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8 pages

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RE: Environmental Impact Assessment for Syngenta's genetically modified maize: GA21

Dear Minister Buyelwa Sonjica

The African Centre for Biosafety (ACB) has a long track record in monitoring and interrogating GMO permits in South Africa, providing independent analysis and lobbying for greater public participation in decision making. In this letter we respectfully call on you to use your discretionary powers to request an Environmental Impact Assessment (EIA) for Syngenta's application for commercial release of genetically modified maize, GA21, in terms of Section 78 of the Biodiversity Act. We also appeal to the Executive Council: GMO Act, to exercise their discretionary powers in terms of the GMO Act to call for an EIA for this event.

Background

On the 13th of December 2009, Syngenta published a public notice of their intent to apply to the GMO Registrar for a permit for general release of genetically modified maize, GA21. The maize is modified to withstand applications of Syngenta's herbicide – Touchdown Forte. To date, no Environmental Impact Assessments have ever been carried out to determine the impact of widespread cultivation of a GMO cultivar. The amendments in the Biodiversity Act now give you the discretionary power to call for such an EIA. The Executive Council: GMO Act, also have discretionary powers to ask for an EIA, and are given further guidance on the matter through the Environmental Risk Assessment Framework, published in September 2008.

South Africa is the only country in the world to have allowed the genetic modification of a staple food. The ACB respectfully submits that the general release of this new event, along with recent amendments in the law should trigger an EIA as the crop poses potential risks to the environment and to human health.

- Section 78 of the Biodiversity Act was amended in 2009, and it now provides that 'if the Minister has reason to believe that the release of a genetically modified organism into the environment under a permit applied for in terms of the Genetically Modified Organisms Act, 1997 (Act No. 15 of 1997), may pose a threat to any indigenous species or the environment, no permit for such release may , be issued in terms of that Act unless an environmental impact assessment has been conducted in accordance with Chapter 5 of the National Environmental Management Act (NEMA) as if such release were a listed activity contemplated in that Chapter.'

- The GMO Amendment Act (Act No. 23, 2006) created a mandatory duty for the EC to consider whether an EIA is required before approving a GMO application. In this regard, the EC is guided by the EIA regulations made in terms of the National Environmental Management Act (Act No. 107 of 1998).

- To further implement the provisions of section 78 of NEMBA, DWEA drafted an Environmental Risk Assessment Framework, which was published in September 2008. This framework aims to provide further guidance to the GMO Executive Council regarding the basic environmental assessment and when to call for an EIA and how this should work in practise. At the same time, it is also meant to inform the general public/interested parties of the environmental risk assessment measures which the EC needs to take into account when evaluating the GMO permit applications.

Syngenta GA21 Maize – Risks

The ACB has already submitted an objection directly to the Registrar: GMO Act, indicating our concerns to both the scientific assessment submitted by Syngenta, and the profound socio-economic risks that a general release of GA21 will entail. Having analysed the non-confidential business information (CBI) version of Syngenta's application, it is the opinion of the ACB that both the scientific and socio-economic assessments put forward in it are wholly inadequate in justifying a commercial release of GA21. Furthermore, much of the 'independent' research cited in Syngenta's documents emanates from organisations that receive direct funding from the industry they are conducting research on, which raises significant concerns over their independence and objectivity. Follows is a brief summary of our main points of contention:

Scientific assessment

Possible unintended effects of non-functional DNA fragments on GA21

Transformation by particle acceleration, the method used in GA21, is a far from sophisticated method of targeted transgene insertion, and has been associated with multiple fragments and gene rearrangements.[i] The DNA sequence data in the application reveals

two (unintended) genes that have the potential to produce novel proteins, which may interrupt native gene sequences. Extra gene fragments in Monsanto's Roundup Ready Soya for example, were also claimed to be non-functional and not-transcribed,[ii] but were later found by Monsanto to be transcribed to produce RNA.

Gene Flow

If transgenes behave like naturally occurring genes, they have the potential to be inherited in the same way and persist indefinitely in cultivated or free living populations. The consequences crop-to-crop gene flow is at present little understood. While not a centre of biodiversity of maize, it is nevertheless a staple crop in South Africa that is grown by many small scale and subsistence farmers who have nurtured and developed their own local varieties over many generations. Syngenta themselves acknowledged the potential of some seed dispersal in its application, and small amounts of maize pollen have been known to travel up to 400 meters,[iii] a distance that could bring it in to contact with dozens of small scale farming plots. The original field trials were not designed to monitor low probability risks, such as gene transfer and no assessment was made of the impacts on non-target organisms despite the various papers that have been published on the subject.

Herbicide tolerance and use

The modified plant EPSPS enzyme as found in GA21 confers tolerance to the herbicide glyphosate. The repeated use of herbicides exerting strong selection pressure on crop weeds has led to more than 250 documented cases of herbicide resistance, a process that is 'likely to accelerate with increased reliance on herbicides'. [iv] The strategies being proposed to counter this resistance by the biotech industry revolve in the main around the development of stacked-gene events that allow for even heavier doses and combinations of herbicides. [v] Over the past 13 years in the United States, it is reported that "compared to pesticide use in the absence of GE crops, farmers applied 318 million more pounds of pesticides over the last 13 years as a result of planting GE seeds". [vi] The report that Syngenta draw upon citing GMOS being responsible for a world-wide reduction in herbicide use of 4.6% between 1996 and 2007[vii] is from an agricultural consultancy with well known links to the biotech industry. [viii]

Health and environmental effects of glyphosate and glyphosate tolerant GMOs

The full impact of glyphosate on groundwater can only really be determined by long-term monitoring programmes. In terms of impacts on human health, glyphosate is acutely toxic to humans and in California has been reported to be the third most commonly reported pesticide related illness amongst agricultural workers.[ix] A study on mice fed GM soybean suggested that *epsps*-transgenic soybean intake was impacting on the morphology,

particularly the nuclear features of liver cells, in both adult and young mice.[x] Several unwanted effects on aquatic systems,[xi] terrestrial organisms,[xii] and ecosystems[xiii] have also been recorded.

Genetic modification: Degree of certainty

The notifier makes the claim that the genetic modification does not introduce any new category of risk as compared to risks from conventional breeding. This is not to be taken as an apparent truth. In general, genetic modification by the application of recombinant DNA technology is characterised by scientific uncertainty. This stems from several factors including the inherent imprecision of currently employed recombinant DNA techniques, the use of powerful promoter sequences in genetic constructs and the generation, as a result of genetic modification, of novel proteins to which humans and animals have never previously been exposed.[xiv] Uncertainty is a key element of the Biosafety Protocol (Cartagena Protocol on Biosafety) to the Convention on Biological Diversity.[xv] The lack of sufficient relevant scientific information and knowledge regarding the extent of potential adverse effects allows the Precautionary Principle referenced in the Biosafety Protocol to be triggered. The precautionary principle states “where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”.

EFSA Opinion

Throughout the Syngenta application, the opinions and decisions of the European Food Safety Authority’s (EFSA) GMO Panel are quoted and referenced. The EFSA, established in 2002, was tasked as serving as the central authority for the scientific evaluation of food and feed safety in the EU.[xvi] However, the EFSA has come in for a great deal of criticism of late for what is seen as its rubber stamping of anything put forward by the biotech industry, and the revolving door between the EFSA and the biotech industry. In May 2008, the former head of the GMO-panel at the EFSA, Suzy Renckens, moved directly into the genetic engineering industry without any objections or restrictions being imposed by the authority. EU staff regulations stipulate that former members of EU public services have to ask for approval from their institutions for new positions. Following questions raised by TestBiotech (an independent German biosafety organisation) head Christoph Then, it took fully 18 months for the executive management at EFSA to contact Mrs Renckens to inform her of this requirement. Mrs Renckens’ replied that EFSA already knew about her work though the meetings that she had already held with the authority in her new position at Syngenta.[xvii]

Socio-economic concerns

Unsubstantiated claims of increased yield performance of GM crops

Syngenta's submission draws on the rather erroneous assertion that GM crops have and will continue to result in improved yields. Yet the 2008 International Assessment of Agricultural knowledge, Science and Technology for Development (IAASTD) assessment, 'the most authoritive statement on current knowledge', could not come to a firm conclusion that genetic engineering was the obvious path to a more sustainable production path. Jack Heinemann, who sits on the UN roster of biosafety experts, went further: "there is no conclusive data from either developed – or developing – country agro-ecosystems to support generic claims that GM crops increase yield or revenue…any general claim that GM crops will reliably produce more than conventional crops in the same environments is not scientifically substantiated".[xviii]

The impact of agriculture on climate change

To posit herbicide resistant crops as a contribution to mitigating climate change (as Syngenta have done in their application) is an outrageous claim; the industrial agricultural model, heavily dependent on fossil fuels, has been found to be one of the most environmentally destructive activities carried out by humankind, accounting for up 20 - 30% of greenhouse gas emissions.[xix] Arguments that GM non-til (NT) agriculture can sequester carbon dioxide in the soil have been questioned by both the Intergovernmental Panel on Climate Change (IPCC),[xx] and the US department of Agriculture.[xxi] If we are to shrink the carbon footprint of global agriculture, a recent study by the Food and Agricultural organization (FAO) and World Bank advised governments to begin shifting their policies toward supporting models that are based on ecological principles and cultivation for local consumption.[xxii]

Food security

Syngenta echoes the long peddled argument that GMOs will improve food security. Data from the UN Food and Agricultural Organisation (FAO) does little to corroborate this assertion; in Argentina and Paraguay, two countries that have devoted more than 40% of their arable crop land to GMOs, food security has *decreased* since GMO adoption in the mid-1990s.[xxiii] The World Food Summit of 1996 defines food security as 'when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life'. The concept is built on three pillars: Availability, access, and use.[xxiv] Recent experiences in the United States confirm that production is only one aspect of this complex issue. Despite increased production of maize, rice, soybean, durum wheat and winter wheat during 2008-09, [xxv] the number of people reported as food insecure rose by almost 30%, to a staggering 49 million.[xxvi] A UN study in African agriculture recently noted that 'organic agriculture can be more conducive to food security in Africa than most conventional systems, and that it is likely to be more sustainable in the future'.[xxvii]

Job Losses

Herbicide resistant crops are in essence a labour-saving technology, and Syngenta points this out themselves in their application (Page 34). Evidence from Argentina (the world's second largest GM producer in 2008/09)[xxviii] has pointed to a strong correlation between the increased adoption of GM soy and rising levels of rural unemployment.[xxix] In the 2nd quarter of 2009, 80 000 jobs were lost in the agricultural sector.[xxx] In her budget speech, delivered in June 2009, Minister Joemat-Petterson remarked that the "primary concern is over job losses during this period and the challenge of creating sustainable jobs".[xxxi] The adoption of crops that further undermine already diminishing and seasonal jobs in rural areas are at odds with the remarks of Minister Joemat-Petterson. Several recent studies have emphasized the link between localised, sustainable agricultural practices and improved rural human capital and livelihoods, particularly in Africa.[xxxii]

Impacts on the farmer

For small-scale and traditional farmers the introduction of GA21 could represent a shift in agricultural practice that, without careful training, can seriously impact on livelihoods and health. Pamphlets on safe use of GA21 are available in English and Afrikaans on the Syngenta website. These should be available in all local languages and the high incidence of illiteracy amongst rural farmers and lack of access to electronic media must be borne in mind.[xxxiii]A study on the experience of the Massive Food Production Programme in the Eastern Cape showed some alarming socio-economic and health impacts, including crippling debt and illness to people and livestock as a result of ignorance about the safe handling of poisons.[xxxiv]

Claims of Independent research

It is significant that both of the reports referenced under in response to socio-economic concerns (Page 33) are from sources with well illustrated links to the biotech industry. The International Service for the Acquisition of Agri-biotech Applications (ISAAA) website describes the organization as 'a not-for-profit international organization that shares the benefits of crop biotechnology to various stakeholders, particularly resource-poor farmers in developing countries'.[xxxv] Less well advertised are the organization's funding sources which include, amongst others, AgrEvo, Monsanto, Novartis, and Pioneer Hi-Bred. Monsanto are even on its board.[xxxvi] PG Economics are a similarly 'independent' agricultural consultancy who count the ISAAA, Agricultural Biotechnology in Europe (an industry lobby group)[xxxvii], Du-Pont, Monsanto Europe, Novartis, and the American Soybean Association amongst previous customers.[xxxviii]

Conclusion

South Africa became a party to the Cartagena Protocol on Biosafety (The Protocol) on the 12th of November, 2003. As such it is bound to certain obligations, and also to follow the spirit of The Protocol. The Precautionary Principle, which states that "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation", is the raison d'être of The Protocol. It is our contention that the Syngenta application cannot be adequately assessed as key information deemed 'commercially sensitive has been omitted. Claims made regarding gene stability and behaviour are by reference to information provided by the developer of the GMO and not to any independent, objective source. Additionally, assertions made as to the socio-economic benefits pertaining from a general release of GA21 are naively optimistic at best, thoroughly misleading at worst. In light of this, we hereby respectfully request that you use your discretionary powers, as described under section 78 of the Biosafety Act, to call for a full and independent Environmental Impact Assessment into GA21.

We look forward to hearing from you soon.

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