



## **The New Green Revolution in Africa: *Trojan Horse for GMOs?***

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## INTRODUCTION

After more than 10 years of genetically modified (GM) crop plants being grown in the world, only South Africa out of 53 countries on the African continent have commercial plantings of genetically modified organisms (GMOs). 9 countries, Burkina Faso; Egypt; Kenya; Morocco; Senegal; South Africa; Tanzania; Zambia; Zimbabwe have reported field trials of GMOs, while Uganda recently announced that field trials involving GM sweet bananas would commence during May 2007. <sup>1</sup> 20 African countries (Benin; Burkina Faso; Cameroon; Egypt; Ghana; Kenya; Malawi; Mali; Mauritius; Morocco; Namibia; Niger; Nigeria; Senegal; South Africa; Tanzania; Tunisia; Uganda; Zambia; Zimbabwe) are engaged in GMO research and development. At least 24 countries (Algeria; Benin; Botswana; Burkina Faso; Cameroon; Egypt; Ethiopia; Ghana; Kenya; Madagascar; Malawi; Mali; Mauritius; Morocco; Namibia; Niger; Nigeria; Senegal; South Africa; Tanzania; Tunisia; Uganda; Zambia; Zimbabwe) have the capacity and institutions to conduct research and development into agricultural biotechnology.

In the last five years, a multitude of genetic engineering and biosafety projects have been initiated in Africa, with the aim of introducing GMOs into Africa's agricultural systems. These include sponsorships offered by the US government to train African scientists in genetic engineering in the US<sup>2</sup>, biosafety projects funded by the United States Agency for International Development (USAID)<sup>3</sup> and the World Bank<sup>4</sup>, transgenic research involving African indigenous food crops funded by foreign governments<sup>5</sup>, public-private partnerships set up to disseminate agricultural technologies in Africa<sup>6</sup> and political regional initiatives to harmonize legal and institutional frameworks in order to expedite the introduction of GM based agriculture.<sup>7</sup>

Contemporaneously, there has been unprecedented interest by a large and diverse number of role players, involved in uplifting Africa out of its poverty, with the objective of integrating it into the world market economy. These interests have converged on a common solution: the 'New Green Revolution for Africa.' Central to the new Green Revolution for Africa push is US based philanthropic organization, the Rockefeller Foundation. The Rockefeller Foundation has a history of supporting a range of projects in Africa to introduce GMOs into the fields and agricultural systems of Africa,<sup>8</sup> and backing research that supports the suitability and applicability of GM cotton in the Makhathini Flats in South Africa,<sup>9</sup> where small- holder black farmers grow GM cotton commercially.

However, the Rockefeller Foundation is not alone in having a double agenda in Africa, as there are a number of players who are involved in the New Green Revolution for Africa project, that are also intimately connected with the GM industry.

Monsanto, who has a strong foothold in South Africa's seed industry, both GM and hybrid, has conceived of a ingenious smallholders' programme known as the 'Seeds of Hope

Campaign’, which first introduces a green revolution type package to small scale poor farmers, followed by GM seeds.<sup>10</sup>

The question has to be asked: will the new Green Revolution for Africa imitate Monsanto’s Seeds of Hope Campaign—by first introducing a Green Revolution type package as a dry run and precursor to the introduction of GMOs in Africa? Will the New Green Revolution provide the impetus to finally break South Africa’s isolation as the only country in Africa that allows the growing of GM seeds? If so, this will have far-reaching consequences for Africa, as Monsanto’s Bt cotton project in the Makhathini Flats in South Africa has illustrated.

## **The New Green Revolution for Africa**

The term “green revolution” was coined in 1968 by then Director of the United States Agency for International Development (USAID) to describe the so called ‘success’ in India and Southeast Asia of an agricultural model that increased crop production in wheat, maize and rice.<sup>11</sup> The essential features of that model comprised of a technology package involving the use of external inputs such as inorganic fertilizers, herbicides, pesticides, laboratory developed hybrid seeds, mechanisation and extensive irrigation projects. The Rockefeller Foundation played a crucial role in promoting this technology package, which also formed the basis of agriculture development aid and assistance at that time. Despite the devastating ecological, social and economic consequences that it brought in its wake,<sup>12</sup> the Asian Green Revolution is widely celebrated by its promoters as having brought sufficient and affordable food to the world’s poor.

Africa’s new Green Revolution is the brainchild of Gordon Conway, a world-renowned agricultural ecologist and former president of the Rockefeller Foundation.<sup>13</sup> There is a veritable smorgasbord of players involved in exporting and promoting various versions of Conway’s Green Revolution, including for example, political regional actors such as the New Partnership for Africa’s Development (NEPAD).<sup>14</sup>

The Rockefeller Foundation prescribes a fundamental transformation of Africa’s agricultural economy, premised on a brutal departure from the use of traditional seeds and local knowledge and exchange systems.<sup>15</sup> Drawing heavily on Conway, the Foundation recommends the application of modern laboratory made seeds and inorganic fertilizers as being key to Africa’s agricultural development and food security. These prescriptions are principally based on the ‘old’ Asian model of adopting high-yielding agricultural techniques. However, the Rockefeller Foundation also promotes the production of crops that are drought tolerant and resistant to pests and diseases, and which provides greater nutritional value.<sup>16</sup>

The Foundation also supports the use of GM seeds, both as a means to increasing crop yields and representing a ‘greener’ revolution that is less dependent on chemical inputs. The promotion of GM seeds and crops is thus an integral part of the new Green Revolution project. The emphasis of Africa’s Green Revolution on avoiding the shortcomings wrought by the use of agricultural chemicals by the Asian Green Revolution makes the role of GM seeds crucial ingredient in the project.

## **ALLIANCE FOR A GREEN REVOLUTION IN AFRICA**

On the 12 September 2006, the Rockefeller and the Bill & Melinda Gates Foundations launched a new partnership which they named *Alliance for a Green Revolution in Africa* (AGRA). AGRA has committed an initial \$150 million to enable the transfer of a technology package featuring improved hybrid seeds, inorganic fertilizers, water management and extension services to Africa. AGRA's goal is to develop 100 new varieties in 5 years focusing on at least 10 different staple crops, including maize, cassava, sorghum, and millet. Although AGRA does not on the face of it promote the use of GM technologies, 70 organisations from 12 African countries see AGRA as shifting African agriculture to a system dependent on expensive, harmful chemicals, monocultures of hybrid seeds, and ultimately GMOs.<sup>17</sup> These groups argue that the Green Revolution under the guise of solving hunger in Africa is nothing more than a push for parasitic corporate-controlled chemical system of agriculture that will feed on Africa's rich biodiversity.

It has not gone unnoticed that AGRA falls under the direct supervision of the Global Development Program, whose senior programme officer is Dr. Robert Horsch, who worked for Monsanto for 25 years before he joined the Gates Foundation. Horsch was part of the scientific team in the company that developed Monsanto's *YieldGard*, *BollGard* and *RoundUp Ready* technologies.<sup>18</sup> Horsch's task at the Gates Foundation is to apply biotechnology toward improving crop yields in regions including sub-Saharan Africa.<sup>19</sup> Lutz Goedde another senior program officer of the Global Development Program, is also a recruit from the biotech industry as he used to head Alta Genetics, the world's largest privately owned cattle genetics improvement and artificial insemination Company, worth US\$100 million.<sup>20</sup>

AGRA's programmes are administered through the 'Programs for a Green Revolution in Africa' (ProGRA), which has an initial annual grant flow of around \$30 million for selected countries in East, Southern and West Africa. The officers of AGRA and ProGRA will initially be key senior staff from the Rockefeller Foundation where they will be based in Nairobi, Kenya.

The first major initiative of ProGRA is the Program for Africa's Seed System (PASS), intended to operate in 20 African countries. PASS is embodied by five projects costing \$150 million over five years, (\$ 50 million coming from the Rockefeller Foundation's contribution and the \$100 million from the Gates Foundation). PASS will focus primarily on improvement and distribution of crop varieties; training of a new generation of plant breeders; seed distribution through seed companies, public community seed systems and public extension; and provision of credit and training for small 'middle men' agro-dealers for distribution of seeds, chemicals and fertilizers (The Agro-Dealer Development Program).

## **MONSANTO'S SEED OF HOPE CAMPAIGN<sup>21</sup>**

The aims of the new Green Revolution for Africa are eerily similar to Monsanto's *Seeds of hope campaign*. During the 1990s, Monsanto introduced 'Combi-Packs'- boxes of materials designed specifically for smallholder farmers, having access to anything from 1/4-5 hectares of land in the Eastern Cape, one of South Africa's poorest provinces. The boxes contain a package of hybrid maize seed, some fertilizer, some herbicide, and pictogram instructions for

illiterate users.<sup>22</sup> The Combi Pack claims to increase the yield of maize crops and to be less labour intensive than conventional farming. These 'productivity gains' are said to give farmers extra time and, in some cases, extra income for other entrepreneurial activities.<sup>23</sup>

Another important component of the Seed of Hope Campaign is the promotion of 'no or low till farming.' This is meant to be a minimally invasive conservation farming technique, in that farmers do not plow or till the land. Instead, they cut small furrows for the seeds.<sup>24</sup> This farming practice entails negligible soil disturbance, maintenance of a permanent vegetative soil cover, direct sowing, and sound crop rotation.<sup>25</sup> It is particularly beneficial for smallholder farmers, because there is no need to use a tractor, a major cost saving.<sup>26</sup> However, using this technique requires the increased use of herbicides, since weeds are not removed by tilling the land, and Monsanto is therefore a fervent supporter of this technique. This is so despite several studies have shown that Monsanto's Roundup herbicide is a threat to human health; not only a hormone-disruptor, but is also associated with birth defects in humans.<sup>27</sup>

In most areas, these packs were sold through private agents. Following on from this, Monsanto introduced its patented GM maize varieties, Roundup Ready (herbicide tolerant) and Bt (insect resistant) maize seeds.<sup>28</sup> Monsanto was also extremely astute in ensuring that massive public funds were allocated to subsidise the purchase of expensive hybrid and GM seeds, herbicides and fertilizers.

It is important to note that the price for a Combi-Pack with conventional seed is R232, the Roundup Ready GM maize seed is R343, and the GM Bt variety, R328, whereas the estimated income of farmers in the Eastern Cape areas is often no more than R1000 a month.<sup>29</sup> Clearly, GM technology is not affordable by resource poor farmers, and the withdrawal of substantial state support will leave these farmers out in the cold.

#### **GM COTTON IN THE MAKHATHINI FLATS: EXACERBATING A FLAWED DEVELOPMENT PARADIGM**

Poor black farmers who have been growing GM Cotton in the Makhathini Flats in South Africa since the late 1990s have become pawns in the 'numbers games' as to whether or not *Bt* cotton results in increases in yields and savings on pesticide use. The GM machinery, ably assisted by the South African government has peddled the experience of these farmers as a success story, worthy of imitation on the continent. However, beneath the hype lies a tragic tale of oppression and vulnerability, which the introduction of *Bt* cotton has further exacerbated.<sup>30 31</sup>

The Makhathini farmers have historically been locked into a system of cotton growing due to a range of economic, political and social forces that resulted in chronic indebtedness.<sup>32</sup> Despite cotton growing sliding into sharp decline in the last decade in South Africa,<sup>33</sup> the government and a range of corporate agribusiness actors particularly Monsanto, lured the Makhathini farmers into adopting *Bt* cotton. This they did by *inter alia*, providing free production packages, including *Bt* cottonseeds, duly subsidized with public funds. Research indicates that to date, the South African government has subsidised the Monsanto driven *Bt* cotton 'success' story with a staggering sum of R30 million from state coffers.<sup>34</sup> Nevertheless, since the arrival of *Bt* cotton in the Makhathini Flats in 1998 and until 2004 the cumulative arrears of farmers to the Land Bank have amounted to a whopping R22,748,147.55!<sup>35</sup> Many reasons may be proffered to explain away the abject failure of the GM project in the Makhathini Flats,<sup>36</sup> however, the central critique must concern itself with the inappropriateness of a development paradigm that seeks to introduce technological solutions to deeply rooted systemic socio-economic problems. Attempts at replicating the Makhathini Flats experience in the rest of Africa, which itself has been caught up in an endless cycle of debt, will undoubtedly yield similar results.

## **CONCLUSION**

Sub-Saharan Africa represents an extremely lucrative market for seed companies. The development interventions by AGRA appear on the face of it, to benevolent. However, not

only will AGRA facilitate the change to a market based agricultural sector in Africa replacing traditional agriculture, but it will also go a long way towards laying the groundwork for the entry of private fertilizer and agrochemical companies and seed companies, and more particularly, GM seed companies.

Hybrid and GM technologies have been designed for large-scale intensive monoculture production, while most arable land in various African countries is generally unsuitable for this. Using new technologies such as hybrid and GM seeds in African regions may not dramatically improve farmers' yield compared to that received from farming with traditional, open pollinated varieties. In addition, in comparison to using open pollinated seeds, which are often saved by the farmers themselves, hybrid and GM seeds are expensive inputs, which need to be bought every planting season.

Furthermore, with farmers changing to hybrid and ultimately GM seeds, the availability of saved seeds declines, leaving the farmers no opportunity to go back to their conventional way of farming. A scarcity of open pollinated seeds among smallholder farmers will have catastrophic consequences on agricultural biodiversity in Africa.

As the Makhathini GM cotton project shows, technological fixes such as improved seeds, pesticides, herbicides, inorganic artificial and GM crops merely serve as 'stop-gap' measures that deflect attention away from the structural problems facing small scale farmers. The Green and Gene revolutions are nothing more than red herrings to avoid sustainable development interventions that address historical inequalities and give farmers real choices within an ecologically sustainable framework built on people centred and traditional and cultural value systems.

## ENDNOTES

<sup>1</sup> Uganda: Researchers Put GM Sweet Banana on Trial in Uganda This Month

Esther Nakkazi Nairobi The East African (Nairobi), 15 May 2007 <http://allafrica.com/stories/200705150771.html>

<sup>2</sup> US Secretary for Agriculture Ann Veneman, Keynote Address at the 7th Annual African Trade and Investment Symposium, 16 Sept 2004 (<http://japan.usembassy.gov/e/p/tp-20040921-03.html>)

<sup>3</sup> See for example, Mariam Mayet *Africa the New Frontier for the GM Industry*, July 2004

<http://www.gmwatch.org/archive2.asp?arcid=4023>; and GRAIN 'USAID: Making the World Hungry for GM Crops' (Elsies River: Fingerprint Co-op, April 2005)

<sup>4</sup> *Groups in Africa, Latin America condemn World Bank Biosafety Projects* GRAIN, African Centre for Biosafety, ETC Group, 26 June 2006

<sup>5</sup> For instance, BIO-EARN, which is a programme designed to build policy and research capacity in agricultural biotechnology in Kenya, Uganda, Ethiopia and Tanzania, funded by the Swedish Development Agency (SIDA) with policy development funded by IBS/International Service for National Agricultural Research (ISNAR). BIO-EARN (<http://www.bio-earn.org/biotech/biotech.htm>)

<sup>6</sup> The African Agricultural Technology Foundation (AATF) is a public-private partnership based in Kenya, with the purpose of developing agricultural biotechnology, including GM technology, in Africa. AATF received start-up funds from USAID, the Rockefeller Foundation and the United Kingdom's Department for International Development (DFID), as well as Monsanto, Dupont, Dow and Syngenta GM Watch, 26 June 2004

(<http://www.gmwatch.org/p1temp.asp?pid=37&page=1>). In 2004 the AATF signed a memorandum of understanding with the United States Department of Agriculture (USDA) to share and disseminate agricultural technologies.<sup>6</sup> Focal areas include development of insect resistant maize, pro-vitamin A enhancement in maize and rice, and cowpea production. East African Standard 17 June 2004 (<http://allafrica.com/stories/200406160970.html>)

<sup>7</sup> "Civil Society Rejects Ecowas Action Plan For Biotechnology, Biosafety" Resolution adopted at the end of one -day conference on GMOs and ECOWAS held in Accra, Ghana on March 29, 2007.

<sup>8</sup> The Rockefeller Foundation is *inter alia*, backing a GM sorghum project that has not been given approval in South Africa, it funded a failed GM sweet potato project in Kenya and is a staunch supporter of the African Agriculture Technology Foundation (AATF), whose function it is to expedite GM technology transfer in Africa, see note 6.

<sup>9</sup> Harald Witt, Cotton: "Still the mother of poverty?" 2007, Centre for Civil Society, UKZN (forthcoming).

<sup>10</sup> Enterprise Africa, 'Policy comment no. 6: Seeds of Hope: Agricultural Technologies and Poverty Alleviation in Rural South Africa,' [http://www.enterprise-africa.org/Publications/pubID.2774/pub\\_detail.asp](http://www.enterprise-africa.org/Publications/pubID.2774/pub_detail.asp) (8 September

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2006).

<sup>11</sup> [http://en.wikipedia.org/wiki/Green\\_Revolution](http://en.wikipedia.org/wiki/Green_Revolution)

<sup>12</sup> For a insightful critique of the Green Revolution see Vandana Shiva 'Science and Politics in the Green Revolution' *The Violence of the Green Revolution* London: Zed Books, 1991.

<sup>13</sup> Gordan Conway, *Doubly Green Revolution: Food for All in 21<sup>st</sup> Century*. See also, Neth Daño *The New Green Revolution in Africa: Motives, Players and Dynamics*, African Centre for Biosafety and Third World Network 2007 (forthcoming).

<sup>14</sup> The important elements of the new Green Revolution in Africa can be gleaned from the details of NEPAD's CAADP: Agricultural development using improved technologies and relying on heavy infrastructures, and market-oriented agricultural production are explicitly stated in the documents although the promotion of modern agricultural inputs are dealt with in a much more subtle manner.

<sup>15</sup> Lisa Harris, "Rockefeller Foundation president says biotech is key to easing hunger", Cornell Chronicle, 11 October 2001 [www.news.cornell.edu/Chronicle/01/10.11.01/Conway\\_on\\_biotech.html](http://www.news.cornell.edu/Chronicle/01/10.11.01/Conway_on_biotech.html)

<sup>16</sup> Gordon Conway, Genetically Engineered Crops: Who Benefits.

<sup>17</sup> Africa's Wealth of Seed Diversity and Farmer Knowledge -Under threat from the Gates/ Rockefeller "Green Revolution" initiative Statement from African civil society organisations at the World Social Forum 2007 Nairobi, Kenya 25 January 2007

<sup>18</sup> [http://commdocs.house.gov/committees/science/hsy87547.000/hsy87547\\_0.HTM](http://commdocs.house.gov/committees/science/hsy87547.000/hsy87547_0.HTM)

<sup>19</sup> Kristi Heim, "Want to Work for the Gates Foundation", Seattle Times, 17 October 2006,

<http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/web/vortex/display?slug=gateshires17&date=20061017>

<sup>20</sup> <http://press.arrivenet.com/business/article.php/579878.html>

<sup>21</sup> We have drawn considerably from the briefing paper produced by the African Centre for Biosafety titled Monsanto's Seed of Hope Campaign in South Africa, January 2007 [www.biosafetyafrica.net](http://www.biosafetyafrica.net)

<sup>22</sup> Karol Boudreaux, *Seeds of Hope: agricultural technologies and poverty alleviation in rural South Africa. Mercatus policy series. Policy comment no.6.* (August 2006) 1.

<sup>23</sup> Boudreaux, *Seeds of Hope*, 2.

<sup>24</sup> *Ibid.* 2.

<sup>25</sup> *Ibid.* 11.

<sup>26</sup> *Ibid.*

<sup>27</sup> Organic Consumers Association, 'Monsanto's Roundup Herbicide Threatens human health,' <http://www.organicconsumers.org/Monsanto/roundup92502.cfm> (September 2002).

<sup>28</sup> Personal communication, E.G. Davie, Free Market Foundation, 26 January 2007.; the commercial use of Roundup ready seeds only took place in 2003, see: African Centre of Biosafety, *A profile of Monsanto in South Africa* (April 2005) 13.

<sup>29</sup> Boudreaux, *Seeds of Hope*, 14. ; In O.R. Tambo municipality, 67.6% of the population earn between 0-R500 a month, while 88% earns between 0 -R1500 a month; in Chris Hani District 59% earns between 0-R500 a month, while 85% between 0 -R1500 a month; in Amathole District, 51% earn between 0-R500 per month, while 77.1% earns between 0-R1500 a month. See: Eastern Cape Department of Social Development, Socio-Economic & Demographic Profile: O.R. Tambo District Municipality, 'Eastern Cape Department of Social Development, Socio-Economic & Demographic Profile: Chris Hani District,' [http://www.socdev.ecprov.gov.za/statistics/demographics/chris-hani\\_area\\_info.htm](http://www.socdev.ecprov.gov.za/statistics/demographics/chris-hani_area_info.htm) (visited at 30 January 2007); Eastern Cape Department of Social Development, Socio-Economic & Demographic Profile: Amathole District,' [http://www.socdev.ecprov.gov.za/statistics/demographics/amathole\\_area\\_info.htm](http://www.socdev.ecprov.gov.za/statistics/demographics/amathole_area_info.htm) (visited at 30 January 2007).

<sup>30</sup> Elfrieda Pschorn-Strauss 'Bt Cotton in South Africa: the Case of the Makhathini Farmers' (2005) *Seedling*.

<sup>31</sup> Harald Witt, Rajeev Patel and Matthew Schnurr "Can the Poor Help GM Crops? Technology, Representation and Cotton in the Makhathini Flats, South Africa" (2006) *ROAPE* 109, 497-513.

<sup>32</sup> Harald Witt, Rajeev Patel and Matthew Schnurr "Can the Poor Help GM Crops? Technology, Representation and Cotton in the Makhathini Flats, South Africa" (2006) *ROAPE* 109, 497-513.

<sup>33</sup> By the 1990-91 growing season, the area under cotton had halved (91 000 ha) and although the area under cotton increased slightly in the immediate period (1998-99) after the introduction of GE cotton (99 000 ha) it has continued its downward slide ever since. According to Cotton South Africa the expected number of ha under cotton for the 2006-07 season is 19 114 ha <sup>33</sup> Cotton SA [http://www.cottonsa.org.za/reports\\_tables.aspx?tableID=4](http://www.cottonsa.org.za/reports_tables.aspx?tableID=4)

<sup>34</sup> Harald Witt, Cotton: "Still the mother of poverty?" 2007, Centre for Civil Society, UKZN (forthcoming).

<sup>35</sup> Land Bank Figures as captured in Harald Witt, Rajeev Patel and Matthew Schnurr "Can the Poor Help GM Crops? Technology, Representation and Cotton in the Makhathini Flats, South Africa" (2006) *ROAPE* 109, 497-513.

<sup>36</sup> M. Gouse, J. Kirsten, B. Shankar, C. Thirtle, 'Bt Cotton in KwaZulu Natal: Technological Triumph but Institutional Failure' AgBiotechNet, 2005. [www.grain.org](http://www.grain.org)