AGAINST THE GRAIN May 2014

SOJA 2,4-D:
waging war on peasants

Global attempts by Dow AgroSciences to gain approval for new genetically-modified soybean varieties resistant to the herbicide 2,4-D have become particularly aggressive in recent months. Simultaneous applications have been filed in several of the countries where genetically engineered crops (GE or transgenic crops or GMOs) were introduced in the 1990s.

The push for approval of new transgenics is part of a broader strategy by agribusiness to make the world's farms increasingly dependent on its toxic herbicides, thus increasing the profits it derives from selling these chemicals.

Transgenic soy in Argentina (Photo: Juan Mabromata/AFP)

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The current situation is a rerun of the 1990s' introduction of Roundup Ready (glyphosate-resistant) crops, only this time the herbicides in question are much more toxic. These weed-killers have been around for a longer time and the case for their hazardousness to human health and the environment has been well documented.

The public pretext for these new GE crops is that they are necessary to counter the rapid spread of glyphosate-resistant weeds, popularly known as "superweeds." But superweeds only exist because they have adapted to survive repeated sprayings of Roundup! In other words, they are a serious problem caused by a technology that was designed as a solution to a lesser problem (offering farmers a convenient way to kill weeds without killing the crop). Only 18 years after their introduction, Roundup Ready seeds are an utter failure.

Applications are now before the regulatory agencies of the United States, Argentina, Brazil, and South Africa for approval of a new genetically engineered soybean resistant to 2,4-D. The four countries are moving in parallel towards the granting of commercial growing permits. This dynamic shows how these corporations operate on a global scale with the confidence that they can have their way with our public institutions – which have been colonised, they know full well, by corporate power and ideology.

The four soy events being promoted by Dow contain stacked resistance to other herbicides (glufosinate ammonium and glyphosate) in addition to 2,4-D.[1]

The good news is that peoples' movements and peasants' organisations have stepped up their resistance, actively mobilising and raising their voices in public forums to fend off this new attack.

The world's 18-year experiment (1996–2013) with Roundup Ready soy offers clear lessons regarding the potential risks of the new 2,4-D-resistant seed. The figures for Argentina indicate that Roundup use increased by approximately 220 million litres during this period[2]. For the United States, Benbrook[3] reports an increase of 239 million kg during the period 1996–2011.

Given this data, there can be no doubt that the approval of any 2,4-D-resistant transgenic event will cause an exponential rise in the use of the herbicide. And soybeans are not the only crop concerned: applications for approval of 2,4-D resistant cotton and corn varieties are also under review. These varieties include stacked resistance to other herbicides (glyphosate and glufosinate), making the projected increase in overall herbicide use that much greater.

The following is an overview of the status of 2,4-D-resistant soy applications filed by Dow in various countries.

The Dow Chemical Company is an American multinational corporation founded in 1897. Initially a chemical manufacturer, in 1989 Dow embarked on an agrichemical joint venture with Eli Lilly, the pharmaceutical giant. Eight years later, the resulting company was bought by Dow and renamed Dow AgroSciences. It markets 2,4-D as a single herbicide under the Frontline trademark, as well as in herbicide mixtures under a wide variety of other brand names.

Canada

Canada is the only one of the major soy-producing countries that has already approved (2012–13) commercial varieties of 2,4-D-resistant soybeans.

1. International Service for the Acquisition of Agri-biotech Applications (ISAAA): DAS44406-6, DAS68416-4, DAS68416-4 x MON89788, and DAS81419.
2. Núcleo de Estudos Agrários e Desenvolvimento Rural (NEAD), "Reavaliação toxicológica dos agrotóxicos a base de 2,4-dicloro-fenoxiacético (2,4-D)," submission to Ministério do Desenvolvimento Agrário, Brazil, 24 March 2014.
3. Charles Benbrook, Impacts of Genetically Engineered Crops on Pesticide Use in the U.S.: The First Sixteen Years, 28 September 2012. GRAIN, "The United Republic of Soybeans – Take Two," 12 June 2013.

Waging war on peasants

2,4-D is the standard abbreviation for the chemical 2,4-dichlorophenoxyacetic acid. A synthetic auxin, or plant hormone, used to kill broad-leaved weeds, it is very commonly applied in combination with other herbicides. It was developed in England during the Second World War and was first marketed in 1946.

2,4-D is notorious for having been an ingredient in Agent Orange (along with 2,4,5-T), the chemical used as a weapon by the United States in the Vietnam War. The health harms caused to thousands of people by Agent Orange were mainly due to the presence of a carcinogenic and teratogenic contaminant (a dioxin) in the 2,4,5-T component. However, some of today's 2,4-D preparations are likewise contaminated with dioxins due to the way they are manufactured.

Numerous studies have shown 2,4-D to be highly toxic, even though it is classified as moderately hazardous (Class II). It is linked to a rise in non-Hodgkin's lymphoma cases among farmers and pesticide applicators in the United States.[4] For this reason, it was the subject of a controversial 17-year review process that culminated in June 2005 when economic interests prevailed over doubts about the product and EPA decided to reregister 2,4-D.

In terms of its mode of action, 2,4-D is a synthetic hormone and has been shown to function as an endocrine disrupter in the human body.[5]

2,4-D is also a neurotoxin. It is readily absorbed through the skin or by inhalation and can damage the liver, kidneys, muscles, and brain tissue. Oral consumption of larger quantities (100–300 mg/kg of body weight in mammals) and absorption through the skin can be fatal. Exposure to the ester and salt forms of 2,4-D is linked to a wide range of adverse human and animal health effects including embryotoxicity, teratogenicity, and neurotoxicity.2

If all this is not bad enough, commercial 2,4-D formulations contain highly toxic adjuvants (other chemicals which enhance the herbicide's effectiveness).[6]

4. The events approved in Canada are the same ones
5. RAPAM, 2,4-D: Razones para su prohibición mundial. (pdf)
6. Ibid.

In November 2012, in conjunction with the first approval, Dr. Warren Bell of the Canadian Association of Physicians for the Environment stated, "The federal government has recklessly approved a GM food crop that is tolerant to yet another toxic pesticide, even though earlier GM glyphosate-tolerant crops already created superweeds and increased pesticide use. These same problems will be recreated by 2,4-D crops. Our environment, food and population will be increasingly exposed to another hazardous product."

United States

Dow is seeking approval for a 2,4-D-resistant soybean (event DAS-68416-4) in addition to other stacked herbicide-resistant events (glyphosate and glufosinate ammonium).

The Center for Food Safety has launched a petition[7] calling on the US Department of Agriculture (USDA) to reject "Agent Orange" soy and has already gathered 32,000 signatures. More recently, it denounced an application for 2,4-D-resistant corn and cotton events. It is worth noting that soy, corn, and cotton are practically the only crops with which the corporations have achieved any commercial success.

The Center for Food Safety petition reads, in part: "Commercial approval of Dow's soy will trigger a large increase in 2,4-D use, but USDA has not conducted a meaningful review of the consequent harm to native ecosystems, crop injury from 2,4-D drifting onto neighbouring fields, or the evolution of weeds resistant to 2,4-D. 2,4-D is already the number one culprit in drift-related crop injury complaints, and the huge increase in its use with 2,4-D soy will exacerbate these harms."

Argentina

In January 2014, it became public knowledge that the National Agricultural Biotechnology Advisory Commission (CONABIA) and the Biotechnology Branch have recommended the commercial release of a genetically modified 2,4-D-resistant soy variety (DAS-44406-6), concluding that "the risks arising from the large-scale release of this genetically engineered plant into the agroecosystem are not significantly different from those inherent in growing non-GM soybeans."

Peasant organisations, NGOs, environmental groups, and environmental law groups have sharply criticised CONABIA's stated rationale for the decision.

In the face of CONABIA's positive decision, a campaign called "Paren de Fumigarnos" (Stop Spraying Us) was launched in January by the GMO-free Latin America Network (RALLT) and Alianza Biodiversidad. The campaign is calling on President Cristina Fernández de Kirchner to reject the soybeans, arguing that "the environmental and health impacts of this new transgenic crop will be even more devastating, especially since this new GMO contains stacked herbicide resistance as a tactic for fighting off the superweeds that have evolved in areas where Roundup Ready crops have been used for many years."[8] So far, the campaign has delivered more than 2,000 signatures to the president.

Tractor spraying herbicide

Simultaneously, the Argentine environmental law group CELMA made a presentation to the federal Department of Agriculture, Livestock Production and Fisheries[9] challenging the CONABIA decision document. CELMA asked that the environmental and food safety studies submitted by Dow AgroSciences Argentina S.A. be made available for public scrutiny, that a public hearing be held, and that the Department of the Environment and Sustainable Development be required to play its statutory role in the decision.

In February, a group of organisations made a presentation to the federal department of agriculture asking why the product was approved in the absence of environmental impact studies and opportunities for public participation. This presentation was made public at a major press conference held in Buenos Aires.[10]

No response has yet been received to any of these actions.

7. Center for Food Safety, "Tell USDA to Reject 'Agent Orange' Soy,"

8. Biodiversidad en América Latina y el Caribe, "ACCIÓN URGENTE: Argentina a punto de aprobar nuevo transgénico resistente al 2,4D uno de los componentes de Agente Naranja,", 10 October 2014.

9. CELMA, "Nuevo dictamen favorable de la CONABIA sobre soja tolerante al 2,4-D, glufosinato y glifosato de DowAgrosciences Argentina SA: impugnación del CELMA", Biodiversidad en América Latina y el Caribe, 4 January 2014.

10. RENACE et al, Conferencia de prensa: "¡No a la soja resistente al 2,4 D!", Biodiversidad, 12 February 2014.

Farmers in Paraguay inspect young soya plants. The sole objetive of introducing transgenic seeds is to gain control of the immense market for primary agricultural inputs and toxic herbicides.

Brazil

In Brazil, too, the regulatory body (CTNBio) is considering an application for approval of 2,4-D-resistant soy. A public hearing was held in December at the impetus of the GM-free Brazil campaign, allowing a range of opinions on the question to be heard. The Attorney General's Office showed its willingness to listen to members of civil society, and legitimate questions were raised as to the possible impacts of a commercial release of soy and corn varieties resistant to 2,4-D, a product classified by the Brazilian national public health agency ANVISA as highly toxic.[11]

The hearing found that "despite all the promises made for GMOs, they now require the use of more pesticides, yet there are more weeds and more pests. The reaction has been to make new promises – about drought-resistant plants, for example, or plants developed with public money instead of by the big multinationals."

South Africa

South Africa approved imports of 2,4-D-resistant soybeans in March 2013. Civil society groups in South Africa, Latin America (especially Brazil and Argentina), and the United States expressed major concerns about the South African authorities' decision to improve imports of Dow's transgenic soy (DAS-44406-4) The variety in question is genetically modified to withstand applications of 2,4-D, glufosinate, and glyphosate.[12]

The critics contend that this approval will lend support to Dow's applications for release of this variety in Brazil, Argentina, the United States and elsewhere.

Mariam Mayet of the African Centre for Biosafety stated: "We condemn the decision by the South African authorities. Once again, economic interests are riding roughshod over our government's stewardship role to protect the health of our citizens and environment. The decision to approve this GE soybean variety is all the more galling in light of a current motion by the African Christian Democratic Party before the South African Parliament, to overturn a previous decision to allow imports of Dow's 2,4-D tolerant GE maize into South Africa."

Observations and conclusions

— The first conclusion to be drawn is an obvious one: that the technology package consisting of using herbicide-resistant seeds in no-till cropping systems has been an abject failure.[13] Everybody

11. AS-PTA, "Brasil: MPF debate liberação de soja e milho resistentes a 2,4-D," Biodiversidad, 18 December 2013.

12. African Centre for Biodiversity et al, "Duras criticas al gobierno sudafricano por la aprobacion de la soja transgenica agente naranja", Biodiversidad, 26 March 2013.

13. Direct seeding, conservation tillage, and no-till agriculture are synonyms for a cropping technique in which the soil is not plowed. Initially proposed as a soil conservation practice, it was commandeered for the implementation of herbicide-resistant crops.

now agrees that herbicide-resistant weeds have become a major problem, yet, during the first GE decade, the corporations routinely denied their existence. Roundup Ready crops have quite simply betrayed the promise that their use would result in reduced application of herbicides.

— More specifically, this situation constitutes conclusive proof of the total failure of what has been far and away the most commercially successful genetically engineered trait: glyphosate resistance. Roundup Ready soy is the most widely grown transgenic crop, covering an area of over 100 million hectares worldwide. We can now say with confidence that it could not have colonised our fields to such an extent without lies, corporate machinations, and shameful complicity on the part of our governments and scientists.

— That the only solution being proposed by the agrichemical manufacturers is new herbicide resistance shows that the sole objective of these seeds is and always has been, as we stated seven years ago, "to control the immense market for primary agricultural inputs and toxic herbicides, of which all the companies want a slice.... Sales of the seed-herbicide technology package (with patent protection guaranteeing payment of royalties) represent the perfect tactic for holding onto the unprecedented gai ns made by agribusiness corporations over the last few decades".[14]

— These new transgenics will translate into the application of millions of litres of herbicides even more toxic than glyphosate. Their appearance confirms that a war is being waged against peasants who continue to resist the incursions of agribusiness into their homelands. But this time the scale of the assault is reaching new levels of intensity.

— The five countries mentioned are among the world's chief GE soy producers, with a combined total of over 80 million hectares under cultivation. Roundup Ready soy is a commodity crop intended mainly for animal feed and agrofuels; it makes little or no contribution to human nutrition. The new herbicide-resistant crops will only exacerbate this situation and worsen the coming food crises.

— The world's regulatory agencies continue to act as rubber stamps for the technologies landing on their desks. They have been captured by the very corporate interests they are supposed to regulate and continue to base their decisions on insupportable concepts such as "substantial equivalence." The various "biosafety" instruments that have been adopted are just the institutionalisation of these corporate interests, while public participation (where it exists) is a pro forma façade.

Day of action against pesticides in Paraguay
(Photo: Rainforest Action Network)

— Sustained resistance is growing in every country as the impacts of transgenic technologies are denounced and the fallacies that allowed for them to be rolled out are exposed. An ever-broadening range of sectors are raising their voices against GMOs.

— Ultimately, to study the history of how GMOs were forced upon us is to discover that we have come down the wrong road. The task now is for us to make the failure of this technology universally known, dismantle the corporate power that keeps it afloat, and embark on the road to food sovereignty, striding along with the small farmers who do the real job of feeding the world.

14. GRAIN, "Más herbicidas para sostener lo insostenible", 18 September 2007.

GRAIN is a small international non-profit organisation that works to support small farmers and social movements in their struggles for community-controlled and biodiversity-based food systems. *Against the grain* is a series of short opinion pieces on recent trends and developments in the issues that GRAIN works on. Each one focuses on a specific and timely topic.

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