ALERT!

GMO Alert – News and status quo in South Africa

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african centre for biodiversity
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Highlights

- General release of the Water Efficient Maize for Africa (WEMA) GM drought tolerant maize is on hold as African Centre for Biodiversity (ACB) fights the approval in the High Court.
- ACB and Monsanto in dispute over confidentiality regime in High Court.
- No decision yet on commercial release of Monsanto's triple-stacked GM maize involving the GM drought tolerant trait.
- South Africans outraged: DuPont Pioneer applies for a permit to bulk up GM herbicide tolerant maize seed in SA on the very day Monsanto is ordered by a United States court to pay US$ 289 million in damages to a Mr Lee Johnson, who is suffering from cancer, due to glyphosate exposure.
- Dow Agroscience's maize varieties engineered to withstand glyphosate, glufosinate and controversial war chemical 2,4-D have been in field trials since 2015. Applications for general release are imminent.
- South Africa continues to export GM maize to African neighbours Zimbabwe and Swaziland, which enters the human food chain and is also used for feed and in food processing (FFP).

1. General release

1.1 WEMA GM drought tolerant maize

The decision to approve an extremely novel GM drought tolerant maize for general release in South Africa in 2015 to be reviewed by the Pretoria High Court.

In 2015 South African authorities approved the commercial release of Monsanto's GM drought tolerant maize variety known as MON87460. This variety has only been approved for cultivation in a handful of countries to date – the USA, Canada and Brazil (some sources also say Japan and Australia,[1] but this is not confirmed). There is scant information on the performance of this crop in the field under drought conditions and there is no history of safe use in our food. This approval could allow yet another novel set of genes to contaminate South Africa's staple food.

In April 2017, the ACB took their review against the commercial release of MON87460 to the High Court, with the assistance pro bono of Legal Aid South Africa. More than 25 000 concerned citizens gave their support by signing petitions and submitting their own objections to the GM regulator. ACB submitted an independent scientific evaluation of Monsanto's health safety assessment, which identified several potential hazards capable of causing adverse effects. These were not identified by Monsanto's research. Similarly, in September 2018, Brazil's federal public prosecutor filed a public civil action suit to suspend the commercialisation of MON87460 in that country, citing safety concerns and lack of adequate safety studies.[2]

South African authorities are also currently considering Monsanto's application for the general release of a GM drought tolerant variety that is stacked with insect resistance and herbicide tolerance (known as MON87460 x MON89034 x NK603).[3] No decision has yet been taken. The

1. http://www.isaaa.org/gmapprovaldatabase/event/default.asp?EventID=98
2. https://www.gmwatch.org/en/news/latest-news/18481-brazil-public-prosecutor-demands-ban-on-three-commercialised-gm-maize-varieties
3. March 2018 Executive Council minutes https://www.nda.agric.za/doaDev/sideMenu/biosafety/doc/Minutes%20of%20the%20Meeting%20of%20the%20Executive%20Council%2027%20March%202018.pdf

next meeting of the Executive Council: GMO Act is in October 2018. The Registrar is unable to provide the ACB with details as to what is on the agenda of this meeting.

MON87460 was developed under the auspices of the Water Efficient Maize for Africa (WEMA) project, which is being piloted in five African countries – South Africa, Kenya, Uganda, Mozambique and Tanzania. It aims to develop drought tolerant and insect resistant maize through genetic engineering as well as conventional means. This approval may have ripple effects on authorities in other WEMA participating countries, where GMOs are yet to gain any commercial release approvals to date. The ACB has written extensively on this project since placing our first objection on record with regulators in 2007.[4] Over the years we have presented compelling evidence that the technology cannot deliver what it promises and additionally, is not appropriate for smallholder farmers. The ACB maintains that Monsanto's GM drought tolerant claim is bogus; it is not their patented inserted gene that confers drought tolerance, rather this is a characteristic of the conventionally bred hybrid maize varieties under the auspices of the WEMA project.

The review is expected to be heard by the High Court in early 2019.

1.1.1 Monsanto and ACB to square off over confidentiality regime

In the intervening time, Monsanto has launched an interlocutory application to the High Court to prevent ACB from having access to pertinent and relevant information to allow ACB to properly participate in the GM drought tolerant maize review proceedings. ACB has opposed this application, which has been set down for hearing in the High Court in Pretoria on 6 December 2018.

ACB is similarly represented pro bono by Legal Aid South Africa.

1.2. DuPont Pioneer's herbicide tolerant and insect resistant maize

South Africans are outraged when DuPont Pioneer applies for a permit to bulk up herbicide tolerant seed in SA, as a US court judgement confirms glyphosate-cancer link.

In August 2018 DuPont Pioneer published a public notice of its intention to submit an application for the general release of genetically modified maize into the South African environment. The maize, designated TC1507 X NK603, is engineered to be sprayed with two herbicides – glyphosate and glufosinate ammonium. It is also genetically engineered for pest resistance. DuPont's objective is to bulk up seed for sale elsewhere, rather than for sale in South Africa.

This application was met with outrage from the South African public, who had, on that very day, learnt the outcome of the US court case, Johnson vs Monsanto. This landmark court case found in favour of a groundsman who had contracted non-Hodgkin's lymphoma from his extensive contact with and exposure to glyphosate. The court awarded DeWayne (Lee) Johnson US$ 289 million in damages. While the case will now go to appeal and is by no means concluded, what was explosive over the course of the case was an exposé of Monsanto's "Let Nothing Go" internal programme, which proactively manipulated the scientific assessment of glyphosate

4. For the latest ACB writing on this, see: https://www.acbio.org.za/sites/default/files/2017/09/WEMA-FAQ-a.pdf

and hid their prior knowledge of its cancer-causing properties. The jury found not only that Monsanto's Roundup and related glyphosate-based brands present a substantial danger to people using them, but that there was "clear and convincing evidence" that Monsanto's officials acted with "malice or oppression" in failing to adequately warn of the risks.

A petition against DuPont's permit application for commercialisation of their triple-stacked GMO in South Africa by Dear Me South Africa has, since August, garnered 19 065 comments, all of which were sent as a unique email to the authorities involved.

Use of glyphosate in South Africa has skyrocketed since the introduction of glyphosate tolerant GM crops in 2000. For example, between 2008 and 2012, herbicide tolerant GM soya cultivation rose from 165 000 ha to 472 000 ha. Over a similar period (2005–2012), the overall use of glyphosate increased from 12 million litres to 20 million litres, demonstrating what a strong driver GM crops are for glyphosate sales. Similarly, from 2007 to 2011 glyphosate imports increased by 177%.

Despite many appeals, the South African government is convinced of the safety claims made by Monsanto/the agro chemical machinery.

1.3 Dow Agrosciences triple-stacked maize

South Africans continue to be force-fed a GM staple food that is being loaded with novel genes and novel combinations of foreign genes.

South African authorities are currently assessing an application by Dow Agrosciences (now merged with DuPont) for the commercial release of a "triple-stacked" maize that is genetically engineered to be resistant to glyphosate as well as produce toxins to fight against lepidopteran pests. This GMO will be cultivated in South Africa and enter our food chain. The ACB submitted a comprehensive scientific objection to this application in March 2018.[5] We identified a lack of information available in the scientific literature on: genetic stability of this event; potential mammalian toxicity of multiple, modified Cry toxins; uncertainties around pesticide residue in food and feed; and lack of long-term safety data. We were particularly concerned that novel genes and novel combinations of genes, which are poorly understood and assessed, continue to be loaded into South Africa's staple food. We concluded that, "Establishing the food and feed safety of MON 89034 x TC1507 x NK603 is essential, considering that maize is consumed by humans and animals in South Africa and is an important staple crop consumed on a daily basis".[6] We requested that South African authorities apply the Precautionary Principle and reject this application.

5. Available at: https://www.acbio.org.za/sites/default/files/documents/GM-Maize-Objections-report-WEB.pdf
6. Ibid.

2. GMO trials

2.1. Dow's 2,4-D resistant maize trials underway

War chemical 2,4-D GM maize arrives in SA: in the fields and coming to our plates soon.

The advent of GM crops resistant to the herbicide glyphosate have promoted rampant use of this chemical in farmers' fields. As a result, weeds have adapted to the poison and the efficacy of glyphosate is diminishing. Agribusiness has responded by developing new GM varieties that are resistant to multiple herbicides, allowing farmers (or, more likely, farm workers) to spray cocktails of different herbicides to deal with resistant weeds.

In July 2015, Dow AgroSciences (now merged with DuPont) was granted approval to run trials of DAS-40278-9 2,4-D tolerant maize, along with stacked varieties (see Table 1) combining 2,4-D and glyphosate tolerance, as well as 2,4-D, glyphosate tolerance and Bt insecticidal traits.[7] Approval was granted, despite a complete failure by the applicant to discuss potential effects of the herbicide use on humans, animals and the environment. Exposure to commercial formulations, as well as to the multiple Bt toxins present in the stacked varieties, were also not discussed. We are expecting applications for the commercial release of some or all of these varieties soon and civil society to strongly oppose the commercialisation of this GM crop.

Table 1: Description of crop events under field trials in SA

Crop variety	Trait/s of interest	Gene/s introduced
DAS-40278-9	2,4-D & aryloxyphenoxypropionate herbicide tolerance	*aad-1*
NK603 x DAS-40278-9	glyphosate & 2,4-D, aryloxyphenoxypropionate herbicide tolerance	*Cp4 epsps (aroA:CP4), aad-1*
MON 89034 × 1507 × NK603	insecticidal activity, glyphosate herbicide tolerance	*Cry2Ab2, Cry1A.105, Cry1Fa2, Cp4 epsps (aroA:CP4)*
MON 89034 × 1507 × NK603 × DAS-40278-9	Glyphosate, 2,4-D & aryloxyphenoxypropionate herbicide tolerance, insecticidal activity	*Cp4 epsps (aroA:CP4), aad-1, Cry2Ab2, Cry1A.105, Cry1Fa2*

7. See https://www.acbio.org.za/sites/default/files/2017/05/2.4D-GM-Maize-briefing.pdf for further information.

3. Import and export of bulk shipments of GMOs

3.1 Commodity imports

In 2016 and 2017, 10 new GM maize varieties were improved for import for food, feed and processing (FFP, also known as commodity import). Two new soybean varieties were also approved. Many of these varieties may never actually be imported into the country – South Africa has zero tolerance for the presence of unauthorised GMOs in bulk shipments, even in tiny amounts. Whole shipments may be rejected due to accidental (adventitious) presence of unauthorised GMOs, so companies protect themselves by gaining approval of a wide variety of GMOs grown in countries from which grain traders import GM maize and soyabeans in bulk loads.

Several highly controversial events were approved for FFP in 2018 – which are resistant to the extremely toxic herbicide dicamba, as well as glyphosate and glufosinate. No actual imports of these varieties (lines 3, 5 and 7 highlighted in Table 2 below) have been approved yet. In fact, not a single permit was issued for the import of commodities for FFP in 2018. This is contrasted with over 2.5 million metric tonnes (MT) of maize imported for FFP in 2017.

Table 2: Commodity import approvals 2017/18

Event	Crop	Trait*	Company/year
BT11 x MIR162x MIMR604 x MON89034 x 5307 x GA21	Maize	IR x HT	Syngenta SA 2018
MON87705 x MON87708 x MON89788	Soybean	HT	Monsanto SA 2018
MON87427 x MON87460 x MON89034 x TC1507 x MON87411 x DAS-59122-7	Maize	IR x HT x drought/ water tolerance	Monsanto SA 2018
MON87427 x MON89034 x MIR162 x MON87411	Maize	IR x HT	Monsanto SA 2018
MON87427 x MON89034 x TC1507 x MON87411 x DAS-59122-7	Maize	IR x HT	Monsanto SA 2018
MON87427 x MON87460 x MON89034 x MIR162 x NK603	Maize	IR x HT x drought/ water tolerance	Monsanto SA 2018
MON87708 x MON89788 x A5547-127[8]	Soybean	HT	Monsanto SA 2018
BT11 x MIR162 x MON89034	Maize	IR x HT	Syngenta SA 2018
MON87427 x MON89034 x MON88017	Maize	IR x HT	Monsanto SA 2017
MON89034 x MIR162	Maize	IR	Monsanto SA 2017
BT11 x MIR162 x MON89034 x GA21	Maize	IR x HT	Syngenta 2017
DP114 x MON810 x MIR604 x NK603	Maize	IR x HT	Du Pont Pioneer 2017
*IR = insect resistance; HT = herbicide tolerance			

Source: DAFF commodities permit list: https://www.daff.gov.za/doc/Commodity%20Clearance%20Approvals%20_GMO%20Act%2015,%201997.pdf

8. ACB's objection is available at: https://acbio.org.za/en/acbs-objection-monsantos-application-commodity-clearance-mon-87708-mon-89788-a5547-127-triple

3.2 Commodity exports

South Africa exports maize for food and feed to several African countries as well as others, primarily in Asia, including:

- Swaziland (almost 21 000 MT in 2017 and 13 000 MT in 2018)
- Zimbabwe (65 000 MT in 2017)
- Vietnam (over 1 million MT in 2018)
- Japan (870 000 MT in 2017 and 485 000 MT in 2018),
- Korea (450 000 MT in 2017 and over 2 million MT in 2018)

The major beneficiaries of this brisk trade are gigantic multinational grain traders, such as Bunge, Louis Dreyfuss and Cargill. These and other such companies also import grains from other GM producing countries to sell in the region.

4. Conclusion

South African authorities maintain their dogged loyalty to the highly controversial GM technology, regardless of emerging damning scientific evidence and numerous scandals about adverse consequences. The path that has been chosen has been toward large-scale, industrial and chemical intensive food production, resulting in profound impacts on the quality of our food and environment, and locking out small producers and entrepreneurs in related food chains from participating in related economies.

However, a growing South African movement is calling for the transformation of our food system toward food sovereignty and the dismantling of corporate control in favour of nurturing small-scale farmers and local food production. You can participate by supporting local farmers and small food businesses. You can also subscribe to the ACB mailing list, to be alerted to applications for new GM licenses that require public comment, and other new developments around GMOs in our country.

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