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222 Evans Road, Glenwood, Durban 4001, South Africa Phone: +27(0)31 206 2954

The Registrar: Nompumelelo Mkhonza

Genetically Modified Organisms Act

Private Bag X973

Pretoria 0001

By email: GMOAppComments@dalrrd.gov.za

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Thank you for the opportunity to provide input in response to the Corteva Agriscience application for a permit for trial release of GM Canola DP73496-4.

Our submission follows below and consists of:

1. Introduction to Biowatch South Africa
2. Our submission.

Yours sincerely

Rose Williams
Director

1. Biowatch South Africa

Biowatch is a non-governmental organisation established in 1999, which strives for social and environmental justice within the context of food sovereignty. Biowatch works to challenge unsustainable agricultural practices and to advocate for agroecology as an ecologically viable alternative that safeguards people and land. This includes supporting smallholder farmers; working with civil society to create joint understanding and action; and constructively engaging with government in implementing policies and practices that promote, facilitate, and actively support agroecology and farmers' rights. We have a long track record of working on policy issues concerning agriculture, biodiversity, and indigenous knowledge systems.

2. Submission in response to the Corteva Agriscience application for a permit for trial release of GM Canola DP73496-4

Introduction

Corteva Agriscience RSA (Pty) Ltd has applied to conduct a trial release of the GM canola event DP73496. DP73496 canola was genetically modified to express the GAT4621 protein for tolerance to glyphosate herbicides. The purpose of the field trial is to evaluate the efficacy of the herbicide tolerance trait of DP73496 canola as compared to conventional canola when planted in South African environments. Canola, also known as Rapeseed, is a Brassica species (*Brassica napus* L.) with many cultivated and wild relatives.

Biowatch South Africa objects to release of GM Canola DP73496 into our environment, whether for trail release or subsequent commercialisation, for the following key reasons:

Potential for the spread of GM Canola and consequent weediness and threats to biodiversity

Biowatch disagrees with the assertion that in the application that GM Canola DP73496-4 poses no risk of weediness because feral oilseed rape doesn't persist outside of cultivation. This is contested by more recent international research than is cited in the application. Sohn et al (2021)[1] provides evidence that due to the small seed size there can be increased distribution through accidental spillage during transport, on machinery and between fields thereby forming feral colonies. They also note that rapeseed can remain in the soil for a long time and thus contribute to seed banks which produce volunteer populations in subsequent years. These feral colonies of cultivated crops also enable transgene spread.

Sohn et al (2021) [1] also describe the potential for out-crossing of GM Canola genes due to its small pollen size. Although most pollen falls within 100 metres from the source, pollen has been found to travel as far as 4km.

Sohn et al (2022) [2] examined hybridization in controlled environments such as greenhouses, experimental fields, and cage setups and found that these allowed GM *B. napus* to successfully hybridise with several *B. rapa* subspecies. In addition, numerous fertile and viable generations could be generated which pass the herbicide-resistant transgenes to their offspring. This is concerning as their herbicide resistance would add to their potential as difficult to control weeds. Hauser, Shaw, and østergård (1998) [3] show that there is no strong hybridisation barrier between Canola and weedy *B. rapa*. Furthermore, F1 hybrids under some conditions are as fit to pass on genes as their weedy parents and therefore introgression of genes from Canola to *B. rapa* is likely. Therefore, transgenes in the gene pool of Canola could transfer to *B. rapa*.

There is potential that transgenes from GM Canola will spread to wild relatives as well as other Brassicaceae species that have become weedy in South Africa, thereby making these resistant to herbicide control and impacting indigenous biodiversity. For example, McGeoch, Kalwij, and Rhodes (2009) [4] list numerous indigenous and naturalised species with compatibility with *B. napus* and high variability in the hybridisation between these. Looking just at the potential to impact the fynbos biome, they provide the example of *Raphanus raphanistrum*, a naturalised alien species with high crossing potential with Canola that has already started developing herbicide resistance in the Fynbos biome. They warn that dangers to biodiversity includes "the development of, or an increase in weediness, development of herbicide resistance, invasion of natural habitat, movement of populations into new ecological niches and possible extinction of native species."

Sohn et al (2021)[1] reference numerous case studies of feral Canola populations and the unintentional escape of GM canola transgenes outside of cultivated Canola in several countries, including from GM trial sites many years after the trials ended. These include Canada, the United States, and Australia as well as countries that merely import Canola such as the United Kingdom, France, Austria, Sweden, and Japan, and even in Switzerland which had banned the growing and importation of GM Canola.

Although the canola crop in South Africa is mainly produced in the Western Cape (particularly in the Southern parts), high demand has meant farmers in Northern Cape, Free State, Eastern Cape, KwaZulu-Natal, Limpopo and North West are also starting to grow it.[5] The fact that Canola is grown in the Cape in winter is often cited as reason to be less concerned about the potential for out-crossing to other plants which flower in summer. However, as the interest in growing Canola increases the crop may increasingly be grown in areas where there is overlap in flowering times.

Relying on data from tests in the United States is not adequate to prove that DP73496-4 will not escape the cultivated area posing risks of contamination to other crops, feral populations and wild species in the South African context.

Glyphosate environmental and health concerns

Glyphosate tolerant GMO crops increase the use of this herbicide by design. Biowatch objects to the authorisation of any further crops which will lead to the increasing use of glyphosate in our food system and environment. Since the initial development of GM crops resistant to Glyphosate, it has now been proven that Glyphosate is not the benign herbicide that agribusiness claimed it to be. Glyphosate persists in the environment, especially in water and soil systems. It also persists as residues in the food we eat. Globally glyphosate can now be found in the urine of exposed workers but also in our bodies, blood and breast milk.

There is an ever-growing body of evidence of the deleterious impacts of glyphosate, its formulations and residues through both direct contact and indirectly – even at low doses - on human and environmental health. [6, 7]

These include:

- Direct contact with glyphosate applications can cause skin and eye irritation, and dermatitis;
- Inhalation can cause respiratory irritation and difficulty breathing;
- onset of inflammatory diseases and organ damage;
- Chronic exposures include neurological disorders, Parkinson's and Alzheimer's diseases, and endocrine and reproductive disruption.

Of extreme concern is the most recent Global Glyphosate study[8] by the Ramazzini Institute involving prominent EU and US scientists. The study fed glyphosate and 2 glyphosate-based formulations to rats from their gestational day 6 (via maternal exposure) through 104 weeks of age at doses equivalent to the EU acceptable daily intake (ADI) of 0.5 mg/kg body weight/day, 5 mg/kg body weight/day and the EU no-observed adverse effect level (NOAEL). In all 3 treatment groups, statistically significant dose-related increased trends or increased incidences of benign and malignant tumours at multiple anatomic sites were observed compared to historical and concurrent controls. These tumours arose in haemolymphoreticular tissues (leukaemia), skin, liver, thyroid, nervous system, ovary, mammary gland, adrenal glands, kidney, urinary bladder, bone, endocrine pancreas, uterus and spleen (hemangiosarcoma). Increased incidences occurred in both sexes. The study concludes that these results provide robust evidence supporting the 2025 International Agency for Research on Cancer (IARC) conclusion that there is "sufficient evidence of carcinogenicity [of glyphosate] in experimental animals".

This outcome alone should cause South Africa to re-evaluate its prior authorisation of Glyphosate resistant GMOs and certainly should preclude any further authorisations of glyphosate resistant GMOs in our food and agricultural systems.

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