

APP - 005961

**IRRIGATION BASED AGRICULTURAL ACTIVITIES AND THE ENVIRONMENTAL
RELEASE OF GENETICALLY MODIFIED MAIZE ON FARM EMILIENHOF,
OSHIKOTO REGION**

COMMENTS RECEIVED



Assessed by:



Assessed for:

Van Druten Family Trust

March 2025

IAP Comments

Comments and Responses Report: Comments from the Namibian Organic Association
Received: 27 September 2024 via Email

Comment 1

27 September 2024

Subject: Response to the Environmental Impact Assessment by Geo Pollution Technologies for the cultivation of genetically-modified maize on Farms Askevold and Naueis

Interested and Affected Party: Namibian Organic Association (NOA)

NOA Board members:

Mareike Voigts (Chairperson)
Eckhart Förtsch (Vice Chairperson)
Sanet Brundyn (Treasurer)
Vera Corry (Secretary)
Selma Nasheya
Jacobina Lumambo
Johannes Negongo
Dirk Bockmühl

To whom it may concern,

Please find attached here some comments and queries with regard to the Environmental Impact Assessment for the cultivation of genetically modified maize on farms Askevold and Naueis.

Attached also is a position paper by the Namibian Organic Association from April 2023 in response to the importation of genetically modified feed by AGRA.

Response 1: The response is well received and the position paper by the Namibian Organic Association from April 2023, in response to the importation of genetically modified feed by AGRA, is noted.

Comment 2

Background

The Namibian Organic Association is a membership-based voluntary association that was founded in 2009 by producers and consumers passionate about healthy, sustainably produced food. The organization's mandate is to grow the organic sector in Namibia, thereby increasing the accessibility of local, healthy, nutritious food to all Namibians. This is done through awareness raising campaigns, training workshops, offering certification for organically produced food for the local market, and more recently, by engaging with government through the establishment of a Technical Working Group on Organic Agriculture and Agroecology which will form part of the Food Security Working Group under the Office of the Prime Minister (OPM).

Standing with organic movements across the globe, NOA and its members are guided by the four principles of organic agriculture, namely: Health, Ecology, Fairness and Care (as defined by the International Federation of Organic Agriculture Movements, IFOAM – Organics International), as well as by the 13 principles of Agroecology. These principles guide management practices across the value chain of the food system and contribute directly to multiple Sustainable Development

Goals (SDGs): -

- SDG 1: Eradication of poverty
- SDG 2: Eradication of hunger
- SDG 4: Ensuring quality education
- SDG 5: Achieving gender equality
- SDG 6: Increasing water-use efficiency
- SDG 8: Promoting decent jobs
- SDG 12: Ensuring sustainable consumption and production
- SDG 13: Building climate resilience
- SDG 15: Halting the loss of biodiversity.

NOA stands for food sovereignty through sustainable food production that is practiced through crop diversity, seed saving and seed sharing, using seeds adapted to local environments as well as conventional crop breeding methods to enhance production within local environments. Capacity building within the country through supporting farmers – subsistence, small-scale and commercial – is a main focus for NOA.

With regard to the cultivation of genetically modified organisms (GMOs), NOA calls for:

- Transparent processes and full public participation
- Fully independent research trials/studies
- Risk assessments for GMOs to include herbicide/pesticide impacts
- All GMO products to be clearly labelled to inform consumers.

NOA would also like to point to the study by Noack et al. (2024), which highlights that while much of the literature focus on yields of GM crops, there is very little focus on the social and environmental impacts of GMO cultivation. This is also highlighted in a report by the African Centre for Biodiversity, which NOA urges all decision-makers, environmental impact assessors and farmers to familiarize themselves with, as well as the references therein:

- Africa Centre for Biodiversity. 2020. GMOs in South Africa 23 years on: Failures, biodiversity loss and escalating hunger

Response 2: Background introduction is noted.

Comment 3

Queries/comments on the Environmental Impact Assessment (EIA):

1. GM Maize that is herbicide resistant (event NK603) is cultivated in conjunction with the herbicide ‘Roundup’, the active ingredient of which is glyphosate. While this product is still available in Namibia on the shelves, it is well documented that this chemical is carcinogenic (OEHHA, 2019) and has been linked to several chronic diseases, such as non-Hodgkin lymphoma, with exposure to glyphosate increasing the chance of cancer by 40% (Zhang, et al., 2019). Furthermore, the “adjuvants” (chemical additives) that are used in the formulation of Roundup make it even more toxic than glyphosate alone, which is largely unknown to the public and decision-makers (Mesnage et al., 2015). The EIA does not deal sufficiently with the impacts of glyphosate (the active ingredient in Round up) on the health of humans and animals.

Response 3: The authors of the EIA are well aware of the inherent dangers of not only an herbicide like glyphosate (and RoundUp), but also many other commonly used pesticides, including those used by the laymen around their own homes and gardens. Many of these have not received the attention of glyphosate, as they are not linked to GM crops. They are however used on crops we buy in our stores on a regular basis. In an ideal world, we think it is safe to assume that, all other things being equal, no single person will willingly choose a crop grown with pesticides over a crop grown without any. Unfortunately, reality is quite different from idealism, and factors like the price of organic vs non-organic foods influence this decision, especially in a country where a large portion of population lives below the poverty line.

The above being said, the debate on the carcinogenicity of glyphosate is ongoing. However, a critical analysis of the Zangh et al. (2019) paper by the US EPA, found various flaws in the Zhang et al. study and concluded that the study by Andreotti et al. (2018) remains the largest, best-designed high quality study, and their categorization of glyphosate as “*not likely to be carcinogenic to humans*” remains.

The very detailed review of GM crops by the National Academies of Sciences, Engineering, and Medicine (2016) had to conclusions on cancer incidence linked to GM crops:

FINDING: The incidence of a variety of cancer types in the United States has changed over time, but the changes do not appear to be associated with the switch to consumption of GE foods.

Furthermore, patterns of change in cancer incidence in the United States are generally similar to those in the United Kingdom and Europe, where diets contain much lower amounts of food derived from GE crops. The data do not support the assertion that cancer rates have increased because of consumption of products of GE crops.

FINDING: There is significant disagreement among expert committees on the potential harm that could be caused by the use of glyphosate on GE crops and in other applications. In determining the risk from glyphosate and formulations that include glyphosate, analyses must take into account both marginal exposure and potential harm.

It may be worthwhile studying the National Academies of Sciences, Engineering, and Medicine (2016) document.

Ultimately, it remains crucial that farmers apply RoundUp, as with all other pesticides, according to the prescribed instructions and in a responsible manner.

References:

Andreotti G, Koutros S, Hofmann JN, Sandler DP, Lubin, JH, Lynch CF, Lerro CC, De Roos AJ, Parks CG, Alavanja MC, Silverman DT. 2018. Glyphosate use and cancer incidence in the Agricultural Health Study. JNCI: Journal of the National Cancer Institute. 110(5): 509–516. doi:10.1093/jnci/djx233.

National Academies of Sciences, Engineering, and Medicine. 2016. Genetically Engineered Crops: Experiences and Prospects. Washington, DC: The National Academies Press. doi: 10.17226/23395.

Comment 4

2. Given that there are several movements in the EU and the US to ban this chemical for use in the agricultural sector, NOA would like to raise the question as to whether it is imperative to set up a cultivation system that is totally reliant on the use of this herbicide? What would the economic implications be if this chemical is banned in the EU (and the US) where many of Namibia's beef exports are destined to?

Response 4: Most of, if not all, animal feed used to supplement cattle's diets, especially now during drought conditions, already contain GMOs. Also, as indicated in the specialist study, the Meat Board of Namibia has confirmed that the export status to the European Union are not negatively influenced by the fact that Namibian animal feed already contains GM ingredients, inclusive of RoundUp Ready Maize. It is also not an irreversible cultivation system. Permits for planting of GM crops needs to be renewed on an annual basis.

Comment 5

3. It is often argued that the cultivation of herbicide resistant GM maize leads to a decrease in herbicide use. There are, however, studies showing the exact opposite (Perry, et al., 2016). Not only does herbicide use remain the same as before, or even increase, but because herbicide resistance does develop in weeds, more herbicide is used, or even more toxic herbicide alternatives are being used, e.g. glufosinate, dicamba, 2-D (REFERENCE). Bayer recommends overlapping use of residual herbicides with glyphosate, the examples of which that are given are partly already banned in the EU or in the process of being banned (e.g. Atrazine, Simazine, Metribuzin, Metachlor). Is the cultivation of herbicide-resistant ('Roundup Ready') GM maize then a sensible and sustainable system to invest into?

Response 5: Likewise, there are studies indicating that there are no definitive proof that herbicide use increase. See the National Academies of Sciences, Engineering, and Medicine (2016) report. Furthermore, herbicide resistance in weeds is not a concern in GM crops only. It also develops under traditional crop farming where weeds are sprayed prior to planting of fields. The same argument can therefore be made for non-GM crops.

Comment 6

4. Pg. 21: It is argued here that GM crops need to be used because the use of herbicides (on non-GM crops) leads to weed resistance. This statement is problematic since it is also the use of herbicides in GM herbicide-resistant crops that leads to weed resistance (Heap and Duke, 2018; even highlighted in a report by Bayer on glyphosate), perhaps even more so as farmers that use herbicide-resistance GM crops start to rely on only one herbicide, rather than an Integrated Pest Management approach which entails a more holistic approach to pest management and thereby reduces the risk of herbicide or pesticide resistance developing.

Response 6: Noted. Throughout the EIA and specialist report it is clearly stated that weed resistance to herbicides can occur in both non-GM and GM crops. However, the statement referred to has been rephrased to better express the argument. It now reads: *Some weeds have developed resistance to some herbicides, leading to a need to rotate both crops and herbicide groups in order to keep crops weed-free. Where broad-leafed weeds developed resistance, glyphosate tolerant GM maize may be beneficial as such weeds can still be eliminated on post-emergent maize.* Ultimately, it is thus equally important to have adequate pest management systems for both GM and non-GM crops.

Comment 7

5. Further to the previous point, a reduced use of pesticides is typically only reported in cultivation systems that are already using significant amounts of agro-chemicals (IAAASTD Report, Pg 45). In

this light, it is questionable whether the cultivation of Bt and herbicide-resistant maize in Namibia on a farm where the amount of chemical use might not have been monitored continuously, would realistically lead to a reduction in pesticide use.

Response 7: It is logical that the largest reduction in pesticide use would be in systems making use of a lot of agro-chemicals (pesticides). Subsistence farmers for example, seldom use pesticides at all. The National Academies of Sciences, Engineering, and Medicine (2016) report highlights numerous studies, all indicating reduced use in insecticides on GM crops. In fact their conclusion is:

FINDING: In all cases examined, use of Bt crop varieties reduced application of synthetic insecticides in those fields. In some cases, the use of Bt crop varieties has also been associated with reduced use of insecticides in fields with non-Bt varieties of the crop and other crops.

Furthermore, it is unlikely, especially in Bt maize, that farmers will willingly use expensive insecticides if they are not needed.

Comment 8

6. Maize is a wind-pollinated plant, which is not mentioned in the EIA report. Therefore, the risk of cross-pollination is very real as pollen can be carried across substantial distances by wind. This would impact those neighbours that want to grow non-GM crops, and could also impact their aspirations for organic certification which would directly impact their economic resilience/status. Contrary to what the EIA states, contamination of non-GM crops on neighbouring farms have impacted these farmers' ability to pursue organic certification (Paull, 2019).

Response 8: Having reviewed the Paull 2019 article, of which he is the only author, it is safe to say that from the tone of the article, and the fact that the author is an advocate of organic agriculture, there is great bias towards organic agriculture. This also stems from his lack of including positive aspects of GM crops, which there definitely are.

Nevertheless, the EIA report indicates a buffer (isolation zone) of 800 m between GM and non-GM fields, or as directed by the seed supplier. A counter argument can also be made by farmers intending to plant GM crops. Many farmers have indicated losses of millions of dollars as a result of fall and African armyworms. If they are not allowed to plant GM crops to counter these losses, due to a nearby organic farmer, their own economic resilience is also impacted.

Comment 9

7. More difficult growing conditions can be expected in the future due to climate change, increased temperatures and unpredictable weather patterns. Resilience lies within crop diversity, which is more apparent in local varieties than in GMO crops.

Response 9: The statement "*More difficult growing conditions can be expected in the future due to climate change, increased temperatures and unpredictable weather patterns.*" directly supports the idea of planting GM crops as it provides a level of flexibility not offered by non-GM crops. For example, with dry-land non-GM crops, farmers have to time field preparation and weed control based on weather predictions. Should the rain arrive too late in the planting window, farmers will either risk investing a lot of money by planting without good rains, or not plant at all. With herbicide tolerant GM crops, planting can occur much later in the planting window, as no weed control is required prior to planting, since weed control can be performed post emergent. New GM traits are continuously investigated, with a strong focus on drought tolerance. Such a trait can play a crucial role in food security in dry African countries which already suffers food shortages.

Local varieties will still be planted as refuges when GM-crops are planted.

Comment 10

8. There are currently only 24 countries in the world that allow growing of GM crops (Paull, 2019), with most countries having strict rules and regulations in place that require food stuffs to be clearly labelled to contain GMOs, which highlights consumers reluctance to consuming GMOs.

Response 10: 27 countries planted GM crops by 2023 and the area under GM crop cultivation, globally, has increased from 170.1 million hectares to 206.3 million hectares. Directly linking the number of countries planting GM crops to consumer reluctance, i.e. consumer reluctance causes fewer countries to plant GM crops, is inaccurate. There are numerous other factors to consider, among them the lengthy and cumbersome processes to follow in order to get approval for

environmental release of GM crops. It therefore does not necessarily represent the populations' sentiment. This is also supported by the fact that many more countries, including Namibia, import GM crops for food and feed.

The luxury to refuse to eat food containing GM products, may be an affordable option in for example certain European countries. The reality of most developing countries is however very different. The following screen capture is just a single example that highlights this difference:

OPINION COMMENTARY Follow

We May Starve, but at Least We'll Be GMO-Free

Unlike the Europeans we copied, Zimbabwe can't afford such an unscientific ideological luxury.

By Nyasha Mudukuti

March 10, 2016 6:51 pm ET

From: <https://www.wsj.com/articles/we-may-starve-but-at-least-well-be-gmo-free-1457653915>

Comment 11

9. The EIA shows that insect and weed resistance needs to be monitored. How does the farmer undertake this, and is it a realistic actionable measure that the farmer is able and willing to continue to do? Who will regulate this? What happens when resistance is recorded? NOA cautions that once resistance has developed it cannot be undone. The proponent will be responsible for ensuring that resistance does not occur through implementing alternative pesticides, but how is this controlled and enforced?

Response 11: As stated earlier, weed and insect resistance to pesticides can occur in cultivation of both GM and non-GM crops. The advantage of GM crops is that there at least is legislation and controls in place to prevent and detect this, whereas with non-GM crops there are none. Ultimately the Biosafety Council under the National Commission on Research Science and Technology, Ministry of Higher Education, Technology and Innovation is mandated to prescribe regulations pertaining to the cultivation of GM crops, if permits for this are issued.

Comment 12

10. Given the stringent management plans and regulations/control of various aspect pertaining to the cultivation of GM maize (e.g. planting of refugia, avoiding crosspollination, use of herbicides, etc.) for which not only the proponent is responsible for, but also the environmental regulators/health & safety inspectors, NOA raises the question as to whether the relevant authorities actually have the expertise and capacity to regulate and control such a highly contentious cultivation scheme. This was also highlighted in a report for South Africa by the African Centre for Biodiversity in relation to GMO cultivation in the country (ACBio, 2020). Given that many Namibian farmers already seem to be illegally cultivating GM maize, it is questionable if the government institutions responsible for regulating and overseeing the legal cultivation of GMO crops in the country have the capacity and resources to do, to ensure that there is no contamination and cross-pollination.

Response 12: The application process for the planting GMO's is substantial. Apart from this EIA process, any applicant should also apply to the Biosafety Council under the NCRST. The requirements for this application include emergency response plans for both transport and cultivation of GM crops. Approved and legal cultivation of GM crops will be better controlled, with checks and balances in place.

Comment 13

11. The EIA/proponent argues that the cultivation of GM maize will lead to more employment opportunities and an increase in technical expertise in the country. The same can, however, be argued for adopting or integrating a more sustainable agricultural system as offered through organic agricultural and agroecological practices – both creating employment opportunities and improving

technical expertise in the country as these farming systems are based on a foundation of a very good understanding of ecology, the environment, markets, etc., in order to flourish, while at the same time safeguarding the environment and producing food that is clean and nutritious. A report by the United Nations found that organic agriculture promotes job creation, providing for more than 30% more jobs per hectare than non-organic farms (De Schutter, 2011).

Response 13: The EIA report does not claim that the cultivation of GM maize will lead to more employment opportunities and more technical expertise than organic agricultural and agroecological practices. It simply highlights potential benefits of this project. Naturally a farm making use of for example manual labour to eliminate weeds, will have to employ more people than when insecticides are applied. It however comes at significant cost which may ultimately be carried over to the consumer. As stated earlier, the Namibian population, save for a small niche market, cannot afford the prices that accompanies organic food production. A visit to the weekly biomarket in Windhoek presents a clear indication of this when the number and demographic of patrons are considered. Furthermore, the higher production costs can also reduce the feasibility of crop production to such a level where farmers stop producing crops, especially if pests continually result in significant losses.

Comment 14

12. Research has shown that there is already resistance that has developed in fall army worm and stem borer to the Bt toxin (Huang et al., 2014; Kruger et al., 2011). Furthermore, a study conducted in 2020, showed that despite initial reductions in pesticide use, farmers use more pesticides today compared to before the introduction of Bt cotton (Kranthi & Stone, 2020). Once resistance has developed, even if only after a few years, farmers need to start using insecticides again – resistance cannot be undone.

Response 14: This concern has already been addressed in previous points above and the specific case as discussed by Kruger et al. (2011) was presented in the specialist report (page 22 of 71).

Comment 15

13. *Bt toxin*

a. Bt from plants can remain in the soil for over 2 months (Strain & Lidy, 2015; Feng et al. 2015) – the EIA does not address the long-term impacts of this toxin in the soil, especially on soil life.

b. The potential impact on higher trophic levels have also not been addressed.

Response 15: The same study by Strain & Lidy (2015) states: “The Bt proteins are highly specific and only lethal upon ingestion, limiting the scope of toxicity to target insects. However, concern of exposure to non-target organisms and negative public perceptions regarding Bt crops has caused controversy surrounding their use.” Literature overwhelmingly reiterates that the Bt proteins are very species specific. No evidence could be found of Bt proteins being toxic in higher trophic levels. The conclusion therefore remains that Bt maize are less harmful in ecosystems than traditional insecticide application.

Comment 16

14. Another worthwhile read is the 2022 publication “Pesticide Atlas” of a consortium of different organisations under the leadership of the Heinrich Böll Stiftung, with statistics proving that GMO cultivation and the associated use of pesticides has been a failure and carries grave consequences for human health and the global environment (https://eu.boell.org/sites/default/files/2023-04/pesticideatlas2022_ii_web_20230331.pdf). This publication not only lists facts and statistics, but also reflects on the European public's resistance to GMO and harmful chemicals. Europe is the most important market for Namibian agricultural exports.

Response 16: The focus of the Pesticide Atlas is pesticides in general and not GM crops. In science, ideas are never entirely proven or disproven. Instead, they are accepted or rejected based on supporting and opposing evidence, with conclusions subject to revision when new evidence or perspectives emerge. The evidence presented in the Pesticide Atlas to “[proof]that GMO cultivation and the associated use of pesticides has been a failure and carries grave consequences for human health and the global environment” is weak and highly correlative. Furthermore, this concern has been addressed in the points above.

Comment 17

15. Pg. 51: The risk of biodiversity loss should be categorized as ‘highly probable’. The following paragraph is relevant here, taken from the ACBio 2020 report: *‘GMOs are central to the industrialised version and vision of agriculture punted across the globe. Expanding monocrops and GMOs severely affect global ecological functions through deforestation (specifically the large grain producers of the world) and encroachment into natural habitats, polluting soils and waterways by highly toxic chemicals. There is an overall reduction in the nutrition of food through the creation of nutritionally depleted soils (Schjoerring et al., 2019). The environmental and social toll of industrial agriculture has been recognised widely, with many experts calling for an urgent shift towards biodiverse agroecological production systems (De Schutter, 2010; HLPE, 2019; IPES-Food, 2016).’* If Namibia now allows GMO cultivation, it follows the trap of many industrialised countries of depleting soils and reducing productivity of their agricultural system.

Response 17: Refer to section 4.4.5 of the specialist report. Scientific studies have shown that biodiversity can actually improve under GM crop cultivation. The problem as illustrated in the concern is not directly correlated with GM crop cultivation, but goes hand in hand with industrialised agriculture, of which GM crop cultivation may be part of, but so is non-GM crop cultivation. Maize, whether GM or non-GM, remains a monoculture. That is why crop rotation is important, and is practiced by most Namibian farmers. Furthermore, in the Namibian setting, as far as commercial farming where GM crops will mainly be cultivated is concerned, “slash-and-burn agriculture” is not practiced. Thus, the statement “*Expanding monocrops and GMOs severely affect global ecological functions through deforestation*” is not valid.

Comment 18

16. NOA would like to raise the concern that the ‘road back’ from GM maize cultivation is even more difficult than converting to organic/agroecological systems now. For example, once herbicide resistant weeds have developed through incorrect and overuse of herbicides, we cannot simply undo this development. Furthermore, once soil health is destroyed due to the use of herbicides and other chemicals, it will become increasingly difficult to cultivate this land.

Response 18: As stated earlier, the same risks exist with non-GM crops cultivated under traditional methods of pesticide use. To try and achieve an agricultural industry where no pesticides are used at all, is, even though ideal, unrealistic.

Comment 19

17. NOA would like to highlight that the wording in the document does not reflect an entirely objective voice and could easily influence the reader: when talking about the risks of GM maize cultivation, the writer uses the words ‘it **may** lead to XYZ’, whereas when highlighting the potential benefits of GM maize cultivation, the writer uses the words ‘it **will** lead to XYZ’.

Response 19: It is not the intention to be subjective. Examples include:

- In the sentence “Increased **potential** yields in maize crops, through the cultivation of GM maize, will improve the economic resilience of the farm by offsetting losses that may periodically be incurred in other income streams” it is stated that it is potential increased yields, and it is true that increased yields generate more income.
- Various potential and definite impacts **will** emanate from the operations, maintenance/construction and decommissioning phases.
- The use of GMO maize **is expected** to increase the success rate and nett economic benefit of operations. **However**, due to the variability of GMO seed prices, input costs etc, the nett benefit **will vary** year on year. It is nonetheless **foreseen**, based on historic cultivation of GMO in other developing countries, that the overall revenue generation capacity **will** be increased, contributing to the sustainability of operations and related employment.