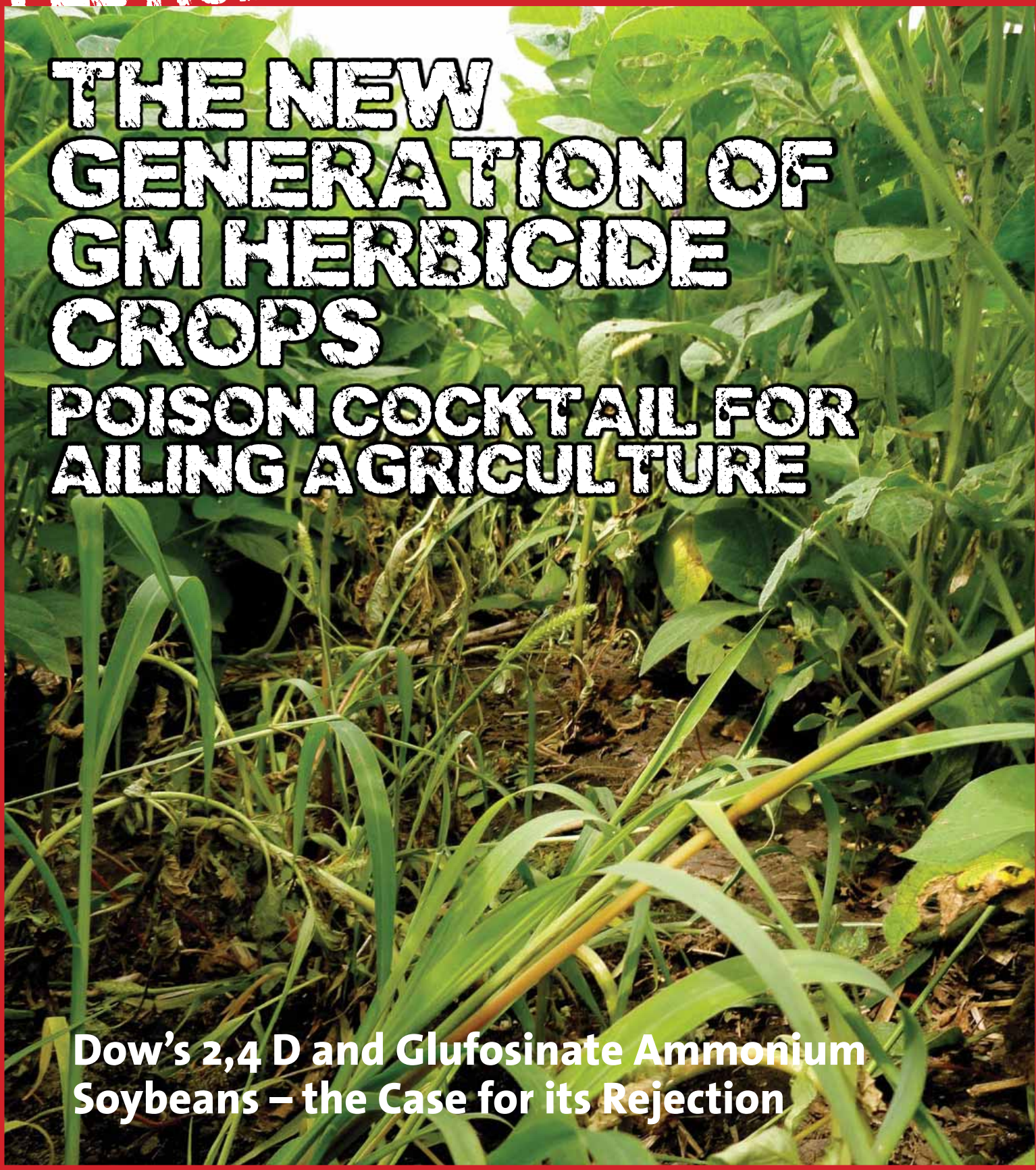
PESTICIDES AND GM CROP SERIES



THE NEW GENERATION OF GM HERBICIDE CROPS

POISON COCKTAIL FOR AILING AGRICULTURE

Dow's 2,4 D and Glufosinate Ammonium Soybeans – the Case for its Rejection

african centre for biosafety

www.acbio.org.za

The African Centre for Biosafety (ACB) is a non- profit organisation, based in Johannesburg, South Africa. It was established to protect Africa's biodiversity, traditional knowledge, food production systems, culture and diversity, from the threats posed by genetic engineering in food and agriculture. It has in addition to its work in the field of genetic engineering, also opposed biopiracy, agrofuels and the Green Revolution push in Africa, as it strongly supports social justice, equity and ecological sustainability.

The ACB has a respected record of evidence based work and can play a vital role in the agro-ecological movement by striving towards seed sovereignty, built upon the values of equal access to and use of resources.

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This factsheet should be read together with "What you should know about Dow's 2,4 D GM maize" on our website, www.acbio.org.za

INTRODUCTION

Dow Chemical has during July 2012, applied to the South African GMO authorities for approval to import its GM soybean DAS-68416-4 for human consumption, animal feed and processing. This GM variety has been genetically engineered to withstand liberal applications of Dow's toxic chemical herbicide 2,4-D and Bayer CropScience's glufosinate ammonium.

2,4 D was one of the active ingredients present in the now infamous 'Agent-Orange' chemical defoliant, used to devastating effect by the US military during the Vietnam war. Glufosinate ammonium also poses many health risks and is to be phased out completely in the European Union by 2017, as a result of the European Parliament voting for its banning.

We have submitted a detailed response to Dow's application and deal with various issues, including: the paucity of the data received; fatal flaws in Dow's food safety studies; and risks posed by both 2,4 D and glufosinate ammonium.[1] We are particularly concerned that this GM soybean will contain residues of both 2,4 D and glufosinate ammonium and pose unacceptable risks to humans and animals. Our worries are compounded by the fact that herbicide residues on imported grains are not being tested in SA by our government or anyone else for that matter.

PETITION TO BAN DOW'S 2,4 D GM MAIZE

The African Centre for Biosafety (ACB) has, with the support of almost 7,000 individuals, 18 health professionals and 20 organisations from South Africa, petitioned the Parliament of South Africa to ban Dow's 2,4 D GM maize. We are of the view that such similar support exists to reject Dow's application to imports its GM soybean 2,4 D + glufosinate into SA (DAS-6816-4).

The petition was submitted to Parliament by Ms C Dudley MP, from the African Christian Democratic Party, on the 7th August 2012.[2]

The petition was tabled in Parliament on the 15th August 2012, and has been submitted to the Portfolio Committee on Agriculture, Forestry and Fisheries for consideration and report back to Parliament.

STATUS OF APPROVAL IN THE WORLD OF DAS-6816-4

DAS-68416-4 is pending approval in the United States and Canada for commercial growing. Dow is also seeking approval to import the GM soybean into Argentina, Australia/New Zealand[3], Brazil, the European Union (EU), Japan, Mexico, South Korea, and Taiwan. According to Dow, these approvals are necessary to "mitigate global sensitivities to GE productions".[4] To date, only the Australia/New Zealand authority has approved it.

WHY THIS "NEW GENERATION" OF EVEN MORE TOXIC GMOS?

The superweed epidemic

Millions of hectares of GM crops grown in the US, Brazil and Argentina are engineered to tolerate glyphosate. These crops have, particularly in the US, become infested with glyphosate tolerant 'super-weeds'. In other words, the GMOs and the glyphosate are not only failing, they are causing havoc in farmers' fields. Such weed resistance is potentially threatening the viability of the biotechnology industry's glyphosate tolerant crops. These crops, which are synonymous with Monsanto's 'Roundup-Ready' brand, account for 85% of all GM crops grown worldwide.[5]

In response to the superweed epidemic, a new generation of GM crops tolerant to older and even more toxic herbicides are now being introduced. These include Monsanto's GM crops tolerant to dicamba, a herbicide very similar to 2,4-D; Bayer's isoxaflutole-tolerant soybean; BASF's imidazolinone tolerant soybean; DuPont's maize and soybeans tolerant to ALS inhibitors and so forth. Indeed, 14 of the 20 GM crops currently pending approval in the US are all herbicide-tolerant, some to three herbicides: 2,4-D, glyphosate and glufosinate.[6]

Herbicide tolerant GM crops awaiting approval in the United States

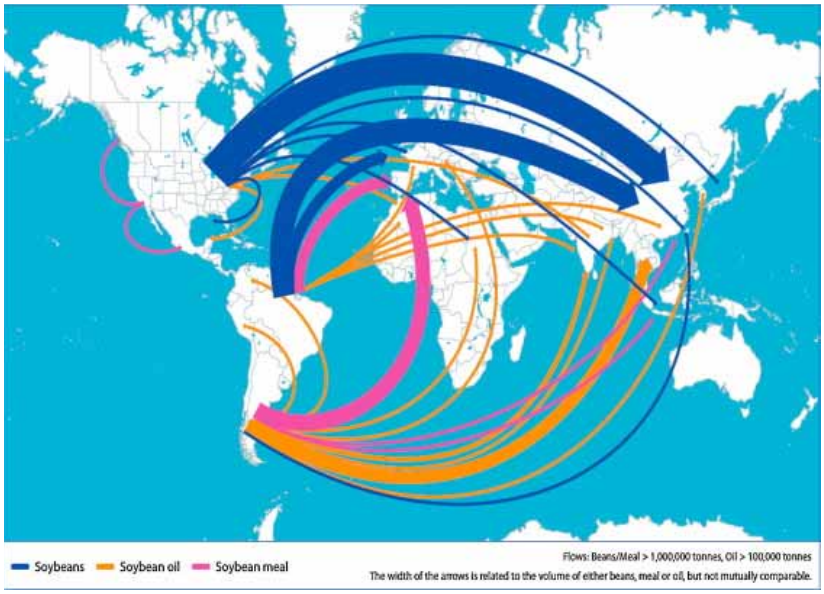
Crop	Company	Trait	Event
Cotton	Bayer	Glufosinate	T303-3
Maize	Pioneer	Glufosinate	DP-ØØ4114-3
Soybean	Monsanto	Dicamba	MON-877Ø8-9
Soybean	Dow	Glyphosate and Glufosinate	DAS-444Ø6-6
Soybean	Bayer	Glyphosate and Isoxaflutole	FG72
Soybean	BASF	Imidazolinone	BPS-CV127-9

Source: USDA-APHIS

Protecting multiple industries

The production of GM herbicide tolerant (HT) soybeans are linked to multiple multi-billion dollar industries across the globe. In 2011 HT soya was planted on a staggering 75 million ha worldwide. This represents 47% of the total area cultivated with GM crops.[7] The vast majority of this is produced not to feed people directly, but to supply protein meal to vast animal feeding lots around the world. In Argentina, 80% of its soybean crop is processed into soybean oil and meal. Of this, 93% of the oil and 99% of the meal is exported.[8]

The international soy trade, 2009.



Source: Spiertz, H (2012). **Avenues to meet food security. The role of agronomy on solving complexity in food production and resource use**. *European Journal of Agronomy, volume 43.pp.1-8*

The introduction of these new herbicide tolerant maize and soybean GMOs will go a long way towards:

- maintaining and expanding the current captured market for GM herbicide tolerant seeds;
- rescuing the GM herbicide tolerant market (albeit only in the short term before even more virulent super weeds begin to develop) and ensuring that it has a continued 'field life' in the short to medium term;
- maintaining and expanding the current captured market for animal feed derived from GM HT crops;
- creating new markets for outdated and toxic herbicides such as 2,4 D, glufosinate, Dicamba and so forth; and
- maintaining and expanding the global meat industry.

The GMO, agrochemical, animal feed, meat and fast food industry link

What is thus at stake is a multi-billion dollar industry, involving the agrochemical industry, the animal feed industry, the meat industry, grain traders, farmers in the North (with a competitive edge supported by subsidies), and a range of other players who benefit from the GM HT industrial value chain.

At the close of the Second World War, the US armaments industry was left with millions of tons of surplus chemicals. These were channelled into a new industry: the chemical-fertiliser and agrochemical industry. The advent of the agrochemical industry profoundly altered the way in which both field crops and animals are produced. By using synthetic fertilisers, US farmers were free to plant maize year after year, rather than rotating with legumes (which return vital nutrients to the soil) and supplementing that with animal manure. This industrial farming system firmly entrenched the separation of arable and livestock farming and resulted in vast tracts of chemically intensive mono-crops. Rather than curtailing production (or switching to alternative crops), the massive surpluses produced by this method were funnelled into industrial-scale animal feeding lots.[9, 10]

Today, it is estimated that 40% of the entire world's grain production is used for animal feed. Most of this comes from GM crops. In 2007/08 over 80% of global soybean production occurred in Argentina, Brazil and the United States, where the majority of production is GM.[11] In the same year, 85% of the world's soybean crop was used for animal feed.[12] The USA uses 45% of its maize crop (85% of which is GM) for animal feed.[13]

This agrochemical, GMO animal feed system is breathtaking in both scale and cost – to the environment, human and animal health. This system is kept alive only through a combination of (so far) cheap and abundant oil and enormous subsidies. For example, from 2008 – 2010 maize and soybean farmers in the United States received nearly $17 billion (roughly 80% of which went to the largest 20% of farms).[14] Meanwhile, in the European Union the average cow gets $2.50 a day in subsidies.[15]

Every link in the factory farming value chain is dominated by a handful of multinational corporations. The storage, handling and transportation of animal feed are the domain of the world's largest grain traders: Archer Daniels Midland, Bunge, Cargill and Louis Dreyfus. The biggest of them all, Cargill, made a whopping $107 billion in revenues in 2010. In the same year Bunge, which recently entered the South African market through a joint venture with a local firm Senwes, made $45 billion in revenues.[16]

At the other end of the chain are the meat processing companies and food retailers. The dominant players include US-based meat packers Tyson and Smithfield as well as Cargill's meat division. These companies have already captured the market place in the global north and are rapidly expanding their operations in the global South. Tyson has operations in China, Argentina and Brazil (see map above for the implications of this).

French poultry company Doux is the world's 10th largest meat company and now produces half its output in Brazil. These companies in turn are the major suppliers to the world's largest fast food chains. Every egg sold by McDonalds in the United States is supplied by Cargill, which recently established similar operations in Russia.[17] In China, two firms supply over 50% of KFC's chicken.[18] This business model is being followed in the South; two of the world's top ten meat producers are Brazilian.[19] Even in South Africa, two of the largest formal agricultural co-operatives have expanded into poultry production. In South Africa, poultry consumption has doubled since 1993. Indeed, meat consumption in the global South doubled from 1980 to 2005, while egg consumption trebled.

This increase in the consumption of meat and other processed foods has been cited as a major factor behind the alarming rise in obesity rates in low and middle income countries.[20] A corollary of this has been a dramatic increase in diseases associated with obesity. In China, Type 2 Diabetes affected less than 1% of the population in 1980. By 2008 prevalence of the disease had reached 10%.[21] Overall, 80% of Diabetes cases now occur in the developing world.[22]

NEW GENERATION OF TOXIC GMOS IN SA'S FIELDS

In July the Executive Council gave the first commercial approval for a glufosinate-tolerant GM crop in South Africa, Pioneer Hi-Bred's TC1507 maize. Pioneer Hi-Bred is a DuPont subsidiary company. Worryingly, a further 7 glufosinate tolerant maize varieties (all from Pioneer) and 3 glufosinate tolerant cotton varieties (from Bayer) have been undergoing field trials since 2010.[23]

Crop	Company	HT Trait	Event	Year of last trial
Maize	Pioneer	Glufosinate, glyphosate	TC1507 x MIR162 x NK603	2010
Maize	Pioneer	Glufosinate, glyphosate	TC1507 x MON810 x NK603	2011
Maize	Pioneer	Glufosinate	TC 1507 x MIR 162	2010
Maize	Pioneer	Glufosinate	TC 1507 x MON 810	2011
Maize	Pioneer	Glufosinate	TC1507	2011
Maize	Pioneer	Glufosinate, glyphosate	TC 1507 x 59122 x NK603	2011
Maize	Pioneer	Glufosinate, glyphosate	TC 1507 x 59122 x MON810 x NK603	2011
Maize	Pioneer	Glufosinate, glyphosate	TC 1507 x NK603	2011
Maize	Pioneer	Glufosinate	TC 1507 x 59122	2011
Cotton	Bayer	Glufosinate	BGII x LL cotton 25	2011
Cotton	Bayer	Glufosinate, glyphosate	GlyTol x LL Cotton 25	2010
Cotton	Bayer	Glufosinate	BG II x GlyTol x LL Cotton 25	2011

As can be seen, SA's farmers and consumers can expect a rash of new glufosinate tolerant GM crops in the near future, from some of the world's largest agrochemical companies. If Dow's varieties are approved for import, it can only be a matter of time before applications are made to grow these even more toxic GMOs, as well as those being created by Monsanto and BASF.

FOOD SAFETY RISKS

We have already dealt comprehensively with the health risks associated with 2,4-D including links to cancer of the white blood cells. In this regard, please see the ACB factsheet 'What you should know about Dow's 2,4-D GM maize'.[24]

In regard to glufosinate ammonium, studies have shown that this chemical negatively affects the cardiovascular, nervous and reproductive systems in rodents and mammals.[25] In 2009 the European Parliament voted to ban glufosinate, along with 21 other pesticides classified as carcinogenic, mutagenic or toxic to reproduction. The use of glufosinate will be completely phased out in the European Union by 2017.

The primary consumers of this 2,4-D tolerant GM soya variety are likely to be factory farmed animals. Aside from the direct health risks posed to these animals, there is evidence that transgenic DNA can be taken up by the organs of animals that eat it. This has occurred in sheep,[26] pigs,[27,28] and rainbow trout.[29] GM DNA from soya was detected in the blood, organs and milk of goats.[30] The implications of this, and the knock on effect on humans consuming GM fed animals, is cause for great concern. This is particularly worrying since Dow has in its application for approval, grossly underplayed the impact of this GM variety on both animal and human health.

RISKY HERBICIDE RESIDUES ON OUR FOOD

The Department of Agriculture, Forestry and Fisheries (DAFF) says that it will monitor and test imported GMOs for herbicide residues. We dispute that this will happen or is likely to happen anytime in the near future. We have already shown that imported GM grains are not being tested at all for herbicide residues. The truth of the matter is that local government health authorities, responsible for the inspection and monitoring of imported foodstuffs, do not have the capacity or resources to undertake such testing.

See further, "How much glyphosate is on your dinner plate: SA food safety compromised by lack of testing."[31]

EXPORTS OF GM SOYBEAN FROM SA TO INDONESIA, MALAYSIA AND MOZAMBIQUE

Dow argues that its application 'is to support the potential shortage of soybean in South Africa.' It dismisses valid concerns that this variety could intermingle with other soybean varieties (GM and non GM) and be re-exported. In this regard, Dow states that South African soya exports have not been 'very insignificant' in recent years. This is not true. During 2012 alone, export permits for nearly 300,000 tons of GM soybeans have been granted, of which 30,000 tons went to Indonesia and the rest to Malaysia. In 2010, South Africa exported 35,000 tons of GM soybeans to Mozambique.[32] If this GM soybean is approved for import into SA, it will be co-mingled with soybeans grown here. This means that SA will re-export Dow's controversial and highly risky GM soybeans to other countries where it has not been approved.

CONCLUSION

The ACB has as far back as 2005, raised vociferous objections to Dow using SA as its guinea pig for profit making purposes. This has also been duly noted by the US government, as exposed by Wikileaks.[33] We continue to raise our strongest objections to Dow's attempts to use the people of South Africa as guinea pigs in order to expand the market for its risky GMOs. Gauging by the support we have received for our petition to ban Dow's GM maize 2,4 D, this GM soybean will be similarly rejected by the public.

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