified (GM) tubermoth-resistant potato variety in South Africa: an ex-ante socio-economic evaluation for commercial producers
  - Smallholder potato production activities in South Africa: a socio-economic and technical assessment of five cases in three provinces

- **Commercial release of GM wine yeast rejected and trial release of fungal resistant grape cultivars approved**

- **The Failure of the Massive Food Production Project**
  Attached: Threats to the Food Security and Food Sovereignty in the Eastern Cape: Impacts of the Massive Food Production Programme (MFPP), GMOs and cash crops in four villages in the Amathole District Municipality

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Commercial Release of Tuber-moth resistant potato (SpuntaG2) Denied

South Africa produces over 1 million metric tons of seed and table potatoes each year. Potatoes are grown in all 9 provinces of South Africa, which encompasses many different climatic regions. This enables a continuous supply of fresh potatoes throughout the year. Around 57 000 ha are planted to potatoes in SA –fetching a gross income of 2.6 billion ZAR per annum and accounting for 3.7% of the total income from agricultural production.

In August 2008 the Agriculture Research Council (ARC) made application in terms of the South African Genetically Modified Organisms Act (Act 15 of 1997), for a general release permit in respect of potatoes that have been genetically modified to confer resistance to the tuber moth. The ARC had been involved in field trials in South Africa since 2004.

The African Centre for Biosafety engaged in the decision making process from 2006, carrying out research, gaining independent analysis of safety dossiers, consulting retailers and consumers and objecting to two field trials as well as the application for commercial release. These objections, as well as a publication entitled 'Hot Potato GM potatoes in South Africa-a critical analysis', can be found on the ACB website at http://www.biosafetyafrica.org.za/index.php/Potato/menu-id-100023.html

As a result of our investigations we came to the conclusion that the tuber-moth resistant potato was not developed in answer to pressing problems faced by South African farmers, industry or consumers. We voiced our concern that a public research institution was spending money on research that was of little use to South African farmers.

The socio-economic studies commissioned by the ARC clearly showed that neither commercial nor small-holder farmers would benefit from the technology (executive summaries of these studies are attached). In the case of commercial farmers, it was found that they were not experiencing major problems with the tubermoth and that the pest was controlled within a spraying regime designed to control more problematic pests, such as leafminer. In terms of small-scale farmers, the majority of these are located in a province where the tubermoth did not present a problem due to the climate.

In addition, the South African potato industry, represented by Potatoes South Africa, were not supportive of the project, stating that the tubermoth-resistant potato would not benefit farmers in any way but could negatively impact on market acceptance of their product.

Consumers that were consulted during our research were indeed not keen to consume GM potatoes and in the absence of any mandatory labelling laws in South Africa to afford them choice, voiced their opposition to the Spunta potato.

In October 2009 the Executive Council (EC) announced their rejection of the Agricultural Research Council's application for the general release of GM potatoes resistant to

tubermoth. The EC sited both biosafety and socio-economic concerns in their final decision, listed below:

According to minutes on the Department of Agriculture's Website, the EC denied the General Release of SpuntaG2 on the grounds that[1]:

- The Socio-economic impact study indicates that the commercial farmers do not anticipate this event to present a significant lowering of inputs as the same spraying regime is required to manage other pests which this event does not target
- Small scale farmers identified more pressing challenges relating to production such as lack of water, seed availability, fertilizers, etc
- No evidence is presented that other pest management strategies against PTM have been considered or compared with the release of GM-Spunta
- The applicant presents several arguments of the value of this event for small scale farmers; however, entry of these GM potatoes into the formal trade remains a particular concern. Segregation of GM from non-GM potatoes would require an Identity Preservation System which is currently not in place.
- The capacity of small scale farmers to implement risk management measures could potentially be onerous
- Considering the biology of potatoes, vegetative material (tubers) may be used for propagation, which may complicate risk management
- PTM is not a major pest for stored potatoes but rather rodents
- The Western Blot of transformed potatoes was limited to protein extracts from leaves and there is an assumption that one band represents the Cry1 la1 protein. No data is presented of expression levels in tubers
- Concerns on the toxicity testing by use of an animal feeding study was conducted with cooked (boiled) potato although raw freeze dried potato would have been better suited
- No evidence is presented that known allergens of potato, namely Sol t1 (patatin) are not over expressed in the GM potato
- No actual toxicity data of the cry-protein on the target organism PTM is presented

This decision is currently on appeal.

[1] minutes of the meeting of the executive council under GMO Act, 1997 held on 21 July 2009 www.nda.agric.za accessed 25 February 2011

Commercial release of GM wine yeast rejected and trial release of fungal resistant grape cultivars approved

As of 2006 wine was South Africa's single most valuable agricultural export and the country was the world's 9th largest exporter of wine. The export value of the product is starting to exceed that of local wine sales, illustrating the increasingly important role that wine plays in maintaining the country's balance of payments. In addition, wine tourism market is valued at about three times the value of wine exports, with about 28 000 people being employed in the industry. There have been two applications in South Africa for GM wines – one for malolactic yeast and another for fungal resistant grapes.

In December 2006 the Cape Wine Makers Guild prepared a media release unequivocally rejecting the "commercial use of GM organisms in any South African wine", citing potential damage to their hard-won environmentally sound image and fears of market rejection[2].

In September 2007 the South African government announced their rejection of Warren-Chem's application for the general release of GM malolactic yeast, used in the process of wine making. The major basis for this decision was both resistance from the local wine industry as well as the very high possibility of the rejection of GM wines by South Africa's major exporting partners in the European Union.[3]

Despite their decision to reject the release of malolactic yeast for wine in 2007 based on the possibility of consumer rejection, the Department of Agriculture announced their approval of field trials of GM fungal resistant grape cultivars in September 2009[4]. The application was submitted by the Department of Viticulture and Oenology in the Institute for Wine Biotechnology (IWB) at the University of Stellenbosch (US) to evaluate long-term stability and expression of introduced genes in the grapevine cultivars (*Vitis vinifera*) Sultana and Chardonnay, designated as TSGn (Transgenic Sultana) and TCGn (Transgenic Chardonnay).The focus of the grapevine biotechnology programme at the US was fungal disease resistance.

When this application was submitted in 2006, a random survey conducted by the NGO Biowatch South Africa found that almost 75% of wine estates were unaware of the application to grow GM grapes and of those who knew about the applications, half were opposed, primarily relating to economic considerations. The objections to these field trials by two NGO's, the African Centre for Biosafety and Biowatch South Africa can be found at: http://www.biosafetyafrica.org.za/images/stories/dmdocuments/Objections_GM_Wine_TSGn_TCGn_10_10_06.pdf and http://www.biowatch.org.za/docs/grapevine_objection.pdf

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[2] http://www.wosa.co.za/sa/news_article.php?id=1080

[3] Minutes of the meeting of the executive council under GMO Act, 1997 held on 18 September 2007 www.nda.agric.za accessed 25 February 2011

4 Minutes of the meeting of the Executive Council under GMO Act 1997 held on 12 2009 www.nda.agric.za accessed 25 February 2011

The Failure of the Massive Food Production Project

In 2002 the Massive Food Production Programme (MFPP) was introduced into one of South Africa's poorest provinces, the Eastern Cape under the Provincial Growth and Development Programme. This project takes a "Green Revolution" approach to "unlock the agricultural potential in underdeveloped areas" and to see a "critical mass of rural households [become] self-sufficient in carbohydrates and proteins". This programme is a public-private partnership between government, agribusiness and local contractors. [5]

Genetically modified maize, soya and cotton, along with their chemical counterparts, form the core of this programme. In the first year these inputs are fully subsidised, in the second year a support subsidy of 75% is given and by the fifth year, farmers are expected to be on their own feet. This extremely top-down result has not brought prosperity to rural folk in the Eastern Cape and has been a poor substitution for urgent development needed in the area based on proper land reform, implementation of infrastructure, access to markets and appropriate technology and training.

The attached study, **Threats to the Food Security and Food Sovereignty in the Eastern Cape: Impacts of the Massive Food Production Programme (MFPP), GMOs and cash crops in four villages in the Amathole District Municipality,** looks at the failings of the Massive Food Production Programme in the Eastern Cape of South Africa, concluding that instead of support for industrial agriculture and genetically modified seed, the following would be more appropriate:

- Access to land outside the communal areas that will transform the dominant social and property relations;
- An agricultural policy with a vision and an approach to small-scale agriculture aimed at food security and food sovereignty;
- Water reform and provision of infrastructure;
- Marketing and financial support from the state for (and building on) people's own initiatives, incorporating new technologies that are being advanced in organic and agro-ecological farming elsewhere, rather than promote agri-business technologies.

[5] GRAIN October 2008 Lessons from a Green Revolution in South Africa http://docs.google.com/viewer?a=v&q=cache:vDQ1VFmxAt4J:www.grain.org/seedling_files/seed-08-10-5.pdf+lessons+from+a+green+revolution+in+south+africa&hl=en&pid=bl&srcid=ADGEESiIq3EKWI1q2iXi43pQtMFUtVQt-_vhtkwLtUSpehJ8SF1rdNTgNbty1eIRkfG2-LjYK7va4zAzw-k53ehiZLzemyUU2QzfqiRjwNUGR61WFxRE0kruuTqnTP8I3IXw-8MLgwEZ&sig=AHIEtbQUQNdnqUDKpFA66FL4EcbR2zxj4w accessed 25 February 2011