



## Americas Program Report



### [Monsanto Soy Herbicide Could Pose Health Risks](#)



## Study Released in Argentina Puts Glyphosate Under Fire

Marie Trigona | July 13, 2009

Available in translation: [El Herbicida para Soja de Monsanto podría representar Riesgos para la Salud: Un estudio realizado en Argentina pone al Glifosato bajo la lupa](#)

Americas Program, Center for International Policy (CIP)

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**Argentina has seen an explosion in genetically modified (GM) soy bean production with soy exports topping \$16.5 billion in 2008. The fertile South American nation is now the world's third largest producer of soy, trailing behind the United States and Brazil. However, this lucrative industrial form of farming has come under fire with environmental groups, local residents, and traditional farmers reporting that GM soy threatens biodiversity, the nation's ability to feed itself, and health in rural communities.**



A study released by Dr. Andres Carrasco earlier this year reports that glyphosate causes birth defects. Photo: Marie Trigona.

Criticism of the soy farming model intensified recently when research released by Argentina's top medical school showed that a leading chemical used in soy farming may be harmful to human health. The study has alarmed policymakers in the South American nation.

A study released by an Argentine scientist earlier this year reports that glyphosate, patented by Monsanto under the name "Round Up," causes birth defects when applied in doses much lower than what is commonly used in soy fields.

The study was directed by a leading embryologist, Dr. Andres Carrasco, a professor and researcher at the University of Buenos Aires. In his office in the nation's top medical school, Dr. Carrasco shows me the results of the study, pulling out photos of birth defects in the embryos of frog amphibians exposed to glyphosate. The frog embryos grown in petri dishes in the photos looked like something from a futuristic horror film, creatures with visible defects—one eye the size of the head, spinal cord deformations, and kidneys that are not fully developed.

"We injected the amphibian embryo cells with glyphosate diluted to a concentration 1,500 times than what is used commercially and we allowed the amphibians to grow in strictly controlled conditions." Dr. Carrasco reports that the embryos survived from a fertilized egg state until the tadpole stage, but developed obvious defects which would compromise their ability to live in their normal habitats.

Pointing to the color photos spread on his desk, Dr. Carrasco says, "On the side where the contaminated cell was injected you can see defects in the eye and defects in the cartilage."

For the past 15 months, Dr. Carrasco's research team documented embryos' reactions to glyphosate. Embryological study is based on the premise that all vertebrate animals share a common design during the development stages. This accepted scientific premise means that the study indicates human embryonic cells exposed to glyphosate, even in low doses, would also suffer from defects.

"When a field is fumigated by an airplane, it's difficult to measure how much glyphosate remains in the body," says Dr. Carrasco. "When you inject the embryonic cell with glyphosate, you know exactly how much glyphosate you are putting into the cell and you have a strict control."

Glyphosate is the top selling herbicide in the world and is widely used on soy crops in Argentina.

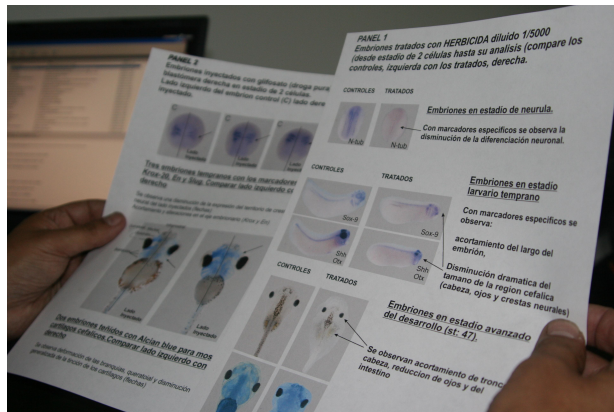
Monoculture soy is grown on more than 42 million acres of fields across Argentina and sprayed with more than 44 million gallons of glyphosate annually. It is part of a technological package sold by Monsanto that includes Round Up Ready seeds GM to tolerate the herbicide glyphosate. This allows growers to fumigate directly onto the GM soy seed, killing nearby weeds without killing the crop. In the winter, crops are sprayed to kill off weeds and seeds are then planted without having to plow the soil, a process commonly referred to as "no-till farming." Nearly, 95% of the 47 million tons of soy grown in Argentina in 2007 was genetically modified, adopting the Round Up ready technology marketed by Monsanto.

The study on the top-selling agrochemical has alarmed policymakers, so much so that Dr. Carrasco has received anonymous threats and industry leaders demanded access to his laboratory immediately following the study's release. Industry leader Monsanto wouldn't talk to the Americas Program for this story, but in a press release on its website, the company says that "glyphosate is safe."

Many in the agro-business sector claim that Dr. Carrasco's study has little scientific basis. Guillermo Cal is the executive director of CASAFE—Argentina's association of agrochemical companies that counts Monsanto, Dow Agro-sciences, Dupont, and Bayer CropScience among its members. Cal dismissed the recent study conducted at the University of Buenos Aires. In an exclusive interview with the Americas Program, Cal rebuked Dr. Carrasco's study, stating, "There are hundreds of articles about the impact of glyphosate in amphibians and none of these articles have shown the disastrous effects that Dr. Carrasco is mentioning. I have the suspicion that these are headlines and probably [this study is a] politically motivated article."

On further investigation, it turned out that the studies that Guillermo Cal cited in the interview were all financed and conducted by the companies that market glyphosate. When asked about that Cal replied, "The developing companies are the ones that have to finance these studies because we need to have proof of the innocuous character of the product before the product is launched."

Since Argentina's soybean boom in the late 90s, clinical studies have been conducted in communities reporting suspiciously high rates of cancer, birth defects, and neonatal mortality. However, industry leaders also refute these clinical studies, saying they are anecdotal and have little scientific basis. Among a corporate controlled scientific community it is notoriously difficult for clinical studies to "prove" the link between environmental contamination and health results, since life is not a "controlled environment."



Frog embryos injected with glyphosate developed obvious defects which would compromise their ability to live in their normal habitats. Photo: Marie Trigona.

In a small town bordering soy farms in the province of Cordoba, the Mothers of Itzuango group was formed in response to sudden increases in the local cancer rate. Itzuango has 5,000 residents—in 2001 they reported more than 200 cases of cancer and by 2009 that number has jumped to 300. This is 41 times the national average. (I conducted this calculation: the national average or percentage is 0.145 of the population diagnosed with cancer—in this town 6% of the population has cancer.) They have fought for regulations against fumigating soy crops in residential areas and a ban of agrochemicals.

Sofia Gatica is an activist with the Mothers of Itzuango. Sofia joined the grassroots group after suffering the death of her newborn baby. Her daughter was still born with a malformed kidney. Her 14-year-old daughter is currently undergoing treatment for toxicity in the blood. The toxin was identified as endosulfan, an insecticide used on soy fields.

Gatica describes the many birth defects that have occurred locally. "We have had children born with only two thumbs and no fingers, malformed kidneys, children with six fingers. We have had babies born without an anus, or with malformations in the intestines."

After years of documenting the tragedies, the Mothers of Itzuango decided to take their case to the courts. In 2006, they won their lawsuit in the provincial Supreme Court. Based on their findings the court ruled to prohibit the use of agrochemicals within 1,000 meters of residential areas. The decision applies to the province of Cordoba while in the rest of the country farmers can continue to fumigate with no regulations.

The case of Itzuango is not an isolated case. For nearly a decade, communities have reported health problems from aerial and terrestrial fumigation with the arsenal of pesticides and herbicides used in

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industrial soy farming. And for nearly a decade they have been ignored. "Communities are literally fumigated with planes or with the terrestrial 'mosquito repellant' fumigations (similar to the DEET trucks used to fumigate U.S. neighborhoods in the 50s). Cases of health problems, miscarriages, birth defects, and cancer rates have multiplied at an alarming rate in communities surrounding the soy fields," says Carlos A. Vicente, head of information for Latin America at GRAIN.

The Campesino Movement of Santiago del Estero (MOCASE), a grassroots movement made up of traditional farmers and indigenous groups, has taken more than 100 accusations of agrochemical poisoning to court in Santiago del Estero. The only other case of a judge ruling against the use of herbicides occurred in the northern province of Formosa. The judge, Silvia Amanda Sevilla, was subsequently fired. No other judge in the country has ruled in favor of prohibiting fumigation using glyphosate or other herbicides and pesticides. The courts have either thrown out or ruled against every single claim brought by the plaintiffs. Darío Aranda, a journalist with the national daily, *Página/12*, has reported on numerous communities in soy-producing regions throughout the country that have faced severe health problems, including residents in the provinces of Buenos Aires, Entre Rios, Chaco, Santa Fe, and Formosa.

Worse yet, research shows that the mostly rural communities that suffer the negative health effects of fumigations have not benefited from the soy explosion. On the contrary, in most regions families have been pushed off land taken over by soy farming, leading to a loss of livelihood in addition to the severe health risks. According to a 2002 agricultural census, in four years more than 200,000 families were driven from their traditional farms, and most of the families relocated in working class belts outside of major cities.

Authorities and industry representatives maintain that the clinical studies and citizen complaints must be backed up by "serious studies" in order for them to act. Gatica says that GM seed and agrochemical companies have converted Argentina into an experimenting ground to test the toxicity of their herbicides and pesticides, principally glyphosate and endosulfan. "We can prove that agrochemicals have harmed us. We can prove this with studies and with whatever is left of our children," says Gatica. The anger in her voice reflects the grief and rage she has channeled into this David and Goliath battle.

The expansion of soy means the increased use and concentration of glyphosate. Over time, Round Up herbicide loses its technological battle with evolution and new weeds develop that are more resistant to the herbicide, explains Javier Souza Casadinho, professor at the University of Buenos Aires and regional coordinator of the Latin American Action Network for Alternative Pesticides. "Producers must use more applications, and in higher doses with higher toxicity—the application has gone from three liters in 1999 to the current dose of 12 liters, per hectare," says Souza.



DANGER! Genetically Modified Soy. Photo: Marie Trigona.

Secretary of Agriculture Carlos Cheppi refused the Americas Program's formal request for an interview. His press secretary said Ricardo Gouna is "unwilling to talk about the use and regulation of agrochemicals in Argentina's soy industry."

The study in Argentina is not the only research concluding that the number one selling herbicide may be harmful to human health. Gilles-Eric Seralini, professor at the University of Caen and specialist in molecular biology, led a study that concluded the herbicides in the Round Up Ready package causes cells to die in human embryos.

"Even in doses diluted a thousand times, the herbicide could cause malformations, miscarriages, hormonal problems, reproductive problems, and different types of cancers," said Dr. Seralini in an interview with Darío Aranda published in *Página/12*. Round Up Ready is currently marketed in more than 120 nations. Latin American nations Brazil, Uruguay, and Paraguay are the region's fastest growing markets.

Since Carrasco's study was released in April, the NGO Association of Environmental Lawyers (Aadeaa) petitioned the Supreme Court to ban the use of glyphosate and endosulfan. Policymakers are currently considering the petition. The National Committee on Ethical Science has also recommended that the Agricultural Ministry create an investigative committee to urgently evaluate the effects of the number one selling herbicide in Argentina. Dr. Carrasco says that his study and previous studies should serve as a red-light warning for policymakers charged with evaluating regulations for glyphosate. The herbicide is

GM soy was swiftly approved for cultivation in Argentina in 1996, under former Agricultural Secretary Felipe Sola. A 180-page file report, prepared by GM giant Monsanto in English without a Spanish translation was the only document evaluated before Sola approved GM soy after only 81 days of review. The former secretary and investor in the soy industry won a seat in the legislature in the June 2009 elections, riding in on his opposition to President Cristina Kirchner's decision to increase the export tax on soy. Argentina's current

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currently categorized as a level 4 toxin—the lowest level possible for agrochemicals. In science and medicine, when you suspect that something dangerous is occurring, you need to implement the precautionary principle, which dictates: "I need to take precautions; I can't ignore the problem; I can't wait until there are a lot of deaths to intervene." Unfortunately, Argentine courts and federal, state, and local governments appear not to agree. Given the enormous economic stakes, precaution may come too late as soy has invaded the majority of Argentina's highly fertile land leading to irreversible social, health, and environmental consequences.

*Marie Trigona is a journalist based in Argentina and writes regularly for the Americas Program ([www.americaspolicy.org](http://www.americaspolicy.org)). She can be reached at [mtrigona\(a\)msn.com](mailto:mtrigona(a)msn.com).*

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### Recommended citation:

Marie Trigona, "Monsanto Soy Herbicide Could Pose Health Risks: Study Released in Argentina Puts Glyphosate Under Fire," Americas Program Report (Washington, DC: Center for International Policy, July 13, 2009).

### Web location:

<http://americas.irc-online.org/am/6254>

### Production Information:

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Name: D. Rubin Date: Jul 20, 2009

Do you have the name of the study by Dr. Andres Carrasco? I can not find it listed anywhere. Was it published yet?

Name: Merlin Date: Aug 07, 2009

This is terrible, the judge being fired for making the right ruling is a sign of Monsanto's corporate elite

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riding above the law. What about the people living with the damage done to themselves or their children, I am appalled.

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