GMO ALERT

Bayer breathing life into Gates' failed GM drought tolerant maize

Agrarian extractivism continues unabated on the African continent

african centre for biodiversity

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The African Centre for Biodiversity (ACB) is a research and advocacy organisation working towards food sovereignty and agroecology in Africa, with a focus on biosafety, seed systems and agricultural biodiversity. The organisation is committed to dismantling inequalities and resisting corporate industrial expansion in Africa's food and agriculture systems.

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Key insights

- The Water Efficient Maize for Africa (WEMA) project (rebranded as TELA), largely funded by the philanthro-capitalist Bill Gates, currently in its death throes, is being resuscitated by Bayer. Since acquiring Monsanto, Bayer is foisting ailing and defunct technologies onto several African countries, on the pretext of uplifting the continent's small farmers out of poverty. Gate's primary agenda has been that of reshaping the trajectory of African and, more recently, global food system governance, by aggressively advancing deeply destructive agrarian extractivism on the continent.
- South Africa (SA) continues to play a role as an experimental dumping ground and launchpad for the biotech industry. In 2019 and 2020, authorisations were given to Bayer by the South African biosafety authorities for field trials involving the ineffective stacked drought tolerant (DT) and insect resistant GM maize variety MON 87460 x MON 810. However, at the heart of this is seed production for the purposes of export to Kenya and Uganda for further field testing.
- Thus, SA is a conduit and facilitator of and for GM seed uptake and expansion in Africa. Clearly, our regulatory systems are designed principally to entrench corporate hegemony and capture, not only within SA's food and agriculture systems but also that of the rest of the continent. These continuous approvals by South African authorities epitomises the extent of the power and influence the biotech industry wields.
- MON 87460 x MON 810 has not been approved for commercial release in SA. The single insect resistant trait involved in the GM maize variety, MON 810, was phased out in SA years ago, due to the onset of widespread insect resistance. Further, the ACB is engaged in a protracted legal battle with the South African government and Monsanto/Bayer, with regard to the commercial approval of the single DT variety trait MON 87460. Crucially, in 2018, Monsanto's bid to obtain regulatory approval for the commercial cultivation of its triple stacked DT variety, MON 87460 x NK603 x MON 89034 was rejected by the South African authorities, due to insufficient data to demonstrate the claimed DT and insect resistant efficacy of the GM event. It is contradictory that while the South African government decided not to allow these unperforming GM seeds to be cultivated in SA, it will turn a blind eye to its cultivation on the rest of the continent.
- Kenya has already completed field trials of MON 87460 x MON 810 and this means that commercial release is in the offing. Absurdly, these trials were also claimed to be testing the efficacy of the same throwaway technology (MON 810) to confer resistance to the fall armyworm (FAW) pest infestations plaguing the continent.
- Uganda's lack of a biosafety law prevents the country from taking any further steps towards commercialisation of the stacked MON 87460 x MON 810. However, the pressure on Uganda is formidable and this situation could change at any time.
- Ethiopia and Nigeria are also WEMA/TELA participating countries involved in these trials, with Ethiopia having granted a five-year permit for field trials already in 2018.
- Despite Tanzania having also undertaken field trials of WEMA GM varieties in 2017 and 2018, the Tanzanian government announced the cancellation and destruction of WEMA/TELA trials of the double stacked variety MON 87460 x MON 810 in order to conserve genetic resources of the country and local seed varieties, and protect the country's seed sovereignty.[1]

There is a chronic problem of lack of transparency with regard to this WEMA/TELA project, and in this alert, we share the information and research we have at our disposal to date.

1. See https://www.ippmedia.com/en/news/ministry-cancels-gmo-seed-trials

Summary of GM maize varieties in the WEMA/TELA project

MON 87460 contains the bacterial cold shock protein B (*CspB*), derived from the common soil bacterium *Bacillus subtilis*. According to Monsanto/Bayer, the cspB gene preserves cellular functions during certain stresses and 'reduces yield loss, primarily through increasing kernel numbers per ear'. It also contains the antibiotic resistance marker *nptII*, conferring resistance to neomycin and kanamycin antibiotics.

MON 810 contains the insecticidal Bt protein Cry1Ab that targets certain members of the lepidopteran family (moths and butterflies). Bt insecticidal toxins were isolated from the bacterium *Bacillus thuringiensis* subsp. *Kurstakiv* Strain HD-1.

MON 89034 is a stacked Bt crop, containing two Bt toxins, Cry2Ab2 and Cry1A.105 (also known as CS Cry1A.105 3.5), which is not one Bt toxin but a protein comprised of naturally occurring Cry1Ab, Cry1F, and Cry1Ac protein. The gene Cry1A.105 is a chimeric gene comprising of four domains from other Cry genes previously used in transgenic plants. Bt insecticidal toxins were isolated from the bacterium *Bacillus thuringiensis* subsp. *kurstaki* strain HD-1 and *Bacillus thuringiensis* subsp. *Kumamotoensis*.

NK603 contains the CS-cp4 eps gene from the bacterium *Agrobacterium tumefaciens* CP4, for glyphosate herbicide tolerance.

All of these traits belong to Monsanto, with MON 810 having come off patent in November 2014,[2] whereas NK603 will come off patent in November 2022.[3] At the time of writing, patent information on MON 89034 and MON 87460 were not accessible.

The African Centre for Biodiversity (ACB has acted as a watchdog for genetic engineering (GE) activities in food and agriculture in SA and on the continent for the past 17 years. As such, we have a long and proven track record in this regard.

"TELA aims to dump outdated genetically modified (GM) technologies and associated toxic chemicals onto several sub-Saharan countries, while ensuring that profit from and capture of the lucrative maize market accrues to multinational seed and agrochemical companies, and associated GM maize value chain profiteers, while purporting to provide royalty-free maize to smallholder farmers."

2. See http://www.agaccord.org/include/gemmadocs/expirations/Monsanto%20MON%20810%20Corn.pdf
3. See http://www.agaccord.org/include/gemmadocs/expirations/Monsanto%20NK603.pdf

Introduction

For the past 12 years, the ACB along with other civil society organisations (CSOs) in Africa have vehemently opposed and denounced the Water Efficient Maize for Africa (WEMA) project, rebranded as 'TELA' in 2018.[4] The TELA project is part of a neo-colonial agenda advancing false solutions and the interests of the biotech industry, on the pretext of addressing food and nutrition insecurity for smallholder farmers on the continent. It has been largely funded by the philanthro-capitalist Bill and Melinda Gates Foundation (BMGF).[5] TELA aims to dump outdated genetically modified (GM) technologies and associated toxic chemicals onto several sub-Saharan countries, while ensuring that profit from and capture of the lucrative maize market accrues to multinational seed and agrochemical companies, and associated GM maize value chain profiteers, while purporting to provide royalty-free maize to smallholder farmers. The project, initially undertaken in SA, Uganda, Kenya, Tanzania and Mozambique, has so far expanded to include Ethiopia and Nigeria.

Central to the promotion of the Gates' capitalist agenda are several protagonists: the biased biotech's propaganda mouthpiece, Cornell Alliance for Science (CAS); and the pro-biotech machinery, International Service for the Acquisition of Agri-biotech Applications (ISAAA) and the African Agricultural Technology Foundation (AATF). The AATF is also independently funded by the BMGF, and together with TELA-associated African scientists and experts, have and continue to make numerous unsubstantiated claims, including that the GM maize varieties will deal with food shortages, and drought and pest infestations brought about by the maize stem borer and the FAW respectively, which is echoed by the CAS[6] (See also ACB, 2018). The ACB and other African CSOs have solidly debunked these uncorroborated and unscientific statements,[7] denouncing them as quick fix and corporate driven false solutions to the numerous challenges facing smallholder farmers (ACB, 2018).

To date, SA is the only country in Africa that grows GM maize as a primary staple crop, making up 90% of total production, with more than 80% of the GM seed consisting of stacked varieties (insect resistant and herbicide tolerant) (USDA, 2020a). This leaves the SA population with few or no alternatives as there is no segregation of GM and non-GM maize (ACB, 2013). But more importantly, the majority of South Africans, due to historical reasons tied to the colonial and apartheid history and ongoing political, social and economic subordination, rely heavily on corporate-controlled mono-maize diets, which is a major contributor to severe malnourishment and persistent hunger (ACB, 2020). This is in addition to the risks posed to human health by the consumption of GM maize and ingestion of pesticide residues over these long years of GM maize commercial production.

The ACB is on record for having consistently opposed the BMGF-funded WEMA project, calling this out as typically colonial, without providing real solutions to systemic issues facing

4. WEMA (now TELA) is a public-private partnership coordinated by the African Agricultural Technology Foundation (AATF). The partners are the International Maize and Wheat Improvement Center (CIMMYT), agribusiness giant Bayer/Monsanto, and the national agricultural research institutions in Kenya, Mozambique, South Africa, Tanzania and Uganda, and most recently, Ethiopia and Nigeria.
5. Other funders include the Howard G. Buffet Foundation and the United States International Agency for Development (USAID).
6. See for example https://allianceforscience.cornell.edu/blog/2019/10/can-tela-maize-solve-the-acute-food-shortages-in-sub-saharan-africa/ and https://allianceforscience.cornell.edu/blog/2018/12/tanzanian-scientist-bt-corn-help-combat-fall-armyworm-africa/
7. See https://www.acbio.org.za/failure-monsantos-drought-tolerant-maize-pushed-africa-confirmed-us

small-scale farmers. Further, the GM-based technologies being foisted on Africa are typical development interventions that reinforce indebtedness, inequalities and social exclusion for the majority of smallholder farmers – particular women – the very people it is supposed to benefit (ACB, 2021).

In 2019 and 2020, authorisations were given to Monsanto/Bayer to conduct extensive field trials in SA involving GM stacked DT and insect resistant variety, MON 87460 x MON 810. However, upon investigation by the ACB, we discovered that what has really been taking place is seed production/multiplication, for the purposes of export to other African countries participating in the WEMA/TELA project. So far, MON 87460 x MON 810 seeds were exported to Kenya and Uganda for the purposes of field trials in 2019.[8] According to Monsanto/Bayer's application to the SA biosafety authorities, the trials are for the purposes of *inbred line increase* and further seed production for WEMA/TELA countries. This seed production will facilitate national performance trials for variety release and seed certification purposes, in terms of commercial seed laws, and commercial cultivation in the event that these are approved by the biosafety authorities in the TELA countries .

8. See Permit lists for 2019 and 2020 here https://www.dalrrd.gov.za/doaDev/sideMenu/biosafety/doc/GMO%20permits%20-%20for%20publishing%202019.pdf and https://www.dalrrd.gov.za/doaDev/sideMenu/biosafety/doc/GMO%20permit%20list%20-%202020.pdf

Brief background of the WEMA/TELA project in Africa

Controversial DT and insect resistant varieties under WEMA/TELA

Monsanto's GM DT maize is touted as providing climate smart technologies to deal with the global climate crisis, caused by worlds' richest countries, for which smallholder farmers in Africa are paying the highest price.

Drought is a complex phenomenon that varies in severity and timing, and thus doesn't lend itself to a simple techno fix, promised by a single gene (ACB, 2017b). In 2019, the non-performance of the DT variety was confirmed by a United States Department of Agriculture (USDA) report, which revealed that the engineered trait, claiming to be DT, was poor in terms of yields and adoption rates, as compared with non-GE (conventionally bred) DT maize.[9] Similarly, the SA authorities rejected a triple stacked DT variety due to insufficient data to demonstrate the claimed DT and insect resistant efficacy of the GM event.[10] Thus, as constantly stated by the ACB and other civil society organisations, the GM DT variety is unable to provide real solutions to smallholder farmers, but these varieties will displace farmers' seed systems, their agency and autonomy.

Likewise, the failures of the MON 810 insect resistant variety in SA, which is being dumped onto the rest of the WEMA/TELA countries (ACB, 2013), have also been amply recorded. Nevertheless, there are unsubstantiated claims that it is an effective agronomic tool to deal with pest infestations, such as the FAW, by the CAS and the biotech machinery.[11] The ACB, in our multiple shocks in Africa series of publications,[12] have argued that the FAW – now pervasive and persistent in Africa – is a result of ecological imbalance and false solutions, including the use of GM insect resistant maize, such as the MON 810, which have longer-term detrimental consequences for the health of farming systems and of people. Other false solutions to combat the FAW have included the development of hybrid maize varieties by CIMMYT, tolerant to the FAW e.g. for Zimbabwe (ACB, 2020), and additional false hopes have been raised through large-scale and untested releases of male FAWs, with self-limiting genes, to eliminate species within a few generations (ACB, 2020).

As it is, the FAW has quickly developed resistance to Bt crops in its native lands, the Americas. Further, there is no long-term scientific evidence supporting their effectiveness, especially against FAW. At the moment there are already 144 cases of insect resistance to FAW around the world – with 45% of the cases resistant to Bt proteins (ACB, 2020). In fact, by 2018 the FAW was the only insect to ever develop resistance to Bt toxins in multiple locations (ACB, 2018), whereas, in just three years in Brazil, most Bt maize hybrids lost their ability to control FAW (ACB, 2020; Rwomushana et al., 2018). Furthermore, patented GM seed is expensive for smallholder farmers, particularly in sub-Saharan Africa, and is inextricably linked to destructive and inequitable industrial food production systems, and wholly inappropriate for African smallholder farming systems. Thus, the pushing of an ailing technology onto other African countries to combat the already endemic FAW is very questionable.

9. See https://www.acbio.org.za/failure-monsantos-drought-tolerant-maize-pushed-africa-confirmed-us
10. See https://www.acbio.org.za/sa-government-rejects-monsantos-triple-stacked-gm-drought-tolerant-maize
11. See guide on FAW management by Feed the Future, produced by CIMMYT in collaboration with USAID and CGIAR https://www.agrilinks.org/sites/default/files/fall-armyworm-ipm-guide-for-africa-jan_30-2018_1.pdf
12. https://www.acbio.org.za/en/shock-after-shock-africa-tale-ecological-imbalance-fall-armyworm-infestation-and-false-solutions

The truth of the matter remains, that MON 810 is a defective Bt maize that failed hopelessly in SA, as a result of massive insect resistance. (ACB, 2013). It was completely phased out by 2015 and is now obsolete, having been replaced by other Bt traits, which will face similar resistance in time to come, if this has not already occurred. (ACB, 2013).

Current status of WEMA/TELA project in sub-Saharan countries

Despite several revelations of the techno failures, and warnings by African civil society, African countries under the WEMA/TELA project continue to be coerced into trialling defective GM insect resistant and DT technologies, MON 87460 and MON 810, either as single events or stacked varieties.

African CSOs have also raised serious concerns about the secrecy and lack of transparency with the project. The AATF exercises extremely tight control over any information related to WEMA/TELA, raising questions about the accountability of the public research institutions involved. While they are constitutionally and legally obligated to act in the interests of farmers, citizens, and the environment,[13] this is called into question by their spewing out of the CAS' unrelenting propaganda to an unsuspecting public.

Kenya and Uganda have been conducting field trials of the WEMA/TELA varieties since 2010, despite a ban on the importation of GMOs into Kenya and Uganda's controversial biosafety law having been rejected twice by the President. Kenya has, so far, approved national performance trials for MON 810 in six sites,[14] and has completed field trials of stacked MON 87460 x MON 810 (USDA, 2020b). Efforts are currently underway to conduct further trials involving the MON 89034 trait, as supposedly it will be able to withstand the FAW better than MON 810 (USDA, 2020b). This does bring to the fore questions around the efficacy of MON 810, as discussed above, with the likelihood of resistance related to MON 810 starting to emerge in the course of these trials in Kenya. Similarly, Uganda also authorised field trials of the stacked MON 87460 x MON 810 in 2016 and 2017, ostensibly for deployment to smallholder farmers in that country (CAS, 2018).

In addition, Mozambique undertook field trials on the WEMA/TELA insect resistant varieties in 2017 (USDA, 2019), while in 2018 Ethiopia approved a five-year permit to conduct field trials involving the DT and insect resistant WEMA/TELA maize (USDA, 2019). We have next to no information, aside from what the biotech propaganda machinery is telling us, that the trials in Mozambique have been completed and that the varieties will be made available to farmers pending approvals by relevant government agencies (CAS, 2018). Nigeria is also said to be trialling the TELA varieties in the field (USDA, 2020). Despite Tanzania having also undertaken field trials in 2017 and 2018, the government announced the cancellation and destruction of WEMA/TELA trials of the double stacked variety MON 87460 x MON 810,[15] thus reinstating a similar decision made earlier, in 2018.[16]

13. See https://www.acbio.org.za/wema-project-shrouded-secrecy-open-letter-african-governments-be-accountable-farmers-civil-society
14. Alupe, Kibos, Kakamega, Embu, Thika and Mwea
15. See blog: https://www.acbio.org.za/tanzania-orders-destruction-monsantogates-gm-trials-due-illegal-use-pro-gm-propaganda
16. See blog: https://www.acbio.org.za/tanzania-cancels-gmo-trials-again-urgent-need-uphold-ban-disrupt-false-solutions-and-neo

Please see the table below for more detail on the status of the stacked MON 87460 x MON 810 in Kenya, Uganda, Tanzania, Mozambique and Ethiopia.

Country	Year planted	Location	Authority
Kenya	2016 2017	Kiboko, South Eastern Kenya Kitale, Western Kenya, (Kenya Agricultural and Livestock Research – KALRO – trial sites)	National Biosafety Authority (NBA)
Uganda	2016 2017	Namulonge, Central Kampala Kasese, Western Uganda (National Agricultural Research Organisation – National Cereal Crops Research Institute)	National Biosafety Committee of the National Council for Science and Technology (NBC-UNCST)
Tanzania	2017 2018	Dodoma, Central Tanzania (Makutupora Research Centre, Tanzania Agricultural Research Institute)	Vice President Office, Ministry of Environment
Mozambique	2017 2018	Gaza Province (Chokwe Research station), Mozambique Agricultural Research Institute (IIAM)	National Biosafety Authority, under the Ministry of Science, Technology, Higher Education and Technical Professionals
Ethiopia	2018	Adawa Region (Melkasa Research Centre, Ethiopia Institute of Agricultural Research)	Ministry of Environment and Climate Change

Source: USDA, 2020b

Conclusion

It is clear that SA is acting as a conduit and facilitator of failed and outdated technologies onto the rest of the continent. Not only is it unacceptable to use SA as part of the global grain trade, to further the interests of these corporate giants, but also deeply unethical. It is vital that Africa starts to consider African interests first and foremost. Instead of acting to advance individual interests, through meagre economic gains from exports, SA must use its power, regulations and resources to shift the dynamics and promote African solutions to the deepening crisis facing smallholder farmers, and food and nutrition more broadly. These technologies are false solutions, which threaten the future of African agriculture and indeed its sovereignty.

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