Executive Summary

In 2001, the South African Agricultural Research Council (ARC) began conducting field trials with potatoes genetically modified to contain a Bt gene Cry1Ia1 (formerly BtCryV). This novel gene is intended to protect the plants and potato tubers from infestations of the Potato tuber moth (*Phthorimaea operculella*).

This research is not home grown or 'truly South African'. The ARC is part of an international consortium, which includes the Michigan State University (MSU), the International Potato Centre in Peru and gene giant, Syngenta. Syngenta has quietly been cornering the GM food potato market; lodging a stream of patents in the USA and other countries for a form of terminator (GURTS) technology **that prevents potatoes from sprouting unless they are treated with chemicals supplied by the patent owner.**[i]

The project is funded by the United States Agency for International Development (USAID), well known for its projects to promote agricultural biotechnology in developing countries.[ii] Ironically, GM potatoes were abruptly withdrawn from stores in the USA due to consumer distrust.

Egypt was the original partner of choice for the project, however, after eight years of research and ostensibly at the brink of commercialisation, the Egyptian government cancelled the project because it feared that the GM potato would jeopardise its export market to the European Union. A parallel GM potato project initiated in Indonesia also did not materialise and was cancelled by the Indonesian government.

South Africa became an obvious next choice, with its lax GM regulations and pro-GM institutional framework. To date, the GM project in South Africa has enjoyed six years of field trials involving the testing of a range of GM lines primarily to assess the efficacy of the Bt gene in South Africa, with some testing of ecological impacts and gene flow.

Touted as a tool to assist small-scale and emergent black farmers, the GM potatoes are said to be only 1 or 2 years away from commercialisation.

The African Centre for Biosafety (ACB) and other groups in South Africa have vociferously opposed the field trials on Biosafety and socio-economic grounds.[iii] We have pointed out that potato farmers integrate diverse and adaptable strategies to respond to climate change, disease and pest challenges. Emergent farmers often do not have access to the finance and infrastructure for this, and many cannot even access certified seed potatoes. The Bt potato is therefore unlikely to reach small-scale farmers, will cost even more than conventional seed potatoes and at best provide a 'cure' for just one of the many problems these farmers face.

The biosafety of the Bt potato is a major concern. Potatoes grow easily from tuber scraps, and can be quickly spread. Once in the environment toxins produced by the Bt genes spread in the environment adversely impacting a range of insect and soil organisms, with knock-on consequences for ecological systems. Bt crops also increase pesticide resistance in target insects potentially creating unmanageable 'super pests'. The Bt Cry1Ia1 gene hasn't been used previously in commercially released crops, so the potential health impacts of this construct are unknown. However, multiple health problems have been documented in connection with other crops modified with Bt genes including immune reactions, impacts on organ weight and function, and allergic reactions.[iv] Horizontal gene transfer from GM plants to soil and stomach bacteria is of particular concern. Genes producing Bt toxin may transfer creating unwanted biological pesticide factories, but also antibiotic resistant genes could be transferred creating superbugs that cannot be treated. This GM potato includes a gene resistant to the antibiotic kanamycin, which is important in South Africa for treating drug-resistant TB.[v]

Despite GM maize, cotton and soya being commercially grown in South Africa, due to increased consumer awareness and public debate, it is highly unlikely that GM potatoes will find a way onto the South African market. One of the largest food retailers, Pick n Pay, issued a surprise media release in 2007 stating that they would not stock the GM potato until the decision-making body on GMOs could provide conclusive scientific evidence on its biosafety. **McCains, which dominates the food processing industry, has indicated that they will not use GM potatoes in South Africa.**

Ninety percent of South Africa's potato exports totalling 14 095 252 kilograms are exported within Southern Africa. Zambia and Angola are the main importers of South Africa's seed and processed potatoes. Angola has no biosafety legislation in place. Zambia has a strong anti-GM foods stance, and has already tackled the USA head-on in rejecting the USA's food aid GM maize during the 2001 food crisis. Zimbabwe, Malawi and Mozambique only accepted the GM maize on condition that it was milled prior to being distributed to make sure it could not be planted.[vi] **In this context it is likely that South Africa's main African trading partners will slam the doors on a brand new GM food.**

It is easy to see that the commercialisation of the Bt potato in South Africa will not benefit Africans as widespread rejection is anticipated. Rather the benefits will accrue to the researchers involved in the project, many of them from the US, and the owners of the key GM gene (Bt Cry1Ia1) in this potato, Syngenta. Echoing past colonial practice, African soil is once again being exploited for open field trials with a risky crop that puts African biodiversity and health at risk.

The United Nations General Assembly has declared 2008 to be the International Year of the Potato. It is an opportune moment for South Africa to reject and put a stop to the Bt potato project. Scarce public resources should rather be invested in a sustainable future, by tackling the socio-economic barriers faced

by emergent black farmers and investing in research and development that improves food sovereignty using traditional food crops and ecological farming methods.

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[i] International Institute for Environment and Development (IIED). 12 January 2007. **'Insulted' Andean farmers pick GM potato fight with multinational Syngenta.** http://www.iied.org/mediaroom/releases/070110syngenta.html (accessed 30th January 2008).

[ii] GRAIN. 2005. **USAID: Making the world hungry for GM crops.** http://www.grain.org/briefings/?id=191

[iii] Ashton, G., Baker, G., Mayet, M., Pschorn-Strauss, E., Stafford, W. 2004. **Objections to application for a permit for additional trials with insect resistant Bt Cry V Genetically Modified Potatoes (*Solanum tuberosum* L. Variety 'Spunta' G2 and G3), as applied for by Dr G. Thompson, Director Plant Protection and Biotechnology, South African Agricultural Research Council, dated 24 May 2004**. African Centre for Biosafety. http://www.biosafetyafrica.net/portal/DOCS/objection_bt_potato_g2_g3.pdf and African Centre for Biosafety. (2006). **Additional comments and objections to continued trials of GM potatoes**. http://www.biosafetyafrica.net/portal/DOCS/GMPotatoesObjection.pdf

[iv] Smith J.M. 2007. **Genetic roulette. The documented health risks of genetically engineered foods**. Fairfield: Yes! Books.

[v] Bamber, Dr S. 26 January 2008. Centre for the Aids Programme of Research in SA (Caprisa) UKZN. Personal communication

[vi] Moola, S and Munnik, V. 2007. **GMOs in Africa: food and agriculture**. ACB Biosafety, Biopiracy and Biopolitics Series 4.