

Profiting from the climate crisis, undermining resilience in Africa: Gates and Monsanto's Water Efficient Maize

for Africa (WEMA) Project

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Overview

- WEMA Project in Africa
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- Overview of WEMA on GM
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WEMA Project in Africa

- Water Efficient Maize for Africa, a public-private-partnership that has been financed primarily by the BMGF. It is a joint collaboration involving the International Maize and Wheat Improvement Centre (CIMMYT), the NARS of the five WEMA countries (Kenya, Mozambique, South Africa, Tanzania and Uganda) and Monsanto, the world's largest seed and biotechnology company.
- Officially launched in Kampala, Uganda, in 2008,
- The goal of the WEMA project is to produce drought-tolerant maize varieties using both conventional breeding and genetic engineering.
- The implementing agency is the African Agricultural Technology Foundation (AATF), based in Nairobi, Kenya, but registered as a charity in England and Wales.
- So far the BMGF has pumped over US\$ 85 million into the WEMA project.

Components of WEMA

- A conventional hybrid maize breeding programme using maize germplasm donated to WEMA by each of the participating parties (Monsanto, CIMMYT and the five individual NARS), and a programme focusing on producing GM drought-tolerant maize donated by CIMMYT will come from an earlier breeding programme, also funded by the BMGF, called the Drought Tolerant Maize for Africa (DTMA) project.

WEMA GM Drought Tolerant Maize Programme

- The GM component of the WEMA project is from Monsanto's GM maize variety MON87460, which contains the bacterial cold-shock gene, *cspB*, derived from the common soil bacterium *Bacillus subtilis*.
- MON87460, was approved for environmental release in the United States in December 2011, the first new GM 'trait' to be introduced in GM maize outside insect resistance and herbicide tolerance
- Reduction in yield loss is estimated to be only around 6%, compared with non-GM conventional maize varieties. MON87460 is 'unlikely to have any benefit under extreme conditions'.
- the Union of Concerned Scientists has calculated that, assuming MON87460 is grown on the 15% of the US maize area that is drought prone, the introduction of MON87460 would result in a nationwide annual productivity increase of 1%.

WEMA GM Status in Africa

-South Africa

- First field trials for MON87460 in South Africa in 2007
- In July 2014 Monsanto submitted an application for full environmental release of MON87460. This has yet to be approved; the South African GMO Registrar stated that the application was 'under review'.
- There is no mention of MON87460 in the latest published South African GMO permits (for March 2015).

WEMA Progress in the Rest of the Other Countries

- Field trials of MON87460 commenced in Kenya and Uganda in late 2010,
- ‘mock field trials’, to simulate the procedures for a GM field trial by using conventional hybrid varieties, were carried out in Tanzania in 2009 and Mozambique in 2010.
- No GM field trials in Tanzania and Mozambique as the biosafety laws in both countries contain strict liability clauses;.
- Tremendous pressure has been placed on both countries to amend the existing liability clauses in their biosafety legislation.
- In Tanzania, the biosafety law had been sent to the Attorney General to amend the strict liability to a fault-based liability (basically this shifts liability from the developer to the end user). This was due to be finalised by January 2015 but cabinet changes in the Tanzanian government, including a new Minister of Agriculture, appear to have stalled the process for the time being.

WEMA Progress in the Rest of Other Countries

- In Mozambique the ABNE, another organization funded by the BMGF, reviewed the liability and redress articles of Mozambique's biosafety law in 2012 and in October 2014 Mozambique's Council of Ministers approved a revised biosafety decree and implementing regulations; field trials are expected to commence some time during 2015.

WEMA and Mon810

- In 2011 it was announced that Monsanto would be ‘donating’ its insect resistant (Bt) event MON810 to the WEMA project.
- The first field trials for MON810 were carried out in Kenya in 2010, the same year a shipment of 280,000 MT of grain from the same variety was prohibited from being unloaded at Mombasa port due to irregularities in GMO import procedures.
- In Uganda field trials began in 2013, using seed imported from South Africa.

WEMA and Mon810

- MON810 was first grown during the 1998/99 growing season in South Africa
- first official reports of insect resistance had been made by 2007 . By 2010 some regions were experiencing over 50% infestations
- Monsanto has withdrawn MON810 from the South African seed market and replaced it with another Bt variety (containing 2 bt genes), MON8903.
- Biotechnology industry in South Africa blamed the GM maize farmers for not adhering to the 'refugia' planting requirements which, in the case of MON810, required farmers to ensure that 5–20% of their total maize area is planted with non-Bt maize.

GM drought tolerant maize: an expensive folly?

- Expected yield increases of anywhere up to 35% were regularly quoted (ISAAA's latest annual review of GM crops).
- Figures are a stark contrast to the expected yield gains quoted in Monsanto's commercial release applications to the USDA and the South African biosafety regulators which predict a 6% reduction in yield loss under water limited conditions, which converts to an approximate yield gain of 1% across the entire US maize belt,
- USDA concludes that under conditions of extreme drought MON87460 is 'unlikely to have any benefit'.
- Only one GM drought-tolerant crop variety has been released in the United States, despite the more than 550 field trials between 1998 and 2011.

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- In 2008 a US\$ 350,000 project funded by USAID also sought to develop GM drought-tolerant maize varieties, adapted to East Africa, using maize germplasm from breeding programmes in Ethiopia, Kenya, Sudan and Tanzania, as well as CIMMYT.
- However, despite predictions of a commercial release by 2017/1876 no records of any field trials related to this project can be found at the Kenyan Biosafety Clearing House, while no GMO field trials of any description have yet taken place in Tanzania or Ethiopia.
- WEMA project is being used as justification, to weaken biosafety regulation across the continent, a process in which another BMGF grantee, the ABNE, is also a significant player.
- It is also facilitating the release of Monsanto's highly compromised (and old) GM insect resistant maize variety, MON810; a variety which has been found to be completely unsuitable for small-scale farming systems, and which is failing even in the large-scale, highly mechanised farming systems for which it was originally intended.

Conclusions and Recommendations

- Undertake long-term monitoring of the socio-economic and environmental impacts of the adoption of WEMA hybrid (and later GM) maize varieties;
- Prohibit any further funding for GM crop research in Africa;
- Increase funding for more public-sector led research into grain crops that are more adapted to drier climates, such as sorghum and millet;
- Increase funding and support into agroecological production methods;
- Support the development and application of participatory plant breeding methodologies between small-scale farmers and public sector researchers and scientists;
- Support the development of alternative seed quality criteria with farmers and other public institutions that offer flexibility and encourage crop diversity

For information

Contextual setting of WEMA

- In eastern and southern Africa (excluding South Africa) it is estimated that 44% of the maize area is planted with hybrid varieties, with considerable variation between countries.
- Fieldwork conducted by the African Centre for Biodiversity (ACB) in Malawi in 2014 found extremely high adoption rates of hybrid maize seed, driven in large part by that country's farm input subsidy programme (FISP).
- Seed Co, Pannar (owned by Pioneer Hi-Bred since 2012) and Monsanto were among the chief beneficiaries, and are estimated to control over 90% of the maize seed market in Malawi. In Tanzania, Pannar and Seed Co held over 50% of the maize seed market in 2010/11.
- Penetration of African seed market by global seed industry. Limagrain, Europe's largest seed company, purchased the South African seed company, Link Seed, in 2013 and followed this with a major investment (up to US\$ 60 million) in Zimbabwe's Seed Co.

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- In early 2015 Monsanto announced it was moving its African headquarters from Johannesburg to Nairobi, to be closer to its major growth markets in East Africa.¹⁶ Under the G8 New Alliance, Pioneer Hi-Bred, Monsanto and Syngenta have all pledged to work on increasing hybrid maize adoption in G8 New Alliance countries.
- The continued drive to open up markets for hybrid maize seed is being paralleled by the fertiliser industry.
- Norwegian fertiliser giant Yara is in the process of building a US\$ 20 million fertiliser terminal at the port of Dar es Salaam in Tanzania.
- The production of just nitrogen-based fertiliser is extremely energy intensive and accounts for 2% of total global energy demand

Funding for the project

- The cost of the WEMA project's first phase was US\$ 47 million, with US\$ 39.1 million coming from the BMGF and the remainder from the Howard G. Buffet Foundation.
- In October 2012 the BMGF contributed a further US\$ 48.9 million for the second phase of the project which will run until 2017. For the second phase the USAID contributed about US\$ 7.5 million during 2013 and 2014.
- Since 2004 the AATF, WEMA's implementing agency, has also received GBP 12.5 million from the United Kingdom's DfID, GBP 7.5 million of which has been granted since 2010.
- Though it is not clear how much of this funding is earmarked for the WEMA project, it nonetheless indicates that substantial amounts of public finance are being allocated to the project.