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BACKGROUND INFORMATION DOCUMENT

Environmental Scoping Assessment and Environmental Management Plan for the Introduction of Genetically Modified Maize for Agricultural Purposes in Namibia

1. Introduction

Some agronomic producers intend to apply for permission from the Biosafety Council of the National Commission on Research, Science and Technology, for the introduction of genetically modified (GM) maize, *Zea mays*, for agricultural purposes in Namibia. Geo Pollution Technologies (Pty) Ltd (GPT) was appointed by the Agronomic Producers Association (APA) to undertake an environmental assessment, as required by Namibian legislation, for the proposed environmental release of GM maize. The application will be for three GM maize events, namely MON810, MON89034 and NK603, where an “event” refers to each modification of an organism and is used to distinguish between different (genetically modified organisms) GMOs.

An environmental clearance certificate (ECC) for the release of GM maize is required as per the Environmental Management Act No. 7 of 2007 and the Biosafety Act No. 7 of 2006. An environmental impact assessment (EIA) and environmental management plan (EMP) will be submitted to the Ministry of Environment and Tourism’s Department of Environmental Affairs (DEA) in support of the ECC application. The environmental assessment’s purpose is to determine any potential positive and negative impacts of cultivating the proposed GM maize in Namibia.

2. The Purpose of this Document

With this background information document (BID) GPT aims to provide information and interact with interested and affected parties (IAPs) with regard to the project. IAPs are therefore invited to register with GPT in order to:

- ♦ Provide GPT with additional information which should be taken into consideration in the assessment of impacts;
- ♦ Share any comments, issues or concerns related to the project; and
- ♦ Review and comment on the reports (EIA and EMP).

3. Genetically Modified Organisms

Conventionally, animals and plants were selectively bred in order to express specific traits (called mutation breeding). This was, and still is, achieved by only breeding with individuals that express similar, favourable traits (i.e. similar genes). Depending on the life cycle of the organism, this can be a long process with unreliable results. Examples of this include the various dog and cat breeds, colour variations in canaries and budgies, and seedless fruits.

A GMO is an organism whose genetic material (genome) has been artificially altered, through genetic engineering, to express favourable physiological traits or produce desired biological products. This means that the genome of the target species is modified at molecular level by recombining its genome with gene(s) from unrelated species. Each such modification is referred to as an “event”. By modifying at molecular level, it allows for very accurate genetic modification, to allow for expression of favourable traits that would be difficult or impossible through selective breeding techniques.

4. History of Genetically Modified Organisms

The first GM animal, a mouse, was achieved in 1974, while the first GM plant was produced in 1983. By 1994, the first commercially available GM tomato was placed on the market as food. In 2015 GM salmon came on the market as the first GM animal approved for human consumption.

Insect resistant GM maize was first planted in South Africa in 1998. Today, approximately 80% of all maize cultivated in South Africa is GM maize. This includes insect-, herbicide-, and both insect and herbicide resistant GM maize.

5. Proposed GM Maize for Namibia

5.1 Event: MON810

MON810, brand name YieldGard™, contains a Cry1Ab gene obtained from the bacteria *Bacillus thuringiensis kurstaki*. In the bacteria

it produces the Cry1Ab delta-endotoxin protein which is toxic to certain lepidopteran insects (moths and butterflies). By inserting the Cry1Ab gene into maize, it also produces the same delta –endotoxin which then protects the maize against, among others, the maize stalk borer (*Busseola fusca*). Maize with the *B. thuringiensis* gene are often simply referred to as BT maize.

5.2 Event: MON89034

Mon89034 is also a BT maize, however it expresses two BT-toxins (from *B. thuringiensis kurstaki*) as a result of the insertion of the genes Cry1A.105 and Cry2Ab2. It also protects the maize from lepidopteran insects.

5.3 Event: NK603

NK603 (brand name Roundup Ready™) has been engineered to express tolerance against glyphosate, a post emergent, systemic, non-selective herbicide. Glyphosate is the active ingredient in Roundup® which is used widely for weed control. However, since glyphosate is non-selective, it cannot be sprayed directly onto crops. Glyphosate functions by binding, and thus inhibiting, the plant enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). EPSPS occurs in all plants and is essential for the production of the three aromatic amino acids: tyrosine, tryptophan and phenylalanine. Without these amino acids plants die. By inserting the gene CP4 EPSPS originating from *Agrobacterium tumefaciens*, a glyphosate tolerant form of EPSPS is produced, allowing maize to survive when glyphosate herbicides are sprayed for weed control.

6. The EIA and EMP

The environmental assessment will consider the potential risks associated with the release of any one of the GM maize events for which approval is required. The assessment will not be site specific, but will consider all areas in Namibia where maize is or may be cultivated. Based on the assessment, a generic EMP will be drafted. The EMP should be implemented by all permit holders, as issued by the Biosafety Council of the National Commission on Research Science and Technology, for the cultivation of MON810, MON89034 and / or NK603 at any given location in Namibia, following approval by the Agronomy Producers Association.

7. Impact Assessment

The introduction of GMOs elicited mixed responses from various individuals, groups and organisations. Objections against GMOs include: It is morally and ethically wrong to

genetically engineer living organisms; Health risks of consuming GMOs are not known; and GMOs can become invasive or lead to super bugs or weeds (BT or glyphosate resistant insects and plants). On the other hand, advantages of GMOs relate to: Enhanced food security through increased crop yields, especially in dry countries like Namibia; Reduced or no insecticide use on BT maize cause less environmental damage; and economic benefits for the agricultural sector and the country as a whole.

During the environmental assessment all components of the environment, and potential impacts, will be considered, however only those components which may be impacted on significantly (both positive and negative), or are deemed to be sensitive, will be assessed. These include the following:

- ◆ Socio-economic impacts
- ◆ Export markets
- ◆ Health and safety risks
- ◆ Ecosystem and biodiversity impacts
- ◆ Soil, surface water and groundwater pollution (pesticide application)
- ◆ Ecosystem services
- ◆ Land degradation

8. Getting Involved

GPT invites all IAPs to register for the projects and provide, in writing, any issues and suggestions regarding the projects. This correspondence must include:

- ◆ Name and surname,
- ◆ Organization represented or private interest,
- ◆ Position in the organization,
- ◆ Contact details, and
- ◆ Any direct business, financial, personal or other interest which you may have in the approval or refusal of the application.

A public meeting will be held in Windhoek. All registered IAPs will be notified of the venue and time. All contributions become public knowledge and will be circulated along with the reports as per the EMA requirements. The comments, inputs and suggestions will also be submitted to the DEA along with how any issues have been addressed in the environmental assessment. The public participation process will remain ongoing during the environmental assessment. However, to be informed of the meeting and related information, registration as IAP should be completed by 11 November 2019.

Your rights as an IAP according to the Environmental Management Act, No7 of 2007, Government Notice No. 30 (Environmental Impact Assessment Regulations)

Section 23.

- (1) *A registered interested or affected party is entitled to comment in writing, on all written submissions made to the Environmental Commissioner by the applicant responsible for the application, and to bring to the attention of the Environmental Commissioner any issues which that party, believes may be of significance to the consideration of the application, as long as -*
- (a) comments are submitted within 7 days of notification of an application or receiving access to a scoping report or an assessment report;*
 - (b) the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.*
- (2) *Before the applicant submits a report compiled in terms of these regulations to the Environmental Commissioner, the applicant must give registered interested and affected parties access to, and an opportunity to comment in writing on the report.*
- (3) *Reports referred to in sub regulation (2) include-*
- (a) scoping reports;*
 - (b) scoping reports amended and resubmitted;*
 - (c) assessment reports; and*
 - (d) assessment reports amended and resubmitted.*
- (4) *Any written comments received by the applicant from a registered interested or affected party must accompany the report when the report is submitted to the Environmental Commissioner.*
- (5) *A registered interested or affected party may comment on any final report that is submitted by a specialist reviewer for the purposes of these regulations where the report contains substantive information which has not previously been made available to a registered interested or affected party.*

Section 24:

The applicant responsible for an application must ensure that the comments of interested and affected parties are recorded in reports submitted to the Environmental Commissioner in terms of these regulations, and comments by interested and affected parties on a report which is to be submitted to the Environmental Commissioner may be attached to the report without recording those comments in the report itself.

For more information, or to register as an IAP, please contact:



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