

# Water Efficient Maize for Africa: Pushing GMO Crops Onto Africa

GMOs in African Agriculture Series



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The African Centre for Biosafety (ACB) is a non-profit organisation, based in Johannesburg, South Africa. It provides authoritative, credible, relevant and current information, research and policy analysis on genetic engineering, biosafety, biopiracy, agrofuels and the Green Revolution push in Africa.

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## Acronymns

<b>AATF</b>	African Agricultural Technology Foundation
<b>ABSPII</b>	Agricultural Biotechnology Support Project II
<b>ACB</b>	African Centre for Biosafety
<b>ARC</b>	Agricultural Research Council
<b>CIMMYT</b>	The International Maize and Wheat Improvement Centre
<b>COMESA</b>	Common Market for East and Southern Africa
<b>EC</b>	GMO Executive Council
<b>ECOWAS</b>	Economic Community of West African States
<b>FAO</b>	Food and Agriculture Organisation
<b>FSANZ</b>	Food Standards Australia/New Zealand
<b>IAASTD</b>	International Assessment of Agricultural of Knowledge Science and Technology for Development
<b>NBC</b>	Uganda's National Biosafety Committee
<b>PBS</b>	Program for Biosafety Systems
<b>RECs</b>	Regional Economic Communities
<b>USAID</b>	US Agency for International Development
<b>WEMA</b>	Water Efficient Maize for Africa

*"As a result, we are really beginning to see an increase in the acceptance of biotech abroad, making this a great time to get new products out to the market as quickly as possible," .... "I am confident in saying that we are moving as fast as regulatory agencies in different areas of the world will allow us in order to get needed products to world farmers. The great news on top of this already good news is that we're seeing biotech approvals increase."*

Robb Fraley, Monsanto chief technology officer on the progress of WEMA two years into the project.<sup>1</sup>

**Structure of paper** This paper looks at the Water Efficient Maize for Africa (WEMA) project within the context of the race by massive agribusiness corporations to bring climate change related crops to the market. The first part of the paper explains the WEMA project within this context, outlining the players and the stakes involved. It looks at who stands to benefit from the project and what the African countries involved are asked to sacrifice. The second part of the paper looks at Monsanto's strategic positioning within this climate change race and how it intends to use WEMA as leverage to bring its controversial crops to a wider global market, simultaneously opening up key markets in Africa for its GM crops. Finally, we outline our concerns and make recommendations with regard to appropriate agricultural systems in Africa.

**Executive summary** Six multinational companies; BASF, Monsanto, Du Pont, Syngenta, Dow and Bayer, are feverishly competing with each other to bring energy crops to the market that will withstand the vagaries of climate change conditions. Between June 2008 and June 2010, 1663 patent documents had been lodged worldwide related to crops with traits such as drought, heat, flood and salt tolerance. The vast majority of the patents held on climate friendly crops are owned by just three companies, Du Pont, BASF and Monsanto. Only 9% of these patents are held in the public domain. The market value of 'climate ready' maize alone is estimated to be over US\$ 2.7 billion.

Monsanto and BASF have teamed up with the Gates and Howard G. Buffet Foundations to bring genetically modified (GM) drought resistant maize to sub-Saharan Africa. The Foundations have made available US\$47 million to a project known as 'The Water Efficient Maize for Africa' (WEMA). According to Monsanto, Warren Buffett's son, Howard Buffett, is also assisting with the project.<sup>2</sup>

The project is being rolled out in five countries – South Africa, Uganda, Kenya, Tanzania and Mozambique. Field trials are already underway in South Africa and Uganda, with Kenya and Tanzania running 'mock trials.' The International Maize and Wheat Improvement Centre (CIMMYT) and local agricultural research institutions in the five countries will provide research capacity and access to germplasm. A key role player in the WEMA project is the African Agricultural Technology Foundation (AATF), a group funded by industry and USAID, active in lobbying in favour of GMOs and weak biosafety regulations on the continent. WEMA's proponents predict that drought tolerant crops will increase crop yields by 30%, adding two million additional tons of food during drought years, in the participating countries.

WEMA will be most beneficial for Monsanto, enabling it to bring a new trait to the market and gain a foothold in Africa for its products.

The GM drought tolerant maize in question is known as MON87460, which is pending regulatory approval in the United States and Monsanto predicts it will come to market in 2012. Applications have also been made in Canada and Mexico. Applications for food feed and processing have already



[http://ipsnews.net/pictures/Busani\\_GMMaize.jpg](http://ipsnews.net/pictures/Busani_GMMaize.jpg)

been made in Australia and New Zealand, Japan, Korea and the European Union, with the Food Standards Australia/New Zealand (FSANZ) having approved it.

### **Key concerns about WEMA**

- Africa risks following an erroneous and misguided development intervention to alleviate hunger and mitigate the effects of climate change, in the process handing over its food systems to the private sector;
- WEMA is a Trojan horse to pressurise participating governments to pass weak biosafety regulations and open the door to the proliferation of GMOs that will undermine food sovereignty;
- Engineering drought tolerance in crop plants is highly complex and it is extremely doubtful that the one gene GM drought tolerant maize crop on offer, will be effective in varying environments and weather conditions;
- There are huge biosafety risks inherent in GM drought tolerant crops-to the environment, human and animal health and to society at large;
- WEMA displaces farmer owned and led agriculture, systems that are appropriately diverse and resilient.
- WEMA diverts funding and research capacity and support away from farmer led, diverse and resilient systems.

**Introduction** Africa remains a vast untapped market for agribusiness, but one that has been extremely difficult to penetrate with GMOs. The current available GM crops (pest resistance and herbicide tolerance) have not proved attractive enough to outweigh the potential risks to environmental and socio-economic systems. Capitalising on the dire predictions of droughts in several parts of Africa and increasingly scarce water resources, Monsanto is intent on introducing genetically modified drought tolerant maize in Africa.

## The race to bring climate ready crops to market

Six multinational companies, the so-called “Gene Giants”, BASF, Monsanto, Du Pont, Syngenta, Dow and Bayer, are competing to bring energy crops to the market that will withstand the vagaries of climate change conditions. Between June 2008 and June 2010, 1663 patent documents had been lodged worldwide related to crops with traits such as drought, heat, flood and salt tolerance<sup>3</sup>. The vast majority of these patents, 66%, are owned by just three companies, Du Pont, BASF and Monsanto<sup>4</sup>. Only 9% of the patents are held in the public domain<sup>5</sup>. The market value of climate ready maize alone is estimated to be US\$ 2.7 billion<sup>6</sup>.

Apart from its use as food and feed and agricultural processing, maize is also a major agrofuel feedstock; in 2009, about one third of the United States corn crop went into ethanol production for fuel<sup>7</sup>.

In July 2009, Syngenta released their drought resistant maize in the United States. The maize has been developed through conventional breeding. Farmers are being promised 15% yield increases in ‘water minimum’ environments<sup>8</sup>. Pioneer released their version of drought tolerant maize in 2010, also developed through conventional breeding, promising a 5% yield increase<sup>9</sup>. By contrast, Monsanto has chosen to bring the first genetically engineered drought tolerant maize to the market. The GM maize in question, MON87460, expected to be on the US market by 2012<sup>10</sup>. According to Hugh Grant, CEO of Monsanto, Monsanto expect to rake in profits in the \$1 billion–plus range<sup>11</sup>.

Monsanto has donated the technology to USAID backed African Agricultural Technology Foundation (AATF), while firmly holding onto its patents. Monsanto publicity states, “the five countries that have committed to joining the WEMA project have agreed to facilitate efforts to develop science-based regulatory systems in their respective countries”<sup>12,13</sup>

It is imperative that we interrogate the WEMA project and ask questions about the potential negative effects the GM drought tolerant maize will have on health, environmental and socio-economic systems. It is important that we investigate who will benefit from the successes of WEMA and at what price to whom. Certainly, the adoption of GM drought tolerant crops in Africa will mean transforming agricultural production from farmer-led and owned, diverse and resilient systems to corporate owned mono-crops cultivated for a global market. This is a high-risk strategy and threatens to worsen the plight of Africans, the majority of whom are smallholder farmers who rely heavily on subsistence agriculture for their survival.<sup>14</sup>

**WEMA** In 2008, The Bill Gates and Warren Buffet Foundations announced their pledge of US\$47 million towards the development of the Water Efficient Maize for Africa (WEMA) project. This 5 year public/private philanthropical partnership aims to increase food security in Sub-Saharan Africa through the development of “drought-tolerant African maize using conventional breeding, marker-assisted breeding, and biotechnology”<sup>15</sup> and avail this to small scale farmers royalty free. The project is being rolled out in five countries – South Africa, Uganda, Kenya, Tanzania and Mozambique. WEMA proponents predict that drought tolerant crops will increase yields by 30%.<sup>16</sup> This translates into an estimated two million additional tons of food during drought years in the participating countries<sup>17</sup>.

Monsanto has pledged to contribute four drought resistant varieties from its research and development pipeline to the project<sup>18</sup>. In fact, the donation is made, courtesy of Monsanto and BASF, who announced a joint investment of US\$1.5 billion toward the development of drought resistant crops in March 2007. (This amount has now increased to US\$2.5 billion with the inclusion of wheat to the project)<sup>19</sup>. In 2009, Monsanto’s CEO, Hugh Grant, assured investors that the company’s “high impact technologies”, all of which are part of their collaboration with BASF, had the “the potential to deliver an incremental \$3 billion in gross revenues by 2020 in the first countries of launch”.<sup>20</sup> The

donation of four maize varieties produced in the course of this project is trifling Public Relations money very well spent. The recent revelation that the Gates Foundation invested US\$27.6 million in 500 000 Monsanto shares between April and June 2010<sup>21</sup> further brings the project's philanthropic orientation into question.

The implementing agency for the project is the African Agricultural Technology Foundation (AATF), one of a handful organisations in Africa set up to ensure the acceptance of green revolution technologies, and assist in developing enabling policy environments for the adoption of GM technology in Africa.

The AATF's stated role in the WEMA project is the contribution of their "expertise in product stewardship, regulatory affairs management and technology delivery". Their role is to ensure that African governments implement weak and permissive biosafety regulatory regimes to facilitate the introduction of GMOs in African agriculture. AATF is licensed to distribute the maize varieties developed under the auspices of the WEMA project to African seed companies, royalty free<sup>22</sup> (i.e. the technology fee will be waived, so that seeds will be priced on par with their conventionally bred counterparts.)

USAID has meddled in the development of African biosafety frameworks, undermining the excellent work done by African leaders on biosafety that aimed at safeguarding health, environment and socio-economic well-being. This is evidenced in the African Model Law on Biosafety. USAID programmes, such as Program for Biosafety Systems (PBS) and the Agricultural Biotechnology Support Project II (ABSPII), were aimed at setting up weak biosafety systems in targeted African countries in order to bring GM crops to the market.<sup>23</sup> USAID has also supported the development of biosafety policies at the regional level, through the Regional Economic Communities (RECs). The draft policies of ECOWAS and COMESA<sup>24</sup> are currently the most advanced and in several respects undermine the Cartagena Protocol on Biosafety, to which most African countries are Parties. The implementation of harmonised regional biosafety policies are designed to enable the proliferation of GMOs on the African continent<sup>25</sup>. The AATF has been a key USAID partner in their endeavours to date.

Other WEMA project collaborators include the International Maize and Wheat Improvement Centre (CIMMYT) and the agricultural research systems in East and Southern Africa. These groups will no doubt assist the project with access to germplasm belonging to farmers around the world.

According to the project agreement, "CIMMYT will provide high-yielding maize varieties that are adapted to African conditions and expertise in conventional breeding and testing for drought tolerance. Monsanto will provide proprietary germplasm, advanced breeding tools and expertise, and drought-tolerance transgenes developed in collaboration with BASF. .... The national agricultural research systems, farmers' groups, and seed companies participating in the project will contribute their expertise in field testing, seed multiplication, and distribution. The project will involve local institutions, both public and private, and in the process expand their capacity and experience in crop breeding, biotechnology, and biosafety"<sup>26</sup>.

June 2010, marked the 2nd anniversary of the WEMA project. According to the AATF, the past two years were spent bringing together a team of more than 60 scientists from the participating countries to work together in building the necessary scientific testing, regulatory procedures and protocols for the evaluation of the maize in this project within each of the five countries.<sup>27</sup>

South Africa, which has had a biosafety regime in place since 1999, has already allowed field trials of WEMA's GM drought tolerant maize to be planted. The trials are being managed by the Agricultural Research Council (ARC). The trials are aimed at testing the agronomic performance of the crop as



well as assist in the identification of hybrids that will yield in the face of drought stress and low soil nitrogen levels<sup>28</sup>.

Kenya and Tanzania have run mock trials since 2009. These have simulated the search for ideal field trial conditions and putting in place procedures and regulatory oversights to enable the trials to take place. However, a liability clause in the Tanzanian Environment Management Act on Biotechnology is reportedly holding back the roll out of the trials in Tanzania. The Guardian reports that “Tanzania could lose out and get isolated from technical assistance in ... WEMA if it doesn’t review the strict liability clause in its biotechnology law”<sup>29</sup>. The clause places liability on developers and partners should anything go wrong.

In July 2010, Uganda’s National Biosafety Committee (NBC) approved a permit to conduct a “confined field trial” of the maize at Mobuku Irrigation Scheme in Kasese District.<sup>30</sup> It would seem that this has occurred even though Uganda has no fully functioning Biosafety system in place. A research permit and a seed import permit also appear to be outstanding before the trial can go ahead.<sup>31</sup>

The AATF anticipates that Kenya, Tanzania and Uganda will begin trials of the drought tolerant GM crops in 2011, while Mozambique will begin wrapping up the development of its testing sites and begin the process of seeking regulatory approval. Should regulatory approval be granted in all the member countries, at least 12 WEMA varieties will be tested in field trials in Kenya, Uganda, Tanzania, South Africa and Mozambique<sup>32</sup>.

### **Resistance to WEMA in South Africa**

A formal objection to the GM trials was submitted to the South African Government under the auspices of the Right to Agrarian Reform for Food Sovereignty Campaign, assisted by the Surplus People’s Project. These small scale farmers from Lutzville, Northern Cape, also held a protest to show their opposition to GMOs. In their written objection, the farmers complained that they had not been consulted about the trials taking place in their area where in fact, they are practising agroecological farming methods. A particular concern raised was that Monsanto’s proprietary technology would undermine seed and food sovereignty:

“The introduction of bio-technologies like drought resistant maize for South Africa and Sub Saharan Africa undermines the seed and food sovereignty of the countries people and farmers. Seed saving is an important component of farmers in Sub Saharan Africa and South Africa in particular. This technology would further deskill and destroy the farming practices of poor black farmers<sup>33</sup>.

The Food Sovereignty Campaign also complained about the role of the government parastatal, the ARC, in “advancing the agenda of multinational corporations like Monsanto that negatively impact on farmers”. They called on the South African government to redirect their activities to support alternative and more appropriate production systems like agroecology<sup>34</sup>.

Monsanto responded to the Food Sovereignty Campaign’s five-page objection by taking refuge in South Africa’s “science based” biosafety regulations. In their response, they stated:

“In their letter, Surplus People Project make numerous unsubstantiated and ideological claims and allegations not specifically relevant to Monsanto’s application for permit extension to conduct field trials with maize MON 87460. These issues will therefore not be addressed here”<sup>35</sup>.

This response highlights the value of so called ‘science based’ biosafety regulations for industry: none of the socio economic contextual issues need to be addressed and only highly educated



<http://agro.biodiver.se/wp-content/uploads/2006/12/maize.JPG>

scientists have credence in the approval process. It is ironic though, that Monsanto and WEMA's publicity for this project is highly emotive rather than scientific, for example, one of their press releases is titled "**Scientists Prepare for Confined Field Trials of Life-Saving Drought-Tolerant Transgenic Maize**".

A delegation from AfricaBio, an industry backed NGO similar to the AATF, was dispatched to the Lutzville area to meet with the farmers to convince them that their views were wrong. The community reported that they found it difficult to assess the scientific information as they have little expertise<sup>36</sup>.

A formal objection to the WEMA trials was also submitted by the African Centre for Biosafety. In addition to the socio-economic risks posed by the project, the ACB also highlighted biosafety and health risks raised by independent scientific analysis of the safety dossier submitted by Monsanto. These included concern over the use of controversial antibiotic resistant marker genes in the transformation process, as well as the possibility of cross pollination of GMO maize, producing genetic contamination. The ACB also pointed out that the "Confidential Business Information" version of Monsanto's safety dossier did not give enough information for the public or independent scientists to engage meaningfully in the decision making process<sup>37</sup>.

The ACB concluded that the "ability of ecosystems to develop gradually, the ability to anticipate environmental health effects and very importantly, the establishment of regulatory mechanisms that can effectively, efficiently and credibly manage risks associated with the use of GMOs has not kept pace with the rapid introduction of GMOs"<sup>38</sup>.

It does appear though, that the South African biosafety authorities have been concerned about the resistance by the farmers and civil society. The recent Minutes of the GMO Executive Council (EC), show that Monsanto made a presentation to the EC on the WEMA project<sup>39</sup>.

## Monsanto needs a breakthrough

In 2007, Monsanto was the world's largest seed company and its GM seeds and traits accounted for 87% of global GM crops planted in that year.<sup>40</sup> In October 2009, Forbes magazine named Monsanto "Company of the Year". However, only a year later, the New York Times reported that farmers were turning on the company and that Monsanto's stocks were plummeting. In a complete turnaround, US stock market commentator, Jim Craven is reported as saying: "This may be the worst stock of 2010"; it had plummeted 42% since the beginning of 2010<sup>41</sup>.

Monsanto lost major ground to Chinese producers of generic herbicides since their proprietary "Roundup" chemical went off patent in 2002<sup>42</sup>. In addition, farmers rejected their new "stacked trait" technology, Smartstax, because of inflated prices and obsolete traits<sup>43</sup>. To add to the company's woes, some of the predicted risks associated with GM crops are undeniably happening.

"Roundup" is Monsanto's blockbuster herbicide chemical and their seed engineered to withstand the chemical is commonly called 'Roundup Ready'. In 2008, herbicide tolerant crops constituted 63% of genetically engineered crops cultivated globally.<sup>44</sup> The emergence of weeds that have developed resistance to Roundup are choking farmers fields in the US, representing a costly nightmare as farmers battle to control the weeds with applications of higher doses of Roundup and older more toxic sprays.<sup>45</sup> At least 9 weeds have now been officially registered as immune to the active ingredient, glyphosate. Farmers in the US are also battling with resistant weeds in their GM soyabean fields and are now paying up to US\$80<sup>46</sup> per acre to control the problem, putting a serious dent in profit margins. Monsanto is reported to be paying farmers to spray alternative chemicals produced by their rivals.<sup>47</sup>

Recent studies have also pointed to negative health and environmental impacts of Roundup, contradicting Monsanto's claims that it is completely safe. During 2010, a study done by the University of Caen revealed that one of the inert ingredients in the Roundup formulation could negatively effect human embryonic, placental and umbilical cord cells<sup>48</sup>.

Activists and scientist have warned about the inevitability of insect resistance to Bt crops. A South African researcher has noted pest resistance to Bt crops in South Africa, and significantly, has concluded that "the increased appearance of these Bt-resistant pests during the last 4 years indicate that the predicted rate of evolution of resistance was seriously underestimated and casts doubts on the use of this technology in future".<sup>49</sup>

Despite Monsanto investing on average, \$2.6 million a day on research and development to develop "the most robust pipeline of products in the industry",<sup>50</sup> the reality is that Monsanto has depended on these two traits for more than a decade and desperately needs to bring a new GM trait to the market. WEMA will do wonders for Monsanto's failing image and will assist them to gain a foothold in Africa for their products as well as ensuring that biosafety policies across the continent suit their agenda.

## MON87460 – draught tolerance coming to the market?

In June 2009, Monsanto, in conjunction with BASF, announced the discovery of a naturally-occurring gene that can help maize plants combat drought conditions and confer yield stability during periods of inadequate water supplies.<sup>51</sup> Called *cspB*, the Monsanto owned gene was first identified in the bacterium *Bacillus subtilis* subjected to cold stress conditions, and further research has demonstrated that *cspB* helps plants cope with drought stress. Monsanto hopes to make the drought tolerant plants (MON87460) commercially available by as early as 2012 pending the necessary regulatory approvals<sup>52</sup>. This variety is already being field trialled in South Africa under the auspices of the WEMA project.



<http://www.portwallpaper.com/imgwal/maize-border.jpg>

However, many scientists are deeply sceptical that drought resistance can be so easily engineered or grow successfully in farmer's fields under a wide variety of environmental conditions.

Pest resistance and herbicide tolerance have proved to be relatively easier traits to engineer, while drought resistance is incredibly intricate. Engineering drought tolerance would involve up to 60 genes, all interacting in a subtle and complex ways<sup>53</sup>. While drought resistant crops may perform in controlled environments, the whole process becomes more complex when they are grown in varied, open environments all over the world. Key complexities that need to be addressed include – when in the plant's lifecycle the drought strikes and what nutrients are available at that time<sup>54</sup>. Another complication is that crops that perform well under drought conditions often underperform in wet conditions<sup>55</sup>.

In Monsanto's 'Summary' forming part of their application for placing of Mon87460 on the EU market, Monsanto admits that under very dry conditions, precisely the conditions under which WEMA is attempting to develop new crop varieties, the drought tolerant trait may not be effective in producing a viable yield:

“Under well-watered conditions, grain yield for MON 87460 is equivalent to conventional maize. Under water-limited conditions, grain yield loss is reduced compared to conventional maize. However, like conventional maize, MON 87460 is still subject to yield loss under water-limited conditions, particularly during flowering and grainfill periods when maize yield potential is most sensitive to stress, by disrupting kernel development. Under severe water deficit, maize grain yield for MON 87460, as well as conventional maize, can be reduced to zero.”<sup>56</sup>

However, Monsanto is intent on bringing their one-gene wonder to the market under the auspices of it being drought tolerant. Will the technology actually work? Is the system of agriculture appropriate for the African continent?

As already discussed, MON87460 is pending commercial approval in the United States and Monsanto predicts it will come to market in 2012. Applications for the full range of uses have also been made in Canada and Mexico, but these are yet to receive approval<sup>57</sup>.

Field trials of MON87460 took place in the United States and Chile, as well as one of the WEMA member countries, South Africa<sup>58</sup> and possibly also in Uganda.

Applications for food feed and processing have already been made in Australia and New Zealand, Japan, Korea and the European Union<sup>59</sup>. Despite the fact that this crop has not received commercial release status in the US, the New Zealand/Australia Food Safety has already approved it. Gaining regulatory approval in foreign countries before it has been approved for environmental release in the country of development is clearly unsound biosafety practice. However, such food safety approvals are important for Monsanto to convince farmers that their produce has a market. It also decreases chances of GM consignments being rejected due to contamination.

## Problems with WEMA for Africa

### Who can buy our maize?

#### Increasing yield does not necessarily ensure food security and livelihoods

The argument advanced by proponents of the WEMA project is that drought tolerant maize will increase production, thereby increasing food security and small-scale farmer livelihoods. However, both South Africa and Uganda have produced maize surpluses in the 2009/10 growing season and this has crippled the farmers who need to sell their produce at giveaway prices. In addition, the bumper harvests have done nothing to ease hunger in those countries. The agricultural systems in these two countries are vastly different, South Africa has a deeply entrenched agribusiness production system with experienced commercial farmers, in Uganda, most of the produce is grown by small-scale farmers who have little experience with industrial crops. However, in both instances, increased yields did nothing to alleviate hunger.

When President Museveni of Uganda closed the 8th Agribusiness forum in Kampala in early December 2010, he said, "Who can buy our Maize? Uganda is looking for a market for maize as it is busy rotting away due to the lack of market."<sup>60</sup> As the maize surplus rots away, over 6 million Ugandans are undernourished. The World Food Programme reports that Uganda, as a whole, has no lack of food, however, access to food and the use thereof are inadequate in many locations.

The majority of that maize was produced by small holder farmers. The Ministry of Agriculture in Uganda estimates that about 40% of the harvested crop is lost annually due to poor storage and processing infrastructure and bad roads. Ugandan maize is also rated as the worst quality maize in the region and is often rejected on the market<sup>61</sup>. Farmers struggle with a long list of difficulties including: lack of capacity for value adding; weak trade policies and volatility in external markets; high input costs and limited availability of inputs due to infrastructure constraints.

South Africa has a highly competitive and organised agricultural production system in place. Over-production has also not benefitted South Africa, where the government struggles to find a market for 6 million surplus tons of maize. An economist for the grain industry, Grain SA, claimed that domestic maize prices were at their lowest in years due to the surplus and because of price fluctuations resulting from the strengthening South African currency. It claimed that farmers could not make a profit because the costs to cultivate a hectare of maize were higher than the income per hectare<sup>62</sup>. Grain SA applied to the South African Competition Commission to set up an "export pool" to cushion the fall in prices. Their application was rejected on the grounds that the pool would keep prices artificially high and that the scheme was unlikely to boost maize exports due to the unavailability of markets<sup>63</sup>.

In another desperate attempt to save farmers from ruin, the Minister of Agriculture has suggested amending South Africa's Biofuel Strategy, which strictly excludes maize as a feedstock for biofuels<sup>64</sup>.

The glut of maize on the South African market has also corresponded with exports of massive GM maize consignments to neighbouring countries for food feed and processing for the first time. In January and February 2010, the South African GMO authorities granted French multinational grain trader Louis Dreyfus permits to export a staggering 280,000 tons of GM maize to Kenya, as well as permits equal to 3,000 MT to other grain traders for export to Swaziland<sup>65</sup>. In May a further 11,000 MT of GM maize was approved to be exported to Mozambique<sup>66</sup>. At the time of the exports, none of these countries had proper biosafety regimes in place. South Africa's desperate attempts to dump its surpluses on unprepared neighbours clearly disregards the Precautionary Principle, on which the International Biosafety Protocol is based.

High yields have neither brought prosperity to farmers nor contributed to the alleviation of hunger in South Africa. The continued obsession with yields and production as indicators for success is a dangerous obfuscation of the systemic problems underlying hunger and poverty; serving agribusiness very well.

This fact has been recognised in a comprehensive and rigorous assessment of global agricultural policy and practice, commissioned by the Food and Agriculture Organisation (FAO) and the World Bank. The study, known as the International Assessment of Agricultural Knowledge Science and Technology for Development (IAASTD), echoes the call of the small scale farmer movement from Lutzville to the South African government; support to diverse, resilient and farmer owned agriculture is the only route to food sovereignty and security into the future. The study was scathing about GMOs ability to contribute to poverty alleviation and food security. Instead, their findings indicated that,

“Technologies such as high-yielding crop varieties, agrochemicals and mechanization have primarily benefited the better-resourced groups in society and transnational corporations, rather than the most vulnerable ones. Small-scale diversified farming is responsible for the lion's share of agriculture globally. While productivity increases may be achieved faster in high input, large scale, specialised farming systems, greatest scope for improving livelihood and equity exist in small- scale, diversified production systems in developing countries.<sup>67</sup>

## Conclusion

The African continent is facing a massive challenge in agriculture as the climate changes. This constitutes one of the most serious issues that African leaders must prepare for as it plans for the future. Agribusiness is offering a very tantalising and seemingly simple technological fix to complex problems in the form of the WEMA project. What they are asking for in return is the control of regulatory systems in order to sell their proprietary products with few checks and balances. Africa's seed and food sovereignty is up for grabs in return for risky products that have no benefits for Africa and its farmers. Africa should not be allowed to become the next battleground in the race between the Gene Giants to gain control over the energy crop market. Instead, African governments need to ensure that regulatory environments are rigorous and in the service of African citizens. In addition, they must ensure that policies support the implementation of the IAASTD recommendations to develop small scale, diverse and farmer owned food production systems. If Africans are to survive and thrive in the age of climate change, government will need to get behind African farmers, not fall at the feet of foreign corporations.

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