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Crop Contamination Takes its Toll on non-GM and Organic Farmers

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by Shicana Allen

Genetic drift, or the spread of genetically modified DNA into the environment, is now reaching near epidemic proportions. In addition, the advent of herbicide-resistant plants like Roundup Ready soy and corn has guaranteed that there are also multiple amounts of poisons to go around, as chemical drift from conventional GMO crops to neighboring organic fields is also spreading by leaps and bounds.

From the start, contamination of organic and non-transgenic crops has been of utmost concern, hence the sentiment that the unpredictable offspring of biotechnology—once released—cannot be recalled into the laboratory. Now these fears are being realized. According to a new survey and subsequent report (conducted by Food & Water Watch

and OFARM, the Organic Farmers' Agency for Relationship Marketing):

One-third of organic farmers in the United States have been adversely impacted, experiencing problems in their fields due to the nearby use of genetically modified crops.

Consequently, more than half of these growers have experienced loads of grain being rejected due to unwitting contamination.

Of those who participated in the survey, 80% of farmers expressed concern over the situation, with 60% admitting they were "very concerned."

What's more, nearly 50% of farmers polled stated they did not believe it was possible for GM and non-GM crops to coexist.

Two-thirds denied that "good stewardship" was sufficient to address the issue of contamination.

The lengths that organic growers must go to in order to avoid genetic contamination are both extensive and expensive. In practice, substantial outlays of both time and money are necessary to safeguard their crops, with virtually no corresponding responsibility on the part of farmers utilizing GM seeds. Rarely are these significant costs considered or acknowledged when biotech advocates are promoting its so-called economic benefits. Farmers answering the survey reported suffering between $2,500 to $20,000 per year in lost income due to the required safety "buffer zone." Averaging around five acres, this belt surrounding a non-GMO or organic field is mandated to guard against the drifting of genetic materials, chemicals, herbicides, and pesticides. Another strategy to which farmers resort is delaying their own planting activity so that their crops are timed not to cross pollinate with their neighbors' GMOs. This, too, imposes a financial burden of several thousand dollars annually on those farmers who refuse to plant genetically modified seeds.

Incidents of detected contamination amongst traded food and feed has also been steadily increasing, with a jump in cases between 2009 and 2012. Food shipments originating from the U.S., Canada, and China caused the largest number of rejections. This was the conclusion of an FAO (Food and Agriculture Organization) survey, the first of its kind, in which 75 out of 193 member countries responded to questions on low levels of GM crops in international food and animal feed trade. The accidental combining of transgenic crops with non-GMO varieties can easily occur during field production, processing, packing, storage and/or transportation. This has led to trade disruptions between countries, with imported shipments of grain, cereal, and other crops being blocked, destroyed, or returned to the country of origin after traces of GMOs were discovered. Although the interpretation of "low-level contamination" varies from country to country, at least 25 have refused such imports.

Read more:

Read more about the FAO study:

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Dangers to the Environment

From the beginning, many scientists have had concerns that the release of these new organisms with their engineered DNA could have dire consequences. Those consequences not only affect the natural "wild" environment, but also conventional and organic agriculture.

Companies are also working with the genetic manipulation of trees to produce commercial benefits such as more rapid growth. There are experiments with "pharma-crops," trying to get plants to "grow" medicines or ingredients for medicines.

Crosspollination

Pollen from GM crops and trees can contaminate nearby crops and wild plants of the same type, except for soy, which does not cross-pollinate. In fact, virtually all heritage varieties of corn in Mexico (the origin of all corn) have been found to have some contamination. Canola and cotton also cross-pollinate.

GM sugar beets are a member of the chard family and therefore have even more potential targets for contamination through crosspollination. No one knows what might happen if DNA containing pharmaceutical properties are spread to wild plants.

Toxicity

Studies have shown that pesticide-producing crops contaminate nearby streams, possibly affecting aquatic life. The bt toxin produced by these GM crops are far stronger than any found in nature, and are produced throughout the plant.

They may harm beneficial insects. And, it has been found that previously insignificant insects which are not targeted by the GM varieties develop into pests. Then pesticide spraying resumes, on top of the potential build-up of the extra strong bt toxin in the soil. This has occurred in China, India as well as in the US.

"Super Weeds"

As weeds adapt to herbicides, they develop resistance and evolve into what are called "super weeds." When that happens, herbicide use increases and the benefits of herbicide resistant crops are diminished, if not lost.

Impact on Sustainable Agriculture

Organic standards do not allow the use of GM seeds and therefore steps are taken to try to prevent contamination. Tests are not required, although some vigilant organic companies require them. According to the organic standards, contamination by cross-pollination is not disallowed, but some companies reject contaminated product above some small amount such as 0.1%.

Organic canola farmers in Canada sued biotech companies, since cross-pollination has made it impossible for them to grow organic, non-GM canola.

GM-free agricultural zones

Using identity preservation (IP), farmers keep crop varieties separate from others to meet purity requirements of their buyers. Contamination is a key challenge to IP growers. Unwanted varieties may cross-pollinate or get mixed up in the seed, harvest equipment, or during storage and transport.

Some farm regions create entire zones that exclude unwanted varieties, where all the farms, and if possible all collection and distribution points, only handle approved grain.

Voters in Mendocino and Marin Counties in California passed ballot initiative to ban GM crops. Officials in Trinity County and Arcata, California have passed ordinances banning the outdoor cultivation of GM crops as well. But since then, a California law was passed prohibiting this type of local initiatives.

In March 2008, voters at the Montville, Maine, annual town meeting overwhelmingly passed a binding ordinance banning the cultivation of GM crops in their community.

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Fraud

In 2004, four advocates of genetically modified (GM) foods published a study in the *British Food Journal* that was sure to boost their cause[1]. According to the peer-reviewed paper, when shoppers in a Canadian farm store were confronted with an informed and unbiased choice between GM corn and non-GM corn, most purchased the GM variety. This finding flew in the face of worldwide consumer resistance to GM foods, which had shut markets in Europe, Japan, and elsewhere. It also challenged studies that showed that the more information on genetically modified organisms (GMOs) consumers have, the less they trust them.[2] The study, which was funded by the biotech-industry front group, Council for Biotechnology Information and the industry's trade association, the Crop Protection Institute of Canada (now Croplife Canada), was given the Journal's prestigious Award for Excellence for the Most Outstanding Paper of 2004 and has been cited often by biotech advocates.

Stuart Laidlaw, a reporter from Canada's *Toronto Star*, visited the farm store several times during the study and described the scenario in his book *Secret Ingredients*. Far from offering unbiased choices, key elements appeared rigged to favor GM corn purchases. The consumer education fact sheets were entirely pro-GMO, and Doug Powell, the lead researcher, enthusiastically demonstrated to Laidlaw how he could convince shoppers to buy the GM varieties. He confronted a farmer who had already purchased non-GM corn. After pitching his case for GMOs, Powell proudly had the farmer tell Laidlaw that he had changed his opinion and would buy GM corn in his next shopping trip.

Powell's interference with shoppers' "unbiased" choices was nothing compared to the effect of the signs placed over the corn bins. The sign above the non-GM corn read, "Would you eat wormy sweet corn?" It further listed the chemicals that were sprayed during the season. By contrast, the sign above the GM corn stated, "Here's What Went into Producing Quality Sweet Corn." It is no wonder that 60% of shoppers avoided the "wormy corn." In fact, it may be a testament to people's distrust of GMOs that 40% still went for the "wormy" option.

Powell and his colleagues did not mention the controversial signage in their study. They claimed that the corn bins in the farm store were "fully labelled"—either "genetically engineered Bt sweet corn" or "Regular sweet-corn."

When Laidlaw's book came out, however, Powell's "wormy" sign was featured in a photograph,[3] exposing what was later described by Cambridge University's Dr. Richard Jennings as "flagrant fraud." Jennings, who is a leading researcher on scientific ethics, says, "It was a sin of omission by failing to divulge information which quite clearly should have been disclosed."[4]

Jennings is among several scientists and outraged citizens that say the paper should have been withdrawn, but the Journal refused. Instead, it published a criticism of the methods by Canadian geneticist Joe Cummins, and allowed Powell to respond with a lengthy reply.[5]

In his defence, Powell claimed that his signs merely used the language of consumers and was "not intended to manipulate consumer purchasing patterns." He also claimed that the "wormy" corn sign was only there for the first week of the trial and was then replaced by other educational messages. But eyewitnesses and photographs demonstrate the presence of the sign long after Powell's suggested date of replacement.[6]

This incident illustrates how so-called scientific papers can be manipulated to force conclusions favorable to authors or funders and how peer-reviewed journals may be complicit. While the subject of this particular study provided ammunition in the battle to deny choice to consumers in North America, there is similar "cooked" research in the more critical area of GMO safety assessments.

Secret, Inadequate, and Flawed

The unpublished industry studies submitted to regulators are typically kept secret based on the claim that it is "confidential business information." The Royal Society of Canada is one of the many organizations that condemn this practice. They wrote:

In the judgement of the expert panel, the more regulatory agencies limit free access to the data upon which their decisions are based, the more compromised becomes the claim that the regulatory process is "science based". This is due to a simple but well-understood requirement of the scientific method itself - that it be an open completely transparent enterprise in which any and all aspects of scientific research are open to full review by scientific peers. Peer review and independant corroboration of research findings are axioms of the scientific method, and are part of the very meaning of the objectivity and neutrality of science.[7]

Whenever private submissions *are* made public through lawsuits or Freedom of Information Act Requests, it becomes clear why companies benefit from secrecy. The quality of their research is often miserable, incompetent, and unacceptable for peer-review. In 2000, for example, after the potentially allergenic StarLink corn was discovered in the food supply, Aventis CropScience presented wholly inadequate safety data to the EPA's scientific advisory panel. One frustrated panel member, Dean Metcalfe, MD, —the government's top allergist—said during a hearing, "Most of us review for a lot of journals. And if this were presented for publication in the journals that I review for, it would be sent back to the authors with all of these questions. It would be rejected."[8]

Submissions to the US Food and Drug Administration (FDA) may be worse than in other countries, since the agency doesn't actually require *any* data. Their policy—overseen by Monsanto's former attorney who later became the company's vice president—says that biotech companies can determine if their own foods are safe. Anything submitted is voluntary and, according to former Environmental Protection Agency scientist Doug Gurian-Sherman, "often lack[s] sufficient detail, such as necessary statistical analyses needed for an adequate safety evaluation." Using Freedom of Information Requests, Gurian-Sherman analyzed more than a fourth of the data summaries (14 of 53) of GM crops reviewed by the FDA. He says, "Our evaluation found that the biotechnology companies provide inadequate data to ensure their products are safe."[9]

Unscientific Assumptions are the Basis of Approvals

"Most or all of the conclusions of food safety for individual GM crops are based on inferences and assumptions, rather than on actual testing," says Professor E. Ann Clark, who analyzed submissions to Canadian regulators. For example, rather than actually testing to see if the amino acid sequence produced by their inserted gene is correct, "the standard practice," according to research analyst William Freese, "is to sequence just 5 to 25 amino acids, even if the protein has more than 600 in total. If the short sample matches what is expected, they assume that the rest are also fine. If they are wrong, however, a rearranged protein could be quite dangerous."

Monsanto's submission to Australian regulators on their high lysine GM corn provides several examples of optimistic assumptions used in place of science. The GM protein produced in the corn is also found in soil. The company claimed that since people consume small residues of soil on fruits and vegetables, the protein has a history of safe consumption. An independent calculation by the Centre for Integrated Research on Biosafety (INBI), however, reveals the weakness of this argument. Based on the amount of GM corn protein an average US citizen would consume (if all their corn were Monsanto's variety),"for equivalent exposure" of the protein from soil "people would have to eat between 80-800 million (males) or 60-700 million (females) kilograms of soil each day, or nearly as much as 10,000kg/second 24 hours a day seven days a week." INBI estimated that the normal exposure to the protein from soil residues was actually "about 30 billion-4 trillion times less than exposure through [high lysine] corn."[10]

In addition, certain nutritional components of this GM variety (i.e. protein content, total dietary fiber, acid detergent fiber, and neutral detergent fiber) lie far outside the normal range for corn. Instead of comparing their corn to normal controls, which would reveal this disparity, Monsanto compared it to obscure corn varieties that were also substantially outside the normal range *on precisely these values*.

Epidemiologist Judy Carman points out that GM "experiments used some very unusual animal models for human health, such as chickens, cows and trout. Some of the measurements taken from these animals are also unusual measures of human health, such as abdominal fat pad weight, total de-boned breast meat yield, and milk production." In her examination of the full range of submittals to authorities in Australia and New Zealand, she says that there was no proper evaluation of "biochemistry, immunology, tissue pathology, and gut, liver and kidney function."[11]Writing on behalf of the Public Health Association of Australia, Carman says, "The effects of feeding people high concentrations of the new protein over tens of years cannot be determined by feeding 20 mice a single oral gavage of a given high concentration of the protein and taking very basic data for 13-14 days . . .The acute toxicity testing proposed as adequate would simply not pick up cancer, teratology [birth defects] or the long-tem effects of nutrient deficiencies or increases in anti-nutrients."[12]

The Science of Rigging Studies

When independent researchers published a study in July 1999 showing that GM soy contains 12%-14% less cancer-fighting phytoestrogens, Monsanto responded with its own study, concluding that soy's phytoestrogen levels vary too much to even carry out a statistical analysis.

Researchers failed to disclose, however, that they had instructed the laboratory to use an obsolete method of detection—one that had been prone to highly variable results.[13]

When Aventis prepared samples to see if the potential allergen in Starlink corn remained intact after cooking, instead of using the standard 30-minute treatment they heated the corn for two hours.

To show that pasteurization destroyed bovine growth hormone in milk from cows treated with Rbgh, they pasteurized the milk 120 times longer than normal. Unable to destroy more than 10%, they then spiked the milk with a huge amount of hormone and repeated the long pasteurization, destroying 90%. (The FDA reported that pasteurization destroys 90% of the hormone.)

To demonstrate that injections of Rbgh did not interfere with cow's fertility Monsanto apparently added cows to the study that were pregnant prior to injection. And in order to prove that he protein from their GM crops breaks down quickly during simulated digestion, biotech companies used thousands of times the amount of digestive enzymes and a much stronger acid compared to that recommended by the World Health Organization.

Methods used to hide problems are varied and plentiful. For example, researchers:

- Use highly variable animal starting weights to hinder detection of food related changes
- Keep feeding studies short to miss long term impacts
- Test effects of Roundup Ready Soybeans that have not been sprayed with Roundup
- Avoid feeding animals the actual GM crop, but give them instead a single dose of the GM protein that was produced inside GM bacteria
- Use too few subjects to derive statistically significant results
- Use poor statistical methods or simply leave out essential methods, data or statistics
- Use rigged or irrelevant control groups
- Employ insensitive or obsolete evaluation techniques

Monsanto's 1996 *Journal of Nutrition* study[14][15] provides plenty of examples of scientific transgressions. Roundup Ready soybeans are engineered to withstand the normally fatal effects of Monsanto's herbicide called Roundup. Monsanto scientists published a feeding study that purported to test their soybeans' effect on rats, catfish, chickens, and cows. The study has been used often by the industry as validation for safety claims. According to Dr. Arpad Pusztai, however, "It was obvious that the study had been designed to avoid finding any problems. Everybody in our consortium knew this." Pusztai was commissioned at the time by the UK government to develop rigorous testing protocols on GM foods—protocols that were never implemented. Pusztai, who had published several studies in that same nutrition journal, said the Monsanto paper was "not really up to the normal journal standards." Pusztai says that if he had been asked to referee the paper for publication, "it would never have passed." He's confident that even his graduate assistants would have taken the study apart in short order. Some of the flaws include:

- Researchers tested GM soy on mature animals, not young ones. Young animals use protein to build their muscles, tissues, and organs. Problems with GM food could

therefore show up in organ and body weight. But adult animals use the protein for tissue renewal and energy. "With a nutritional study on mature animals," says Pusztai, "you would never see any difference in organ weights even if the food turned out to be anti-nutritional. The animals would have to be emaciated or poisoned to show anything."

- Even if there were an organ development problem, the study wouldn't have picked it up since the researchers didn't weigh the organs.
- In one of the trials, researchers substituted only one tenth of the natural protein with GM soy protein. In two others, they diluted their GM soy six- and twelve-fold.[16] Scientists Ian Pryme of Norway and Rolf Lembcke of Denmark wrote, the "level of the GM soy was too low, and would probably ensure that any possible undesirable GM effects did not occur."
- Pryme and Lembcke, who published a paper in *Nutrition and Health* that analyzed all peer-reviewed feeding studies on GM foods as of 2003, also pointed out that the percentage of protein in the feed used in the Roundup Ready study was "artificially too high." This "would almost certainly mask, or at least effectively reduce, any possible effect of the [GM soy]." They said it was "highly likely that all GM effects would have been diluted out."[17]
- Proper compositional studies filter out effects of weather or geography by comparing plants grown at the same time in the same location. Monsanto, however, pooled data from several locations, which makes it difficult for differences to be statistically significant. Nonetheless, the data revealed significant differences in the ash, fat, and carbohydrate content. Roundup Ready soy meal also contained 27% more trypsin inhibitor, a potential allergen, which might explain the sudden jump in soy allergies in the UK beginning right after Roundup Ready soy was introduced. Also, cows fed GM soy produced milk with a higher fat content, demonstrating another disparity between the two types of soy.
- One field trial, however, did grow GM and non-GM plants next to each other, but this data was not included in the paper. Years after the study appeared, medical writer Barbara Keeler discovered the data that had been omitted. It showed that Monsanto's GM soy had significantly lower levels of protein, a fatty acid, and phenylalanine, an essential amino acid. Also, toasted GM soy meal contained nearly twice the amount of a lectin—one that may interfere with the body's ability to assimilate other nutrients. And the amount of trypsin inhibitor in cooked GM soy was as much as seven times higher than a cooked non-GM control.
- The study also omitted many details normally required for a published paper. According to Pryme and Lembcke, "No data were given for most of the parameters."
- And when researchers tested the effects of Roundup Ready protein on animals, they didn't extract the protein from the soybeans. Instead, they derived it from GM bacteria, claiming the two forms of protein were equivalent. There are numerous ways, however, in which the protein in the soy may be different. In fact, nine years after this study was published, another study showed that the gene inserted into the soybeans produced unintended aberrant RNA strands, meaning that the protein may be quite different than what was intended.[18]

In Pryme and Lembcke's analysis, it came as no surprise that this Monsanto study, along with the other four peer-reviewed animal feeding studies that were "performed more or less in

collaboration with private companies," reported no negative effects of the GM diet. "On the other hand," they wrote, "adverse effects were reported (but not explained) in [the five] independent studies." They added, "It is remarkable that these effects have all been observed after feeding for only 10–14 days."[19]

Toxic GM Foods Could Have Been Approved

Two GM foods whose commercialization was stopped because of negative test results give a chilling example of what may be getting through. Rats fed GM potatoes had potentially precancerous cell growth in the stomach and intestines, less developed brains, livers, and testicles, partial atrophy of the liver, and damaged immune systems.[20] GM peas provoked an inflammatory response in mice, suggesting that the peas might trigger a deadly anaphylactic shock in allergic humans.[21] Both of these dangerous crops, however, could easily have been approved. The problems were only discovered because the researchers used advanced tests that were never applied to GM crops already on the market. Both would have passed the normal tests that companies typically use to get their products approved.

Ironically, when Monsanto was asked to comment on the pea study, their spokesperson said it demonstrated that the regulatory system works. He failed to disclose that none of the company's GM crops had been put through such rigorous tests.

Rampant Unrelenting Industry Bias

Industry-funded research that favors the funders is not new. Bias has been identified across several industries. In pharmaceuticals, for example, positive results are four times more likely if the drug's manufacturer funds the study.[22] When companies pay for the economic analyses of their own cancer drugs, the results are eight times more likely to be favorable.[23] Compared to drug research, the potential for industry manipulation in GM crop studies is considerably higher. Unlike pharmaceutical testing, GM research has no standardized procedures dictated by regulators. GM studies are not usually published in peer-reviewed journals and are typically kept secret by companies and governments. There is little money available for rigorous independent research, so company evidence usually goes unchallenged and unverified. Most importantly, whereas drugs *can* show serious side effects and still be approved, GM food cannot. There is no tolerance for adverse reactions; feeding trials *must* show no problems.

Thus, when industry studies show problems (in spite of their efforts to avoid them), serious adverse reactions and even deaths among GM-fed animals are ignored or dismissed as "not biologically significant" or due to "natural variations."

Numerous reports including peer-reviewed articles and part 3 of the book *Genetic Roulette* are replete with examples of rigged research. But making these public does not seem to curtail its practice. Consider the wormy corn of the *British Food Journal*. Not only has the editor refused to retract the paper, he has not even agreed to reconsider its Award for Excellence. A blatant propaganda exercise still stands validated as exemplary science.

In the critical arena of food safety research, where the health of society is caught in the balance, it is entirely unacceptable that the biotech industry is without accountability, standards, or peer-review. At our expense, they've got bad science down to a science.

This article is based on Part 3 of the book, *Genetic Roulette: The Documented Health Risks of Genetically Engineered Foods* by Jeffrey M. Smith. **Footnotes**

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10 Reasons to Avoid GMOs

1. GMOs are unhealthy.
The American Academy of Environmental Medicine (AAEM) urges doctors to prescribe non-GMO diets for all patients. They cite animal studies showing organ damage, gastrointestinal and immune system disorders, accelerated aging, and infertility. Human studies show how genetically modified (GM) food can leave material behind inside us, possibly causing long-term problems. Genes inserted into GM soy, for example, can transfer into the DNA of bacteria living inside us, and that the toxic insecticide produced by GM corn was found in the blood of pregnant women and their unborn fetuses.

Numerous health problems increased after GMOs were introduced in 1996. The percentage of Americans with three or more chronic illnesses jumped from 7% to 13% in just 9 years; food allergies skyrocketed, and disorders such as autism, reproductive disorders, digestive problems, and others are on the rise. Although there is not sufficient research to confirm that GMOs are a contributing factor, doctors groups such as the AAEM tell us not to wait before we start protecting ourselves, and especially our children who are most at risk.

The American Public Health Association and American Nurses Association are among many medical groups that condemn the use of GM bovine growth hormone, because the milk from treated cows has more of the hormone IGF-1 (insulin-like growth factor 1)—which is linked to cancer.

2. GMOs contaminate—forever.
GMOs cross pollinate and their seeds can travel. It is impossible to fully clean up our contaminated gene pool. Self-propagating GMO pollution will outlast the effects of global warming and nuclear waste. The potential impact is huge, threatening the health of future generations. GMO contamination has also caused economic losses for organic and non-GMO farmers who often struggle to keep their crops pure.

3. GMOs increase herbicide use.
Most GM crops are engineered to be "herbicide tolerant"—they deadly weed killer. Monsanto, for example, sells Roundup Ready crops, designed to survive applications of their Roundup herbicide.

Between 1996 and 2008, US farmers sprayed an extra 383 million pounds of herbicide on GMOs. Overuse of Roundup results in "superweeds," resistant to the herbicide. This is causing farmers to use even more toxic herbicides every year. Not only does this create environmental harm, GM foods contain higher residues of toxic herbicides. Roundup, for example, is linked with sterility, hormone disruption, birth defects, and cancer.

4. Genetic engineering creates dangerous side effects.
By mixing genes from totally unrelated species, genetic engineering unleashes a host of unpredictable side effects. Moreover, irrespective of the type of genes that are inserted, the very

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process of creating a GM plant can result in massive collateral damage that produces new toxins, allergens, carcinogens, and nutritional deficiencies.

5. Government oversight is dangerously lax.
Most of the health and environmental risks of GMOs are ignored by governments' superficial regulations and safety assessments. The reason for this tragedy is largely political. The US Food and Drug Administration (FDA), for example, doesn't require a single safety study, does not mandate labeling of GMOs, and allows companies to put their GM foods onto the market without even notifying the agency. Their justification was the claim that they had no information showing that GM foods were substantially different. But this was a lie. Secret agency memos made public by a lawsuit show that the overwhelming consensus even among the FDA's own scientists was that GMOs can create unpredictable, hard-to-detect side effects. They urged long-term safety studies. But the White House had instructed the FDA to promote biotechnology, and the agency official in charge of policy was Michael Taylor, Monsanto's former attorney, later their vice president. He's now the US Food Safety Czar.

6. The biotech industry uses "tobacco science" to claim product safety.
Biotech companies like Monsanto told us that Agent Orange, PCBs, and DDT were safe. They are now using the same type of superficial, rigged research to try and convince us that GMOs are safe. Independent scientists, however, have caught the spin-masters red-handed, demonstrating without doubt how industry-funded research is designed to avoid finding problems, and how adverse findings are distorted or denied.

7. Independent research and reporting is attacked and suppressed.
Scientists who discover problems with GMOs have been attacked, gagged, fired, threatened, and denied funding. The journal Nature acknowledged that a "large block of scientists . . . denigrate research by other legitimate scientists in a knee-jerk, partisan, emotional way that is not helpful in advancing knowledge." Attempts by media to expose problems are also often censored.

8. GMOs harm the environment.
GM crops and their associated herbicides can harm birds, insects, amphibians, marine ecosystems, and soil organisms. They reduce bio-diversity, pollute water resources, and are unsustainable. For example, GM crops are eliminating habitat for monarch butterflies, whose populations are down 50% in the US. Roundup herbicide has been shown to cause birth defects in amphibians, embryonic deaths and endocrine disruptions, and organ damage in animals even at very low doses. GM canola has been found growing wild in North Dakota and California, threatening to pass on its herbicide tolerant genes on to weeds.

9. GMOs do not increase yields, and work against feeding a hungry world.
Whereas sustainable non-GMO agricultural methods used in developing countries have conclusively resulted in yield increases of 79% and higher, GMOs do not, on average, increase yields at all. This was evident in the Union of Concerned Scientists' 2009 report Failure to Yield—the definitive study to date on GM crops and yield.

The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) report, authored by more than 400 scientists and backed by 58

governments, stated that GM crop yields were "highly variable" and in some cases, "yields declined." The report noted, "Assessment of the technology lags behind its development, information is anecdotal and contradictory, and uncertainty about possible benefits and damage is unavoidable." They determined that the current GMOs have nothing to offer the goals of reducing hunger and poverty, improving nutrition, health and rural livelihoods, and facilitating social and environmental sustainability.
On the contrary, GMOs divert money and resources that would otherwise be spent on more safe, reliable, and appropriate technologies.

10. By avoiding GMOs, you contribute to the coming tipping point of consumer rejection, forcing them out of our food supply.
Because GMOs give no consumer benefits, if even a small percentage of us start rejecting brands that contain them, GM ingredients will become a marketing liability. Food companies will kick them out. In Europe, for example, the tipping point was achieved in 1999, just after a high profile GMO safety scandal hit the papers and alerted citizens to the potential dangers. In the US, a consumer rebellion against GM bovine growth hormone has also reached a tipping point, kicked the cow drug out of dairy products by Wal-Mart, Starbucks, Dannon, Yoplait, and most of America's dairies.

The Campaign for Healthier Eating in America is designed to achieve a tipping point against GMOs in the US. The number of non-GMO shoppers needed is probably just 5% of the population. The key is to educate consumers about the documented health dangers and provide a Non-GMO Shopping Guide to make avoiding GMOs much easier.

Please choose healthier non-GMO brands, tell others about GMOs so they can do the same, and join the Non-GMO Tipping Point Network. Together we can quickly reclaim a non-GMO food supply.

Item #13-1374

PERSONAL HEALTH

Popular Resistance / *By Kevin Zeese and Margaret Flowers*

932 COMMENTS

Study Shows Dramatic Correlation Between GMOs And 22 Diseases

As crops that use the herbicide glyphosate rise, so do a wide range of diseases.

November 18, 2014 |

There is a growing movement for labeling of GMO crops, and many would go further and ban GMOs completely. Currently there is a close vote in Oregon on a GMO labeling initiative, with advocates for labeling 0.3% behind and raising money to check ballots (we urge your support). Those who profit from GMOs spent $20 million to prevent labeling in Oregon. Several states in the Northeast have put in place laws that will require labeling.

Vermont is about to be sued to prevent GMO labeling. GMO profiteers have an unusual marketing strategy. While most companies brag about their product, the GMO industry spends hundreds of millions to hide their product. The US does not requiring labeling of GMOs despite the fact that 64 countries around the world label GMO foods.

Millions have marched against Monsanto urging labeling or the banning of GMO products. There is a national consensus in favor of labeling but the government has been unable to respond. Indeed, President Obama's food czar is a former Monsanto executive. The deep corruption of government is putting the health of the American people at serious risk.

The research highlighted below, "Genetically engineered crops, glyphosate and the deterioration of health in the United States of America," was published in The Journal of Organic Systems this September and links GMOs to 22 diseases with very high correlation. We reprinted many of the graphs from the study that show an

incredible correlation between the rise of GMO crops that use the herbicide glyphosate and a wide range of diseases.

Glyphosate was introduced to the marketplace in 1974 but data on its use is only available since 1990. Monsanto has genetically modified foods so that they are resistant to glyphosate, a herbicide Monsanto sells, resulting in a dramatic increase in the use of glyphosate. The study points out that research has shown that "glyphosate disrupts the ability of animals, including humans, to detoxify xenobiotics. This means that exposures to the numerous chemicals in food and the environment, such as endocrine disrupting chemicals and carcinogens, could be causing levels of damage that would not occur if the body were able to detoxify them."

Correlation is not proof of causation. But the authors point out "we have data for 22 diseases, all with a high degree of correlation and very high significance. It seems highly unlikely that all of these can be random coincidence." They point out that according to "the American Academy of Environmental Medicine's position paper on genetically modified (GM) foods: '[S]everal animal studies indicate serious health risks associated with GM food consumption including infertility, immune dysregulation, accelerated aging, dysregulation of genes associated with cholesterol synthesis, insulin regulation, cell signaling, and protein formation, and changes in the liver, kidney, spleen and gastrointestinal system.'"

The conclusions of the study are:

"These data show very strong and highly significant correlations between the increasing use of glyphosate, GE crop growth and the increase in a multitude of diseases. Many of the graphs show sudden increases in the rates of diseases in the mid-1990s that coincide with the commercial production of GE crops. The large increase in glyphosate use in the US is mostly due to the increase in glyphosate-resistant GE crops.

"The probabilities in the graphs and tables show that it is highly unlikely that the correlations are a coincidence. The strength of the correlations shows that there is a very strong probability that they are linked somehow. The number of graphs with

similar data trends also indicates a strong probability that there is a link. Although correlation does not necessarily mean causation, when correlation coefficients of over 0.95 (with p-value significance levels less than 0.00001) are calculated for a list of diseases that can be directly linked to glyphosate, via its known biological effects, it would be imprudent not to consider causation as a plausible explanation.

"We do not imply that all of these diseases have a single cause as there are many toxic substances and pathogens that can contribute to chronic disease. However, no toxic substance has increased in ubiquity in the last 20 years as glyphosate has. . . . Another critical issue is that glyphosate is an endocrine disruptor and it has been argued that there are no safe levels of endocrine disruptors. This would imply that the current permitted residue levels in food could be causing multiple health problems that have been documented in the scientific literature to be caused by endocrine disrupting chemicals." [Citations omitted]

A root cause of the problem is that United States' regulatory structure is backward, making people into guinea pigs instead of protecting them. As the researchers write:

"... the regulatory approach in the US is reactionary rather than precautionary. Instead of taking preventive action when uncertainty exists about the potential harm a chemical or other environmental contaminant may cause, a hazard must be incontrovertibly demonstrated before action is initiated. Instead of requiring industry to prove the safety of their devices or chemical products, the public bears the burden of proving that a given environmental exposure is harmful."

As to next steps, the researchers urge independent scientific research (sadly, too much research is funded by corporations that profit from GMO crops]. They write:

"The data presented in this paper highlight the need for independent scientific research to be conducted, especially in the areas of the endocrine disruption, cancer precursor, oxidative stress, gut microbiome and the Cytochrome P450 pathways. It is our hope that, in addition to more basic research in the form of toxicology and carcinogenic studies, epidemiology studies will be undertaken by experts in each of these disease categories."

In the meantime, people need to continue to take political action to require labeling, urge a new regulatory structure that applies the precautionary principle and urge the banning of GMO crops now that correlation to disease is being shown. There are a few things you can do to protect yourself from GMO foods: (1) Buy organic, (2) Look for the Non-GMO seal, (3) Avoid crops where GMO's are common.

The eight GM food crops are Corn, Soybeans, Canola, Cottonseed, Sugar Beets, Hawaiian Papaya (most) and a small amount of Zucchini and Yellow Squash. Sugar is likely to contain GMO beets unless it is labeled as pure cane sugar. Dairy is also likely to be GMO unless it is labeled No rBGH, rBST, or artificial hormones. Here's a non-GMO shopping guide for further assistance.

Below are some of the key charts from the Journal of Organic Systems study.

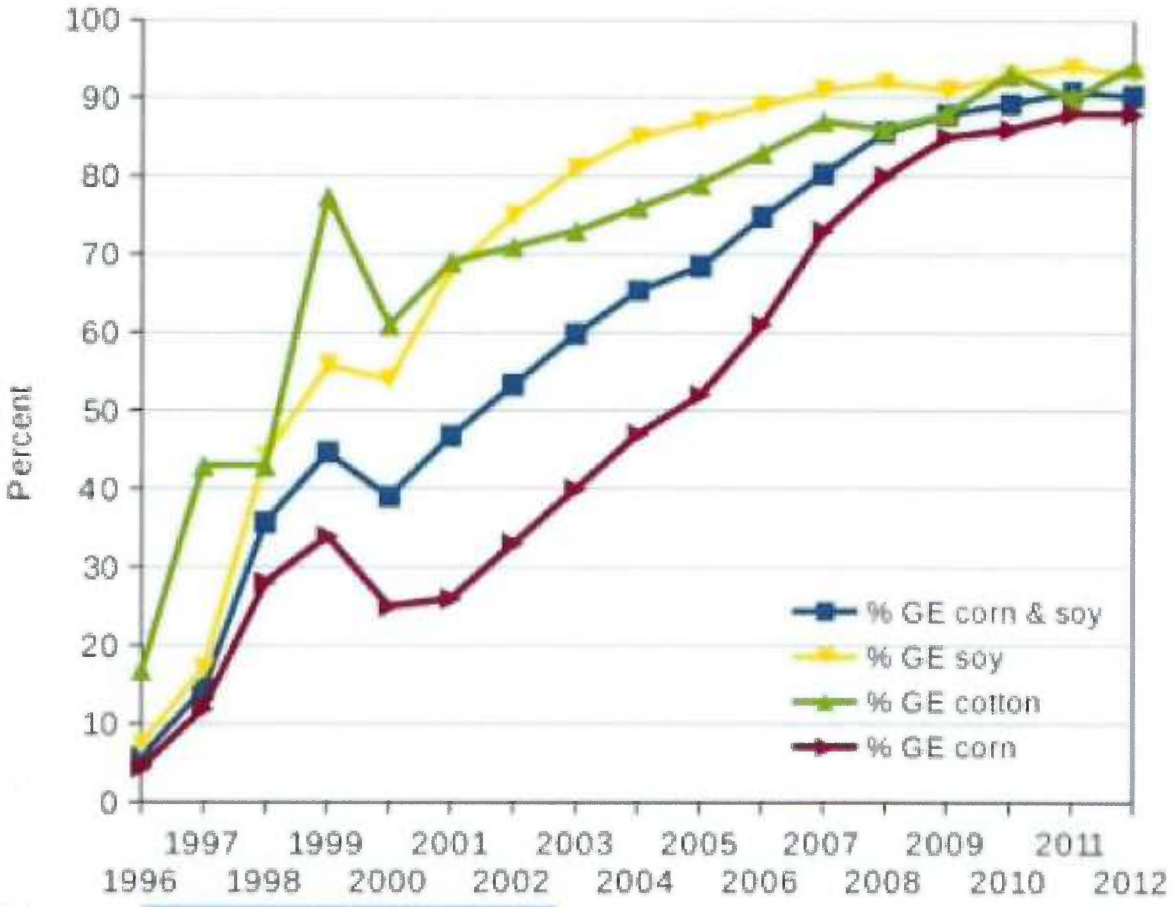

Figure 1. Adoption of GE crops in US.

Adoption of GE crops in the U.S.
Photo Credit:

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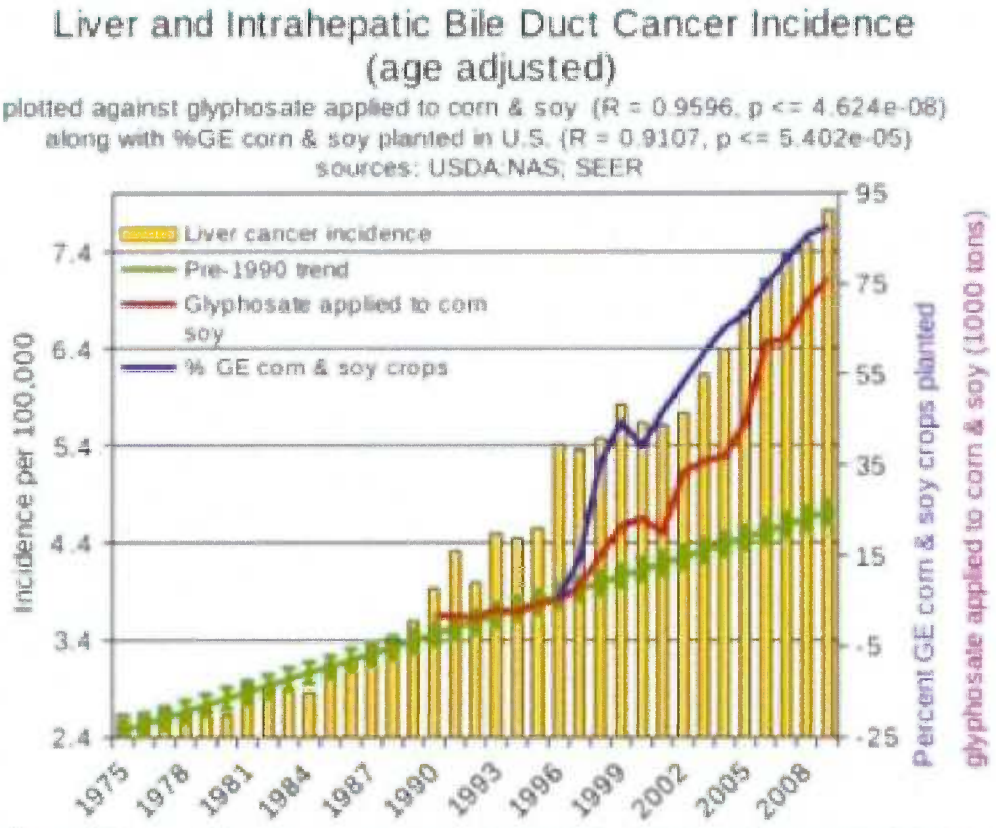

Figure 7. Correlation between age-adjusted liver cancer incidence and glyphosate applications and percentage of US corn and soy crops that are GE.

Click to enlarge.

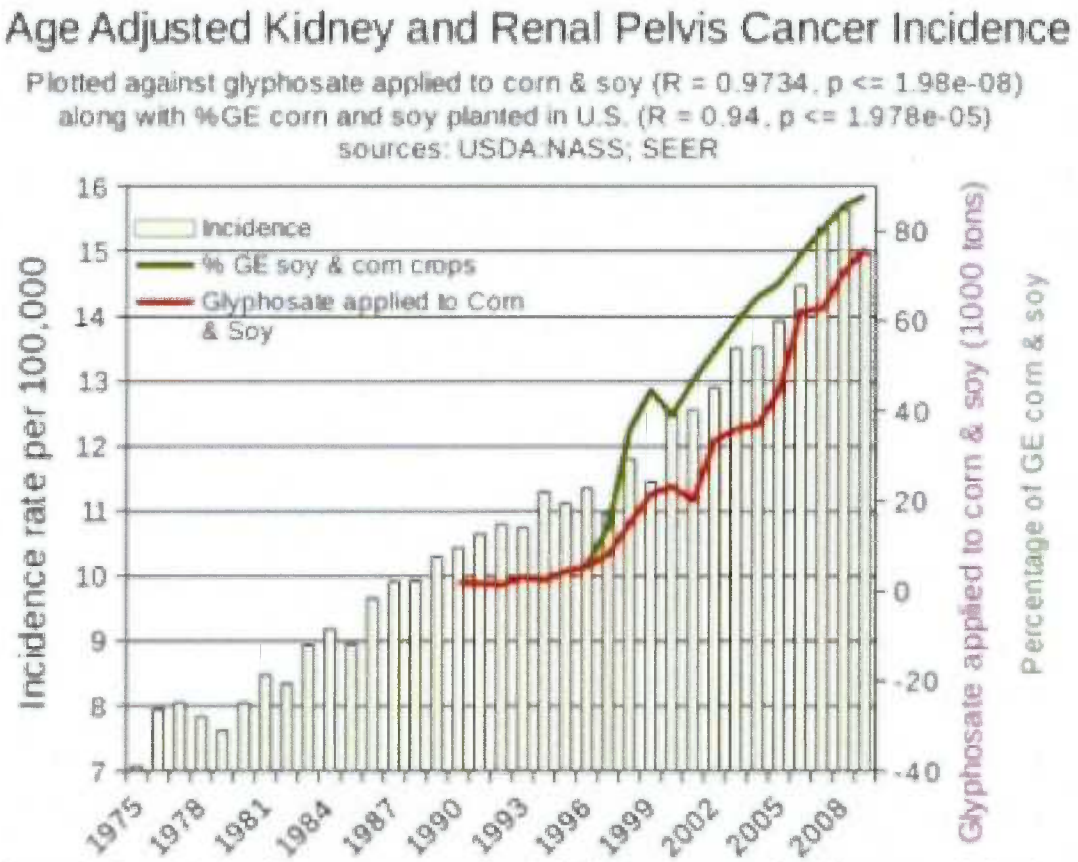

Figure 8. Correlation between age-adjusted kidney cancer incidence and glyphosate applications and percentage of US corn and soy crops that are GE.

Age adjusted kidney and renal pelvis cancer incidence.
Photo Credit:
Journal of Organic Systems

Click to enlarge.

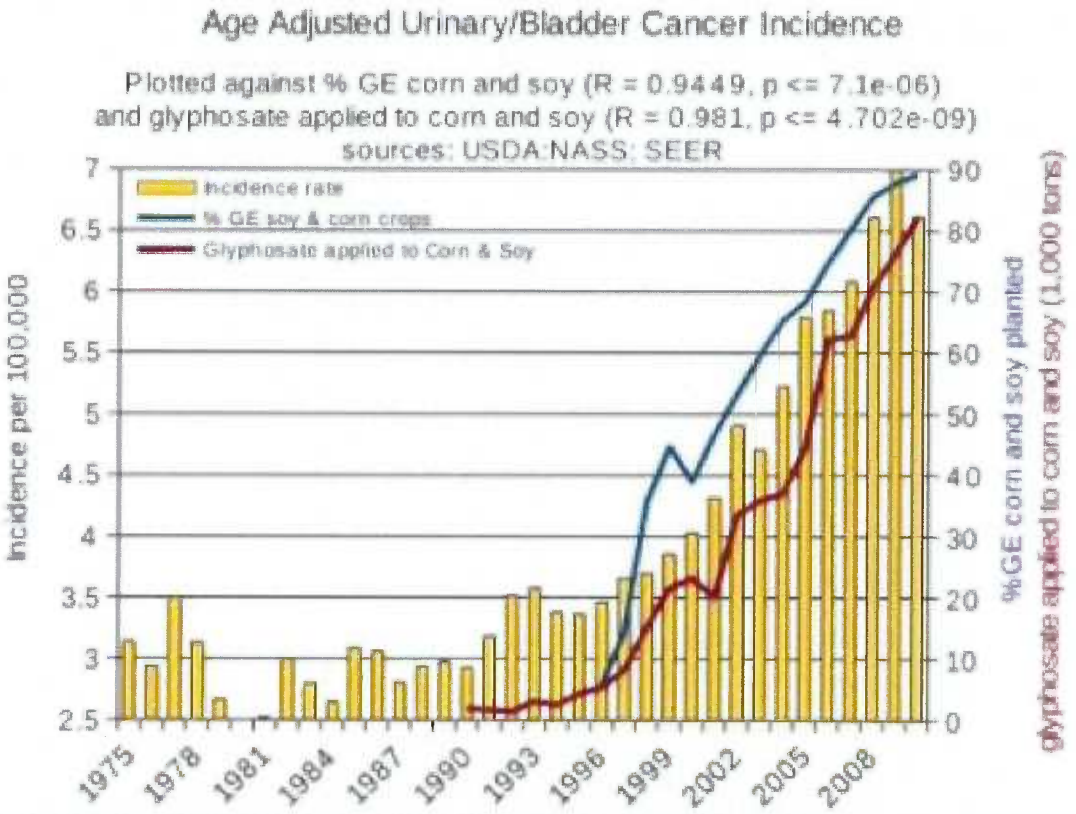

Figure 9. Correlation between age-adjusted bladder/urinary tract cancer and glyphosate applications and percentage of US corn and soy crops that are GE.

Age Adjusted Urinary-Bladder Cancer Incidence.
Photo Credit:
Journal of Organic Systems

Click to enlarge.

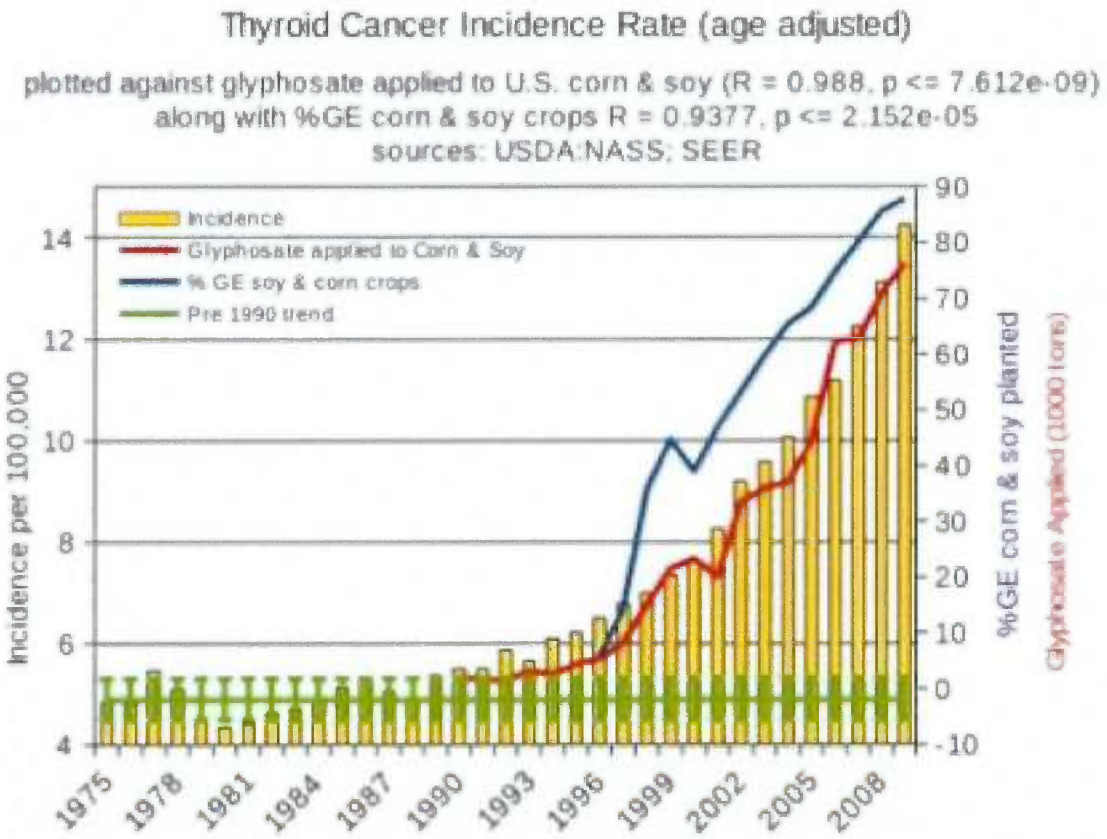

Figure 10. Correlation between age-adjusted thyroid cancer incidence and glyphosate applications and percentage of US corn and soy crops that are GE.

Thyroid cancer incidence rate.

Photo Credit:
Journal of Organic Systems

Click to enlarge.

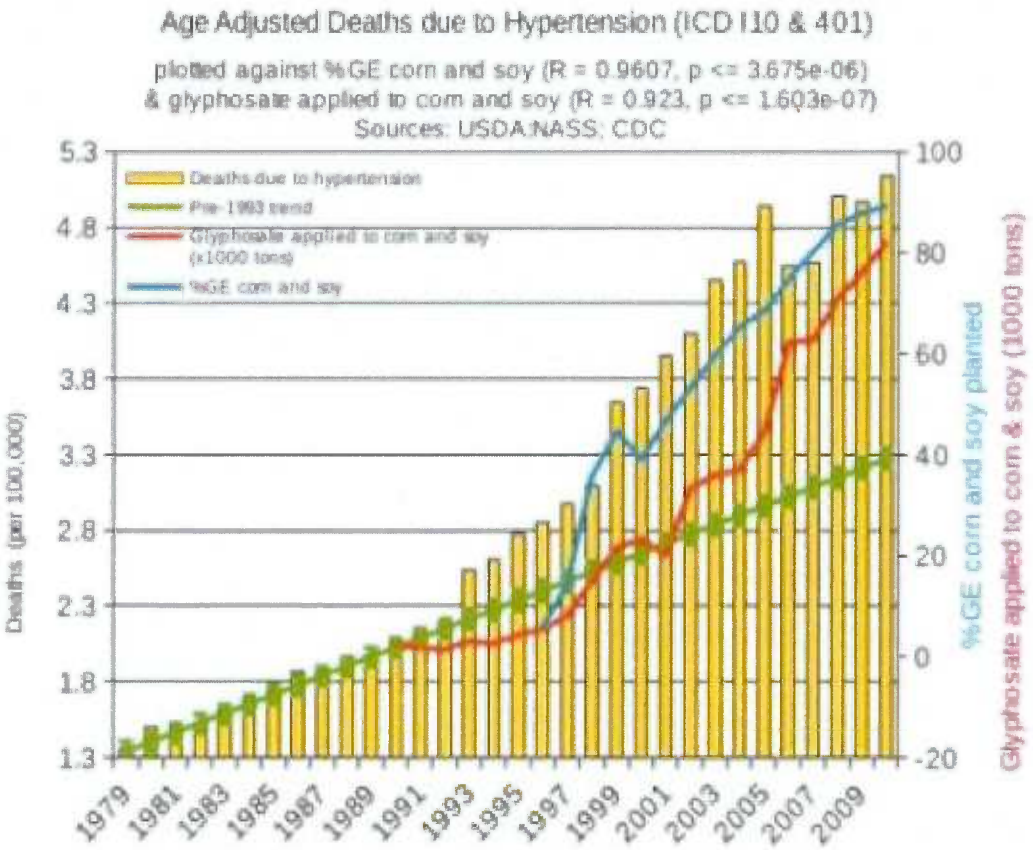

Figure 11. Correlation between age-adjusted hypertension deaths and glyphosate applications and percentage of US corn and soy crops that are GE.

Age adjusted deaths due to hypertension.

Photo Credit:
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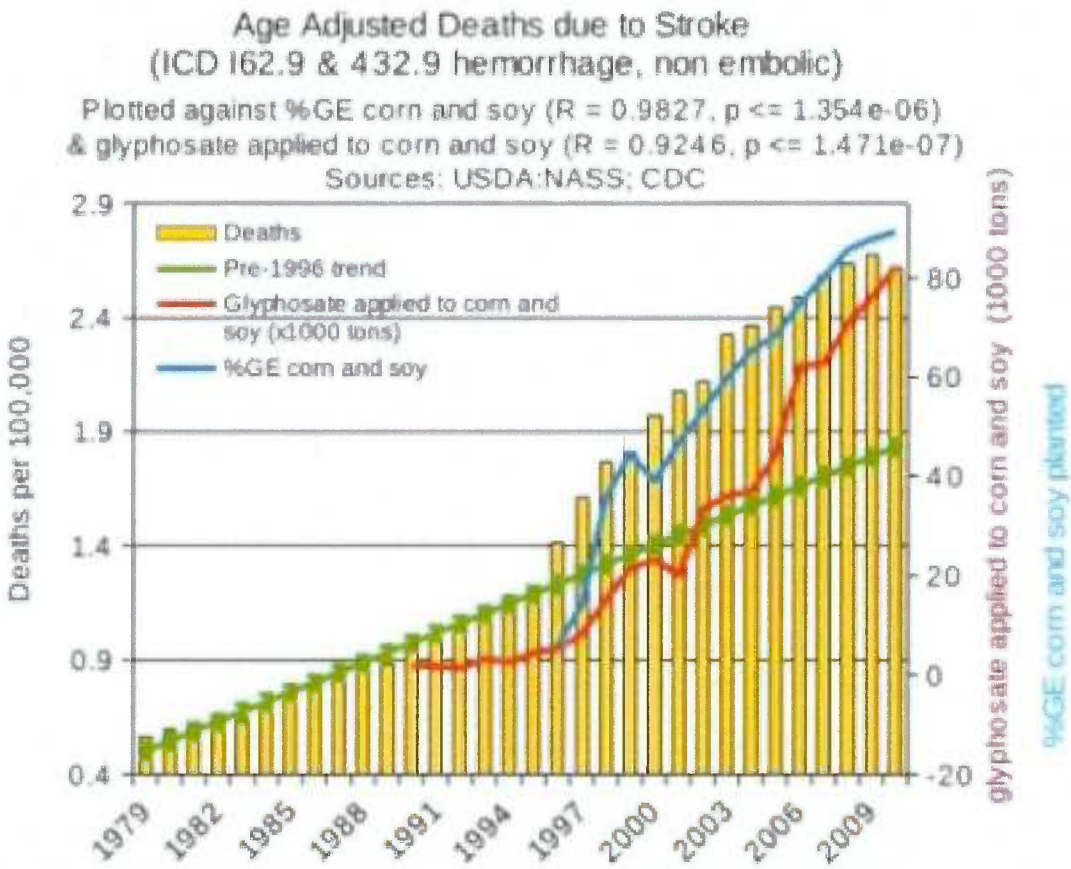

Figure 12. Correlation between age-adjusted hemorrhagic stroke deaths and glyphosate applications and percentage of US corn and soy crops that are GE.

Age adjusted deaths due to stroke.

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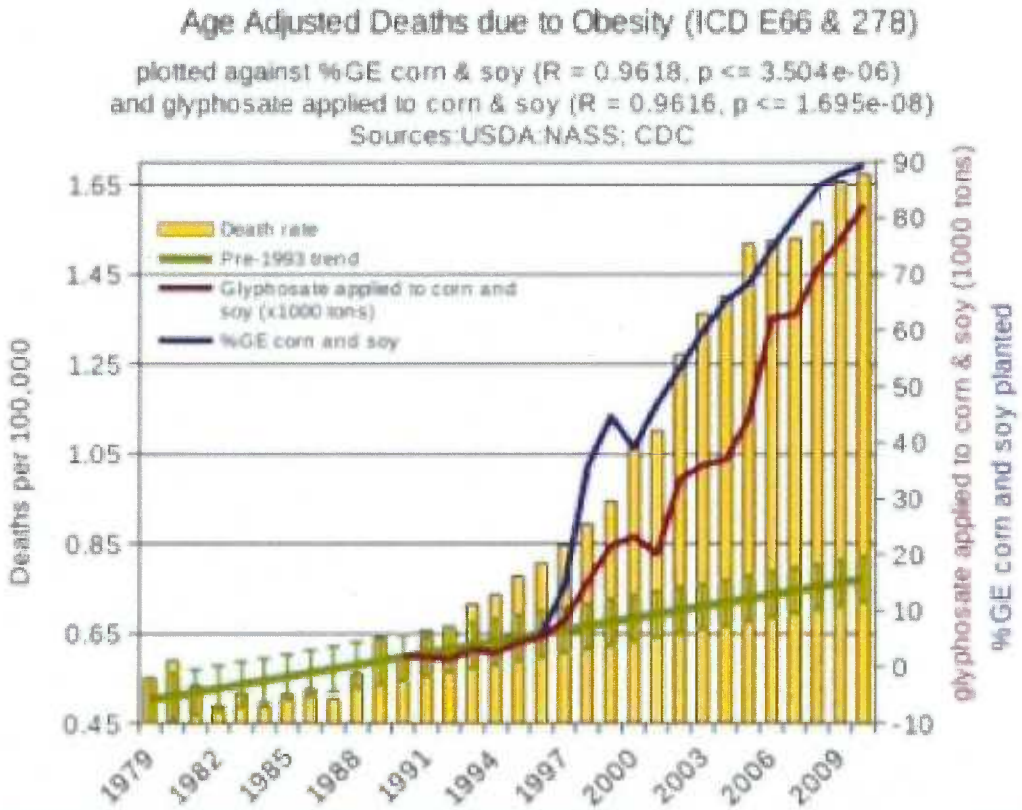

Figure 13. Correlation between age-adjusted obesity deaths and glyphosate applications and percentage of US corn and soy crops that are GE.

Age adjusted deaths due to obesity.

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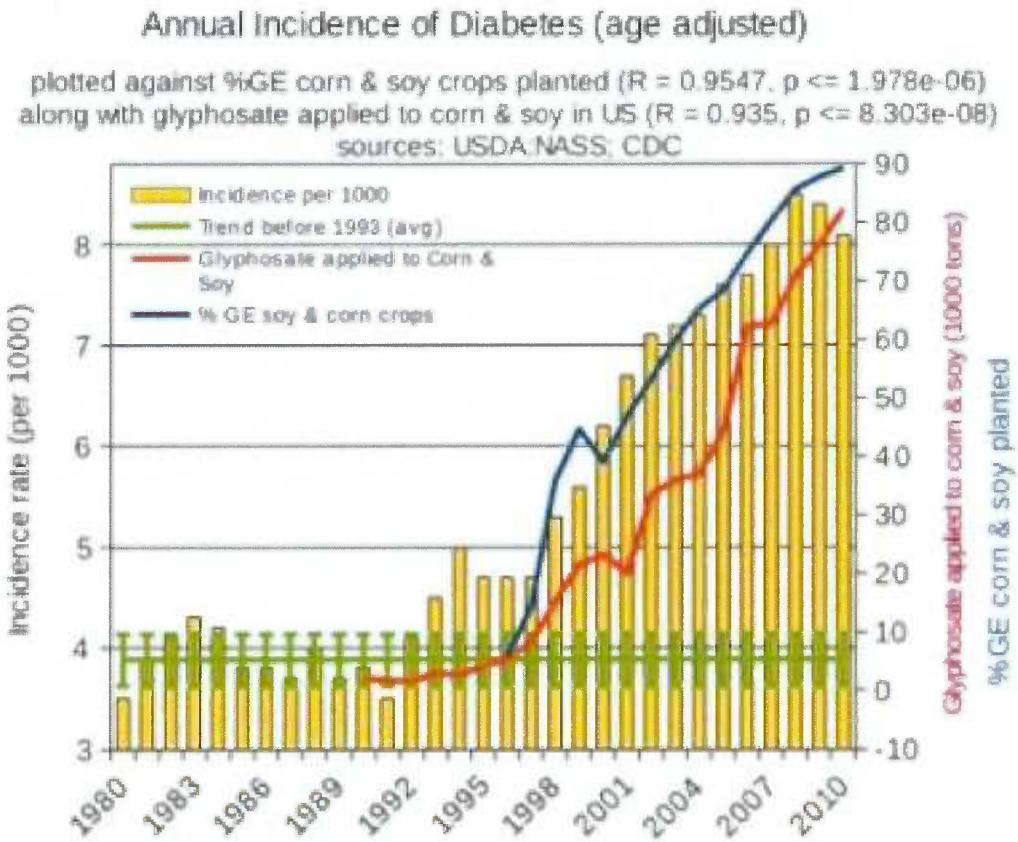

Figure 14. Correlation between age-adjusted diabetes incidence and glyphosate applications and percentage of US corn and soy crops that are GE.

Annual incidence of diabetes.

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Journal of Organic Systems

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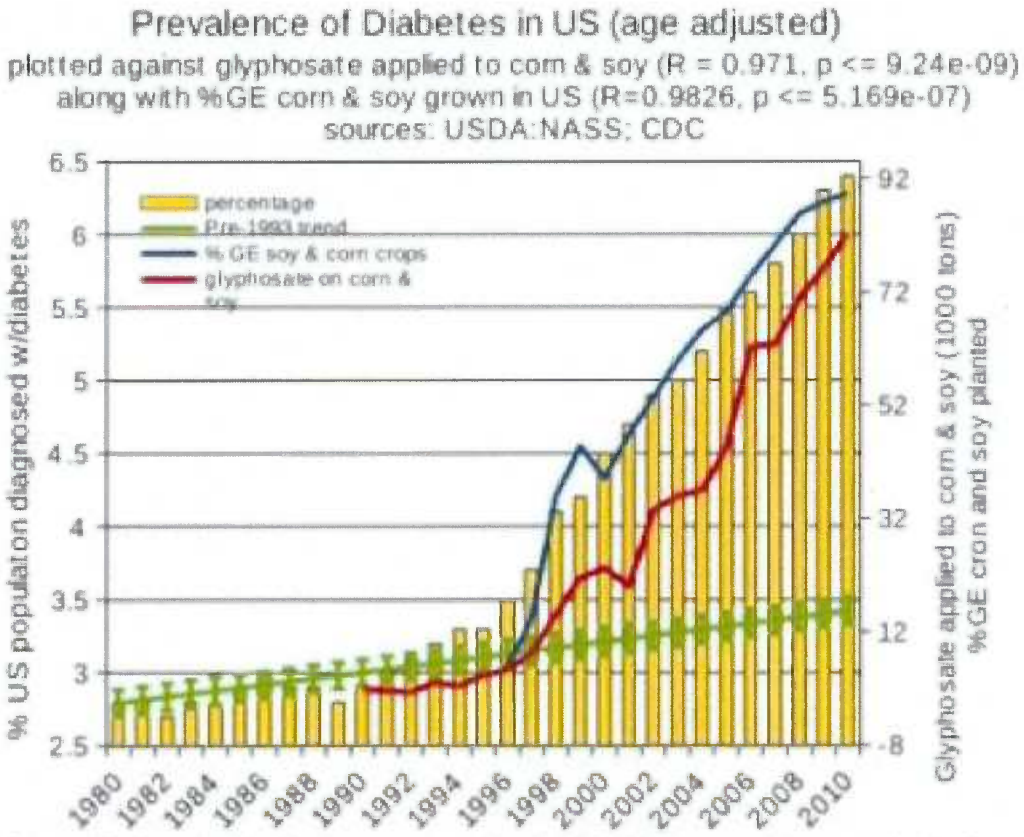

Figure 15. Correlation between age-adjusted diabetes prevalence and glyphosate applications and percentage of US corn and soy crops that are GE.

Prevalence of diabetes in the U.S.

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Click to enlarge.

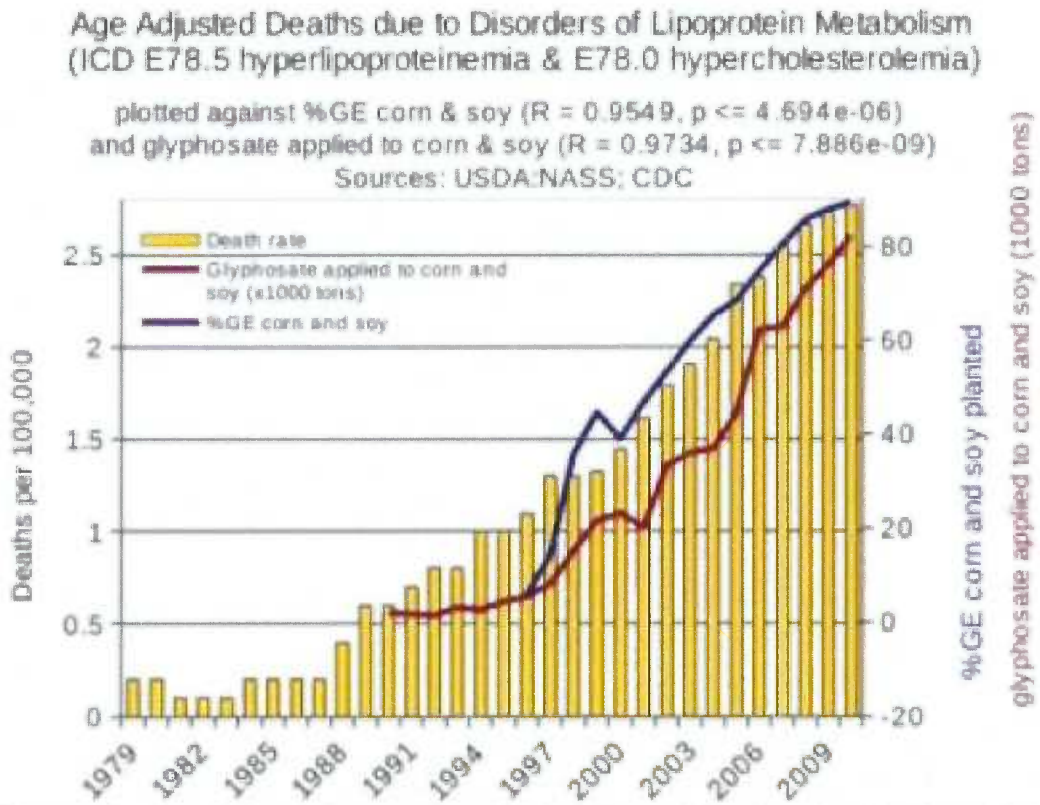

Figure 16. Correlation between age-adjusted lipoprotein disorder deaths and glyphosate applications and percentage of US corn and soy crops that are GE.

Age adjusted deaths due to disorders of liproprotein metabolism.

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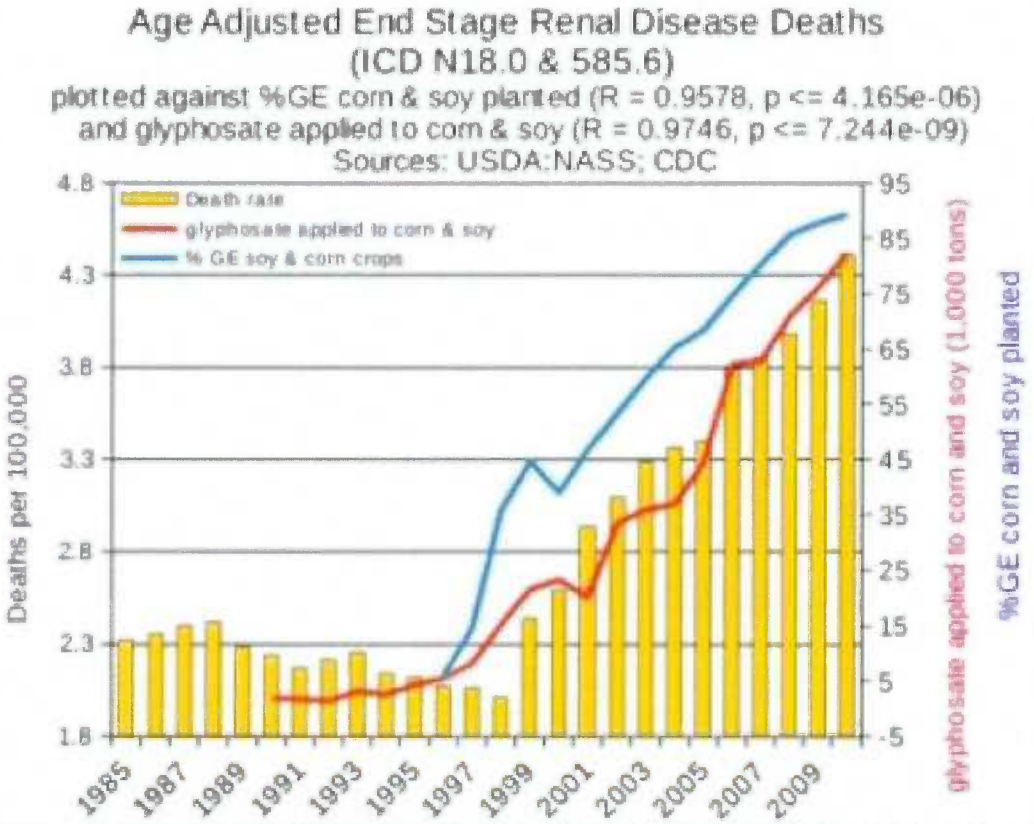

Figure 18. Correlation between age-adjusted End Stage Renal Disease deaths and glyphosate applications and percentage of US corn and soy crops that are GE.

Age adjusted end stage renal disease deaths.

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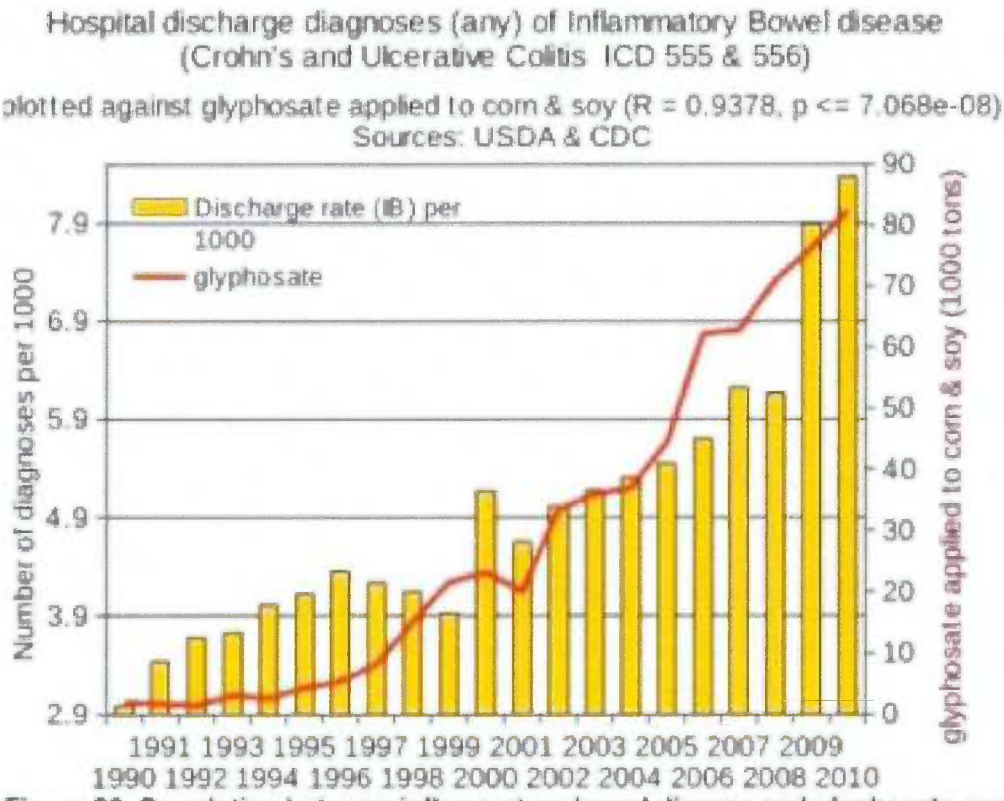

Figure 20. Correlation between inflammatory bowel disease and glyphosate applications to US corn and soy crops.

Hospital discharge diagnoses any of inflammatory bowel disease.

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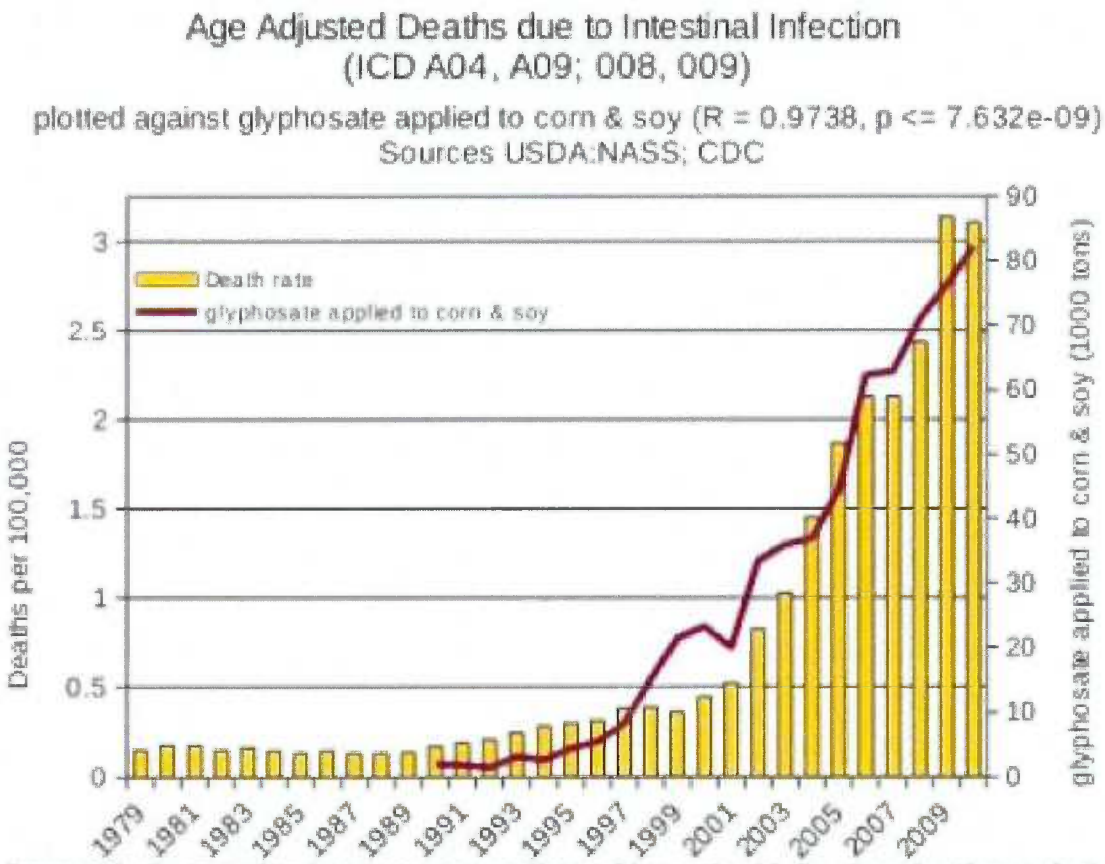

Figure 21. Correlation between age-adjusted intestinal infection deaths and glyphosate applications to US corn and soy crops.

Age adjusted deaths due to intestinal infection.

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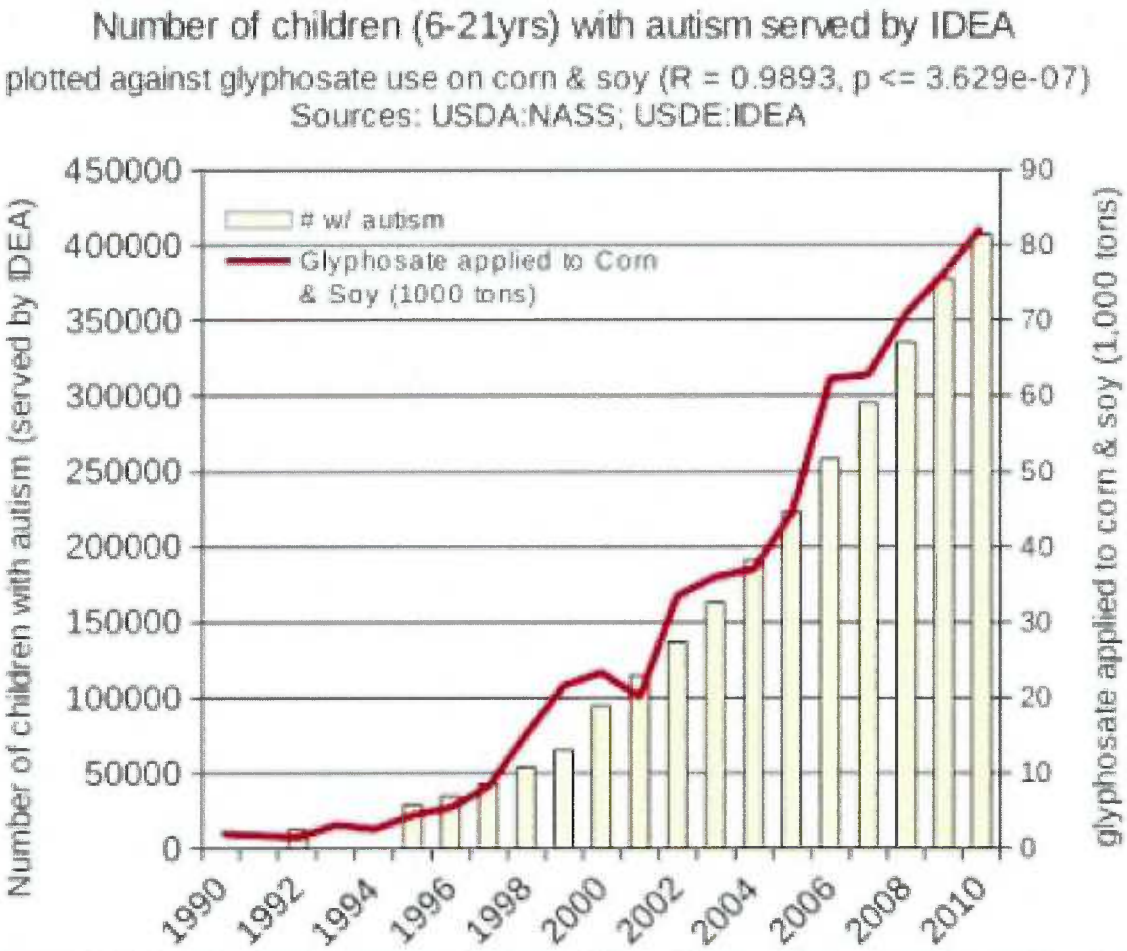

Figure 23. Correlation between children with autism and glyphosate applications.

Number of children with autism served by IDEA.

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Journal of Organic Systems

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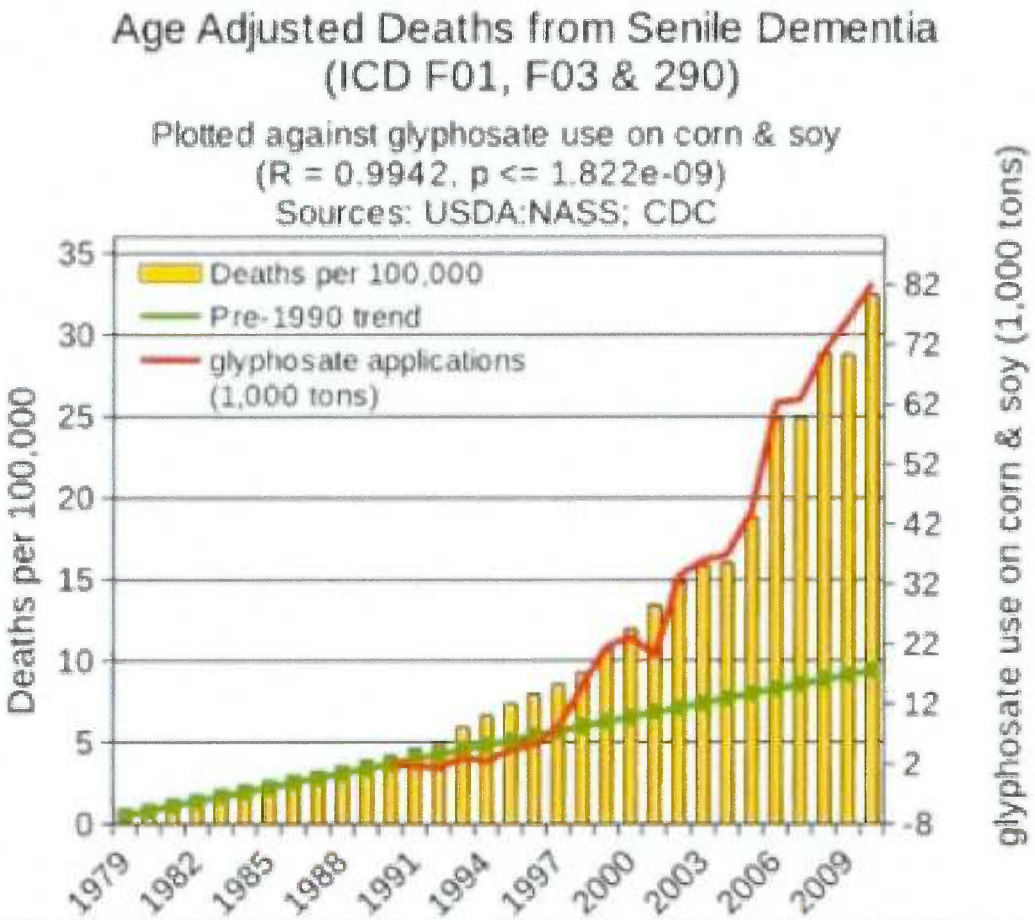

Figure 24. Correlation between age-adjusted dementia deaths and glyphosate applications.

Click to enlarge.

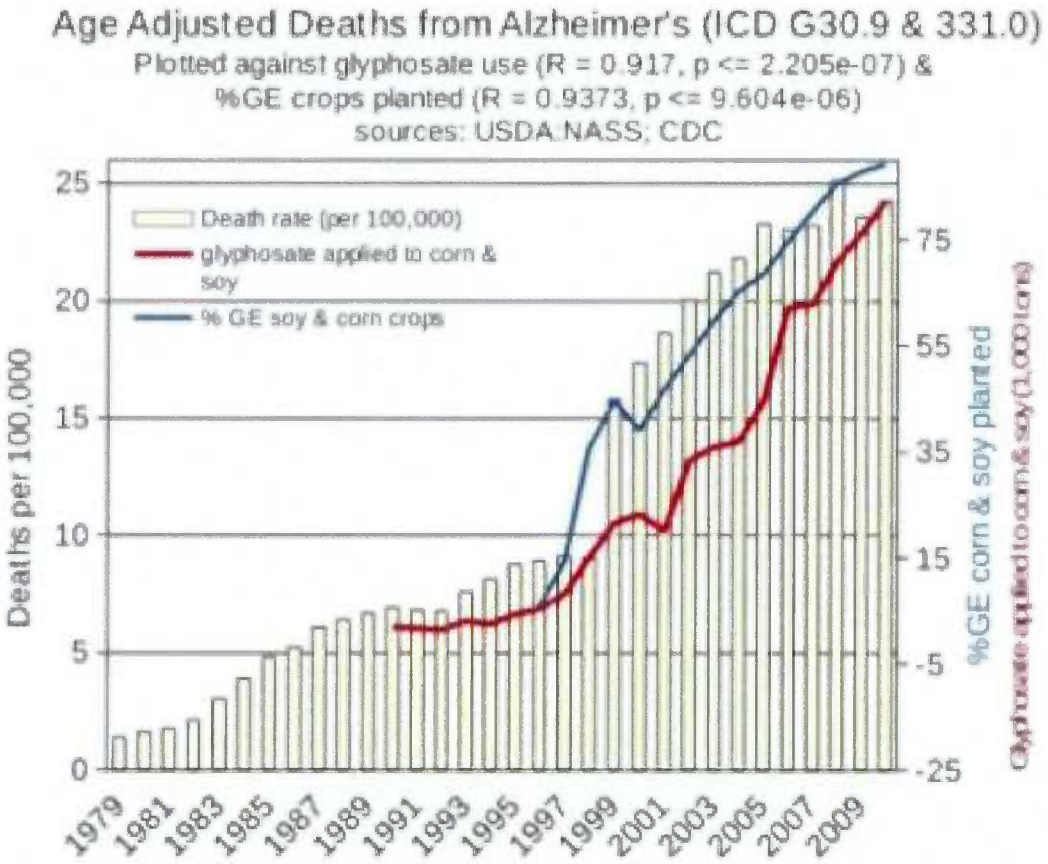

Figure 25. Correlation between age-adjusted Alzheimer's disease deaths and glyphosate applications and percentage of US corn and soy crops that are GE.

Age adjusted deaths from Alzheimer's.

Click to enlarge.

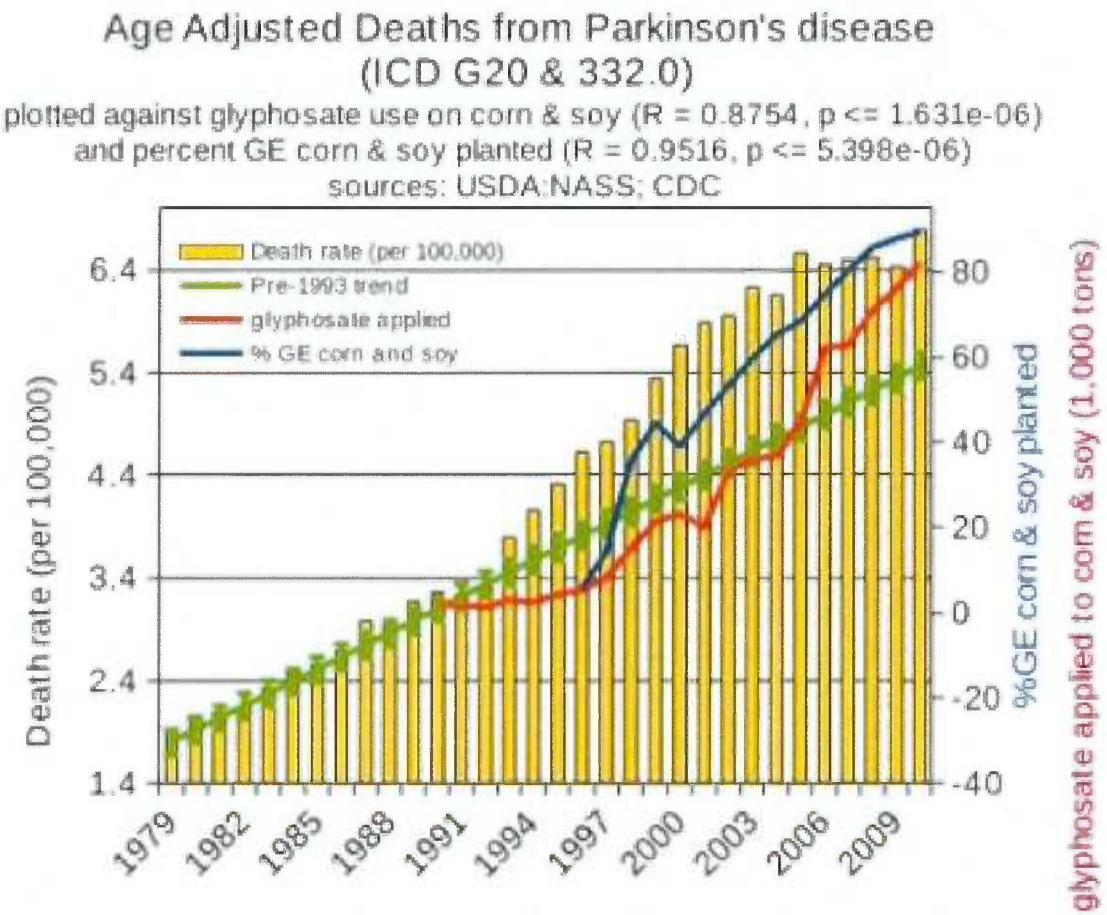

Figure 26. Correlation between age-adjusted Parkinson's disease deaths and glyphosate applications and percentage of US corn and soy crops that are GE.

Click to enlarge.

European Network of Scientists for Social and Environmental Responsibility

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- State of the GMO Planet, San Francisco
- Conference on Risks for Public Health & the Environment, Madrid
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- Conference on Sustainability and Holistic Assessment, Caen
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10/21/13

Statement: No scientific consensus on GMO safety

As scientists, physicians, academics, and experts from disciplines relevant to the scientific, legal, social and safety assessment aspects of genetically modified organisms (GMOs),[1] we strongly reject claims by GM seed developers and some scientists, commentators, and journalists that there is a "scientific consensus" on GMO safety[2] [3] [4] and that the debate on this topic is "over".[5]

We feel compelled to issue this statement because the claimed consensus on GMO safety does not exist. The claim that it does exist is misleading and misrepresents the currently available scientific evidence and the broad diversity of opinion among scientists on this issue. Moreover, the claim encourages a climate of complacency that could lead to a lack of regulatory and scientific rigour and appropriate caution, potentially endangering the health of humans, animals, and the environment.

Science and society do not proceed on the basis of a constructed consensus, as current knowledge is always open to well-founded challenge and disagreement. We endorse the need for further independent scientific inquiry and informed public discussion on GM product safety and urge GM proponents to do the same.

Some of our objections to the claim of scientific consensus are listed below.

1. There is no consensus on GM food safety

Regarding the safety of GM crops and foods for human and animal health, a comprehensive review of animal feeding studies of GM crops found "An equilibrium in the number [of] research groups suggesting, on the basis of their studies, that a number of varieties of GM products (mainly maize and soybeans) are as safe and nutritious as the respective conventional non-GM plant, and those raising still serious concerns". The review also found that most studies concluding that GM foods were as safe and nutritious as those obtained by conventional breeding were "performed by biotechnology companies or associates, which are also responsible [for] commercializing these GM plants".[6]

A separate review of animal feeding studies that is often cited as showing that GM foods are safe included studies that found significant differences in the GM-fed animals. While the review authors dismissed these findings as not biologically significant,[7] the interpretation of these differences is the subject of continuing scientific debate[8] [9] [10] [11] and no consensus exists on the topic.

Rigorous studies investigating the safety of GM crops and foods would normally involve animal feeding studies in which one group of animals is fed GM food and another group is fed an equivalent non-GM diet. Independent studies of this type are rare, but when such studies have been performed, some have revealed toxic effects or signs of toxicity in the GM-fed animals.[12] [13] [14] [15] [16] [17] The concerns raised by these studies have not been followed up by targeted research that could confirm or refute the initial findings.

The lack of scientific consensus on the safety of GM foods and crops is underlined by the recent research calls of the European Union and the French

View the first signatories

View the 297 signatories as of December 10

Sign the statement "No consensus on GMO safety"

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government to investigate the long-term health impacts of GM food consumption in the light of uncertainties raised by animal feeding studies.[18] [19] These official calls imply recognition of the inadequacy of the relevant existing scientific research protocols. They call into question the claim that existing research can be deemed conclusive and the scientific debate on biosafety closed.

2. There are no epidemiological studies investigating potential effects of GM food consumption on human health

It is often claimed that "trillions of GM meals" have been eaten in the US with no ill effects. However, no epidemiological studies in human populations have been carried out to establish whether there are any health effects associated with GM food consumption. As GM foods are not labelled in North America, a major producer and consumer of GM crops, it is scientifically impossible to trace, let alone study, patterns of consumption and their impacts. Therefore, claims that GM foods are safe for human health based on the experience of North American populations have no scientific basis.

3. Claims that scientific and governmental bodies endorse GMO safety are exaggerated or inaccurate

Claims that there is a consensus among scientific and governmental bodies that GM foods are safe, or that they are no more risky than non-GM foods,[20] [21] are false.

For instance, an expert panel of the Royal Society of Canada issued a report that was highly critical of the regulatory system for GM foods and crops in that country. The report declared that it is "scientifically unjustifiable" to presume that GM foods are safe without rigorous scientific testing and that the "default prediction" for every GM food should be that the introduction of a new gene will cause "unanticipated changes" in the expression of other genes, the pattern of proteins produced, and/or metabolic activities. Possible outcomes of these changes identified in the report included the presence of new or unexpected allergens.[22]

A report by the British Medical Association concluded that with regard to the long-term effects of GM foods on human health and the environment, "many unanswered questions remain" and that "safety concerns cannot, as yet, be dismissed completely on the basis of information currently available". The report called for more research, especially on potential impacts on human health and the environment.[23]

Moreover, the positions taken by other organizations have frequently been highly qualified, acknowledging data gaps and potential risks, as well as potential benefits, of GM technology. For example, a statement by the American Medical Association's Council on Science and Public Health acknowledged "a small potential for adverse events ... due mainly to horizontal gene transfer, allergenicity, and toxicity" and recommended that the current voluntary notification procedure practised in the US prior to market release of GM crops be made mandatory.[24] It should be noted that even a "small potential for adverse events" may turn out to be significant, given the widespread exposure of human and animal populations to GM crops.

A statement by the board of directors of the American Association for the Advancement of Science (AAAS) affirming the safety of GM crops and opposing labelling[25] cannot be assumed to represent the view of AAAS members as a whole and was challenged in an open letter by a group of 21 scientists, including many long-standing members of the AAAS.[26] This episode underlined the lack of consensus among scientists about GMO safety.

4. EU research project does not provide reliable evidence of GM food safety

An EU research project[27] has been cited internationally as providing evidence for GM crop and food safety. However, the report based on this project, "A Decade of EU-Funded GMO Research", presents no data that could provide such evidence, from long-term feeding studies in animals.

Indeed, the project was not designed to test the safety of any single GM food, but to focus on "the development of safety assessment approaches".[28] Only five published animal feeding studies are referenced in the SAFOTEST section of the report, which is dedicated to GM food safety.[29] None of these studies tested a commercialised GM food; none tested the GM food for long-term effects beyond the subchronic period of 90 days; all found differences in the GM-fed animals, which in some cases were statistically significant; and none concluded on the safety of the GM food tested, let alone on the safety of GM foods in general. Therefore the EU research project provides no evidence for sweeping claims about the safety of any single GM food or of GM crops in general.

5. List of several hundred studies does not show GM food safety

A frequently cited claim published on an Internet website that several hundred studies "document the general safety and nutritional wholesomeness of GM foods and feeds"[30] is misleading. Examination of the studies listed reveals that many do not provide evidence of GM food safety and, in fact, some provide evidence of a lack of safety. For example:

- Many of the studies are not toxicological animal feeding studies of the type that can provide useful information about health effects of GM food consumption. The list includes animal production studies that examine parameters of interest to the food and agriculture industry, such as milk yield and weight gain;[31] [32] studies on environmental effects of GM crops; and analytical studies of the composition or genetic makeup of the crop.
- Among the animal feeding studies and reviews of such studies in the list, a substantial number found toxic effects and signs of toxicity in GM-fed animals compared with controls.[33] [34] [35] [36] [37] [38] Concerns raised by these studies have not been satisfactorily addressed and the claim that the body of research shows a consensus over the safety of GM crops and foods is false and irresponsible.
- Many of the studies were conducted over short periods compared with the animal's total lifespan and cannot detect long-term health effects. [39] [40]

We conclude that these studies, taken as a whole, are misrepresented on the Internet website as they do not "document the general safety and nutritional wholesomeness of GM foods and feeds". Rather, some of the studies give serious cause for concern and should be followed up by more detailed investigations over an extended period of time.

6. There is no consensus on the environmental risks of GM crops

Environmental risks posed by GM crops include the effects of Bt insecticidal crops on non-target organisms and effects of the herbicides used in tandem with herbicide-tolerant GM crops.

As with GM food safety, no scientific consensus exists regarding the environmental risks of GM crops. A review of environmental risk assessment approaches for GM crops identified shortcomings in the procedures used and found "no consensus" globally on the methodologies that should be applied, let alone on standardized testing procedures.[41]

Some reviews of the published data on Bt crops have found that they can have adverse effects on non-target and beneficial organisms[42] [43] [44] [45] – effects that are widely neglected in regulatory assessments and by some scientific commentators. Resistance to Bt toxins has emerged in target pests,

[46] and problems with secondary (non-target) pests have been noted, for example, in Bt cotton in China.[47] [48]

Herbicide-tolerant GM crops have proved equally controversial. Some reviews and individual studies have associated them with increased herbicide use,[49] [50] the rapid spread of herbicide-resistant weeds,[51] and adverse health effects in human and animal populations exposed to Roundup, the herbicide used on the majority of GM crops.[52] [53] [54]

As with GM food safety, disagreement among scientists on the environmental risks of GM crops may be correlated with funding sources. A peer-reviewed survey of the views of 62 life scientists on the environmental risks of GM crops found that funding and disciplinary training had a significant effect on attitudes. Scientists with industry funding and/or those trained in molecular biology were very likely to have a positive attitude to GM crops and to hold that they do not represent any unique risks, while publicly-funded scientists working independently of GM crop developer companies and/or those trained in ecology were more likely to hold a "moderately negative" attitude to GM crop safety and to emphasize the uncertainty and ignorance involved. The review authors concluded, "The strong effects of training and funding might justify certain institutional changes concerning how we organize science and how we make public decisions when new technologies are to be evaluated."[55]

7. International agreements show widespread recognition of risks posed by GM foods and crops

The Cartagena Protocol on Biosafety was negotiated over many years and implemented in 2003. The Cartagena Protocol is an international agreement ratified by 166 governments worldwide that seeks to protect biological diversity from the risks posed by GM technology. It embodies the Precautionary Principle in that it allows signatory states to take precautionary measures to protect themselves against threats of damage from GM crops and foods, even in case of a lack of scientific certainty.[56]

Another international body, the UN's Codex Alimentarius, worked with scientific experts for seven years to develop international guidelines for the assessment of GM foods and crops, because of concerns about the risks they pose. These guidelines were adopted by the Codex Alimentarius Commission, of which over 160 nations are members, including major GM crop producers such as the United States.[57]

The Cartagena Protocol and Codex share a precautionary approach to GM crops and foods, in that they agree that genetic engineering differs from conventional breeding and that safety assessments should be required before GM organisms are used in food or released into the environment.

These agreements would never have been negotiated, and the implementation processes elaborating how such safety assessments should be conducted would not currently be happening, without widespread international recognition of the risks posed by GM crops and foods and the unresolved state of existing scientific understanding.

Concerns about risks are well-founded, as has been demonstrated by studies on some GM crops and foods that have shown adverse effects on animal health and non-target organisms, indicated above. Many of these studies have, in fact, fed into the negotiation and/or implementation processes of the Cartagena Protocol and Codex. We support the application of the Precautionary Principle with regard to the release and transboundary movement of GM crops and foods.

Conclusion

In the scope of this document, we can only highlight a few examples to illustrate that the totality of scientific research outcomes in the field of GM crop safety is nuanced, complex, often contradictory or inconclusive, confounded by researchers' choices, assumptions, and funding sources, and in

general, has raised more questions than it has currently answered.

Whether to continue and expand the introduction of GM crops and foods into the human food and animal feed supply, and whether the identified risks are acceptable or not, are decisions that involve socioeconomic considerations beyond the scope of a narrow scientific debate and the currently unresolved biosafety research agendas. These decisions must therefore involve the broader society. They should, however, be supported by strong scientific evidence on the long-term safety of GM crops and foods for human and animal health and the environment, obtained in a manner that is honest, ethical, rigorous, independent, transparent, and sufficiently diversified to compensate for bias.

Decisions on the future of our food and agriculture should not be based on misleading and misrepresentative claims that a "scientific consensus" exists on GMO safety.

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[1] In the US, the term "genetically engineered" is often used in place of "genetically modified". We have used "genetically modified" because this is the terminology consistently used by many authorities internationally, including the Food and Agriculture Organization of the United Nations; the World Health Organization; Codex Alimentarius; European and Indian legislation; peer-reviewed studies by industry and independent scientists; and the international media. It is also consistent with the Cartagena Protocol's term "living modified organism".

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Re: GMO Free Zone, Council File 13-1374

Item #13-1374

Agenda item # 21

Support the GMO-Free Zone

It is the mandate of the People of Los Angeles, whom you represent.

Neighborhood Councils who recommend this Ordinance:

- Historic Highland Park Neighborhood Council
- Lake Balboa Neighborhood Council
- Mar Vista Community Council
- Northwest San Pedro Neighborhood Council
- Wilshire Center Koreatown Neighborhood Councils

Petition in support of the Ordinance, with more than 2,700 signatures, representing every Council District in L.A.
2,000 postcards, presented at the City Council meeting of October
Phone calls to your offices from your constituents and from residents of Los Angeles.

More than 100 endorsement letters from local businesses, small farmers, urban agriculture, community gardens, health professionals, Latino organizations, environmental organizations and churches

Support the Ordinance that would make L.A. a GMO-Free Zone

City File 13-1374

Item #13-1374

Northwest San Pedro Neighborhood Council

"Your Community Voice"

December 8, 2014

Councilmember Joe Buscaino
Los Angeles City Hall
200 N. Spring Street, Room 410
Los Angeles, CA 90012

Re: Council File #13-1374 – Prohibit the Growth of Genetically Modified (GM) Crops within City Limits

Dear Councilmember Buscaino:

Tonight, the Northwest San Pedro Neighborhood Council voted to support Councilmembers Koretz and O'Farrell's ordinance which would prohibit the growth of genetically modified crops within Los Angeles city limits.

We strongly urge your "aye" vote for this ordinance in the City Council meeting on December 9th.

Sincerely,

R. Regalado

Raymond Regalado
President, Northwest San Pedro Neighborhood Council

638 S. Beacon Street Box 688 • San Pedro, CA 90731 • (310)-732-4522
www.nwsanpedro.org

CF #13-1374

~~Agenda Item # 21~~

December 9, 2014

City Council of the City of Los Angeles
200 N. Spring Street
Los Angeles, CA 90012

~~Re: GMO-Free Zone~~, City Clerk's File 13-1374

Dear Council Members:

Our coalition is made up of your constituents, the citizens you have sworn to protect and serve. Our coalition includes people and organizations from all 15 Council districts of Los Angeles. This Ordinance has been endorsed by five Neighborhood Councils. You are our representatives, which means you need to reflect our position when you vote.

We are not paid to promote this initiative. We do not do this for profits. We have an even higher calling: we care about our children and future generations. Our credentials are that we are standing up for what is right, because we care about people's health, the future of the food supply, and the future of the earth.

The Ordinance before you protects the right of all people to have access to clean, safe, affordable, fair food. That means not just people who can afford fancy stores, but also people who grow their own food in self-sufficiency. That means not just people who are here today, when there are still a few varieties of untainted corn remaining, but also preserving for people into future generations.

Additionally, we assert that a human life is about much more than science. A human life is also about culture, security, nature and the hope and happiness of healthy grandchildren and great-grandchildren. The Seed Freedom LA coalition takes into account the full spectrum of impacts that we would suffer without this Ordinance.

Refuting the biotech industry

Despite the claims of Manatt law firm, the representatives of the Biotechnology Industry Organization, **there is no scientific consensus about the safety genetically modified organisms** (GMOs). The only pseudo-"consensus" is in the studies that the biotech industry has bought and paid for.

1. The position of the Biotechnology Industry is about preservation of their profits, rather than what is right for the citizens of this City and for mankind into the future.
2. The City is the only government entity courageous enough to take a stand on GMOs with respect to Southern California lands. All other government entities have failed us and sidestepped regulating GMOs.
3. Representatives of the Biotechnology Industry Organization claim that the Ordinance before you is "anti-science," yet they use blog posts, popular press, and the New Yorker as their footnotes. By contrast, the Seed Freedom LA coalition puts before you extensive references to scientific studies, research reports, and industry professionals from around the globe.
4. The position of the Biotechnology Industry Organization completely disregards input from L.A.'s local small business, urban agriculture, seedsavers, home gardeners, environmental organizations, the Latino community, and the impact on future generations.

No scientific consensus

If science has supposedly proven GMOs to be "safe", what about the findings of studies like the following:

- Carman et al., who found "gastric and uterine differences" and "higher rate of severe stomach inflammation" in pigs fed a GMO diet;[1]
- Ewen SW et al, who found "variable effects on different parts of the rat gastrointestinal tract"[2]
- Alberto Finamore, et al, who found "alterations in intestinal and peripheral immune response of weaning and old mice"[3]
- Séralini et al., who linked GMOs to tumors, cancers, endocrine disruptions and hormone disruptions in rats[4]

And, given the adverse effects on health that each of these studies revealed, where are the followup studies? If the Biotechnology Industry Organization were truly interested in human safety – rather than preserving monopolies and corporate profits – they would have jumped forward to fund studies to examine every point. Instead of doing diligence, the biotech industry has launched a concerted effort to bury these adverse studies and attempted to discredit some of the scientists involved.[5]

Respected organizations find problems with GMOs

It is false for the Biotechnology Industry Organization to claim that "every respected organization" has endorsed the GMO technology:

- Kaiser Permanente recommends that consumers eat organic or non-GMO, saying: "Despite what the biotech industry might say, there is little research on the long-term effects of GMOs on human health. Independent research has found several varieties of GMO corn caused organ damage in rats. Other studies have found that GMOs may lead to an inability in animals to reproduce."[6];
- The Union of Concerned Scientists published their findings with "Failure to Yield: Evaluating the performance of Genetically Engineered Crops"[7];
- Food and Water Watch published their findings with "Superweeds: How Biotech Crops Bolster the Pesticide Industry"[8];
- United Nations is very vocal in promoting Agroecology, which does not include biotechnology. Hilal Elver, the new United Nations Special Rapporteur on the Right to Food, calls on governments to support a transition to "agricultural democracy" which would empower small farmers. "Modern agriculture, which began in the 1950s, is more resource intensive, very fossil fuel dependent, using fertilizers, and based on

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1 Carman et al., "A long-term toxicology study on pigs fed a combined genetically modified (GM) soy and GM maize diet" in the Journal of Organic Systems 8 (1): 38-54; Open access full text: http://www.organic-systems.org/journal/81/8106.pdf

2 Ewen SW, Pusztai A (October 1999) "Effect of diets containing genetically modified potatoes expressing Galanthus nivalis lectin on rat small intestine" Lancet 354 (9187): 1353–4. doi:10.1016/S0140-6736(98)05860-7. PMID 10533866

3 Alberto Finamore, et al, "Intestinal and Peripheral Immune Response to MON810 Maize Ingestion in Weaning and Old Mice," J. Agric. Food Chem., 2008, 56 (23), pp 11533–11539, November 14, 2008 http://www.cyberacteurs.org/sans_ogm/fichiers/finamore08-jf802059w.pdf

4 Séralini et al., "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize" in Food and Chemical Toxicology 50:4221-4231

5 This statement by Seed Freedom LA coalition paraphrases information from Belinda Martineau, phD, and the Union of Concerned Scientists.

6 Kaiser Permanente, Northwest Fall 2012 newsletter, quoted onlinehttp://www.examiner.com/article/kaiser-permanente-advises-members-against-gmos and commented upon online http://news.health.com/2012/12/03/kaiser-permanent-says-gmo-controversy-misleading/

7 Gurian-Sherman, Doug, "Failure to Yield: Evaluating the performance of Genetically Engineered Crops," Union of Concerned Scientists, April 2009, available online http://www.ucsusa.org/sites/default/files/legacy/assets/documents/food_and_agriculture/failure-to-yield.pdf

8 Food and Water Watch, "Superweeds: How Biotech Crops Bolster the Pesticide Industry," July 2013. available online http://www.foodandwaterwatch.org/reports/superweeds/

massive production. This policy has to change."[9];

- *Scientific American,* a quasi-scientific publication, explained that "Scientists must ask corporations for permission before publishing independent research on genetically modified crops. That restriction must end."[10];
- The US Fish and Wildlife Service has quit using GMOs for any wildlife objectives across the nation.[11]

Far from declaring GMOs to be "safe," the World Health Organization position on GMOs is delicately worded, and anyone can plainly see the politicking between the lines.

GMOs harm the environment

Other important scientific studies that the Biotechnology Industry Organization would rather you didn't learn about:

- Benbrook, Charles M., who found that "Contrary to often-repeated claims that today's genetically-engineered crops have, and are reducing pesticide use, the spread of glyphosate-resistant weeds in herbicide-resistant weed management systems has brought about substantial increases in the number and volume of herbicides applied"[12];
- Sirinathsinghji, Eva, who found antibiotic resistance marker genes used in genetically modified crops n bacteria isolated from all China's rivers[13];
- Altieri, M. A. , a meta-study which found that transgenes (genetically altered genes) cannot "be retracted once they have escaped, thus the damage to the purity of non-GM seeds is permanent"[14];
- Pleasants, J.M. et al, who found that GMO-growing practices wiped out 81% of the Monarch butterflies[15];
- Latham, who found that "engineering genes into a recipient plant's DNA is nearly always accompanied by small or substantial deletions or rearrangements of recipient plant DNA, insertions of DNA sequences not intended for insertion,"[16] in other words: unintentional mutations are common;
- Mulvaney, P, who found that "the past decade has been marked by exceptional concentration and privatisation of seeds in the hands of a few transnational corporations"[17];
- There is the emerging soil science work of Dr. Whendee Silver and the Marin Carbon Project[18] who are finding that organic soils can sequester carbon, reducing global warming. Yet GMO-growing practices are

9 Hilal Elver quoted in http://www.yesmagazine.org/planet/un-only-small-farmers-and-agroecology-can-feed-the-world
10 Scientific American, "Do Seed Companies Control GM Crop Research?" July 2009, http://www.scientificamerican.com/article/do-seed-companies-control-gm-crop-research/
11 US Fish and Wildlife Service memo, July 2014 http://www.centerforfoodsafety.org/files/agricultural-practices-in-wildlife-management_20849.pdf
12 Benbrook, Charles M., "Impacts of genetically engineered crops on pesticide use in the U.S. – the first sixteen years", Published in Environmental Sciences Europe, Vol. 24:24 doi:10.1186/2190-4715-24-24, 28 September 2012. http://www.enveurope.com/content/24/1/24/abstract
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16 Latham 2006, paraphrased by Belinda Martineau, phD
17 Mulvaney, P, "Corporate Control of Seeds: Limiting Access and Farmers Rights" IDS Bulletin(Impact Factor: 0.54). 02/2009; 36(2):68 - 73. DOI: 10.1111/j.1759-5436.2005.tb00199.x
18 See scientific papers at MarinCarbonProject.org

the antithesis of this.

About enforcement

The Biotechnology Industry Organization makes wild and unfounded assertions about enforcement in Los Angeles:

- As discussed in the Arts and Parks Committee meeting on December 8, enforcement of the City of L.A.'s Ordinance could easily be subcontracted to the L.A. County Agricultural Commissioner, who already performs inspections in all pertinent locations. There would be no additional work for the City.
- Cost information from Santa Cruz County, Marin County, Mendocino County, and San Juan County (Washington), each far larger areas than the City of L.A., reveal that their GMO-free Zones have cost them next-to-nothing to enforce.[19]
- If any "conflicts with or [preemptions] by federal or state law"[20] were indeed discovered, the City would have several other California counties and municipalities at its side in fighting such legal challenges.[21]
- AB 2470 is the state's "implementation of less stringent environmental controls."[22] It is protectionism for the biotech industry.

The facts about GMOs in L.A.

The Biotechnology Industry Organization attempts to blur the facts about GMOs in L.A.:

- There are currently no locations growing GMOs in L.A., but the biotech industry has full intention of bringing them here. First to arrive large-scale will probably be GMO turfgrasses, marketed to parks and golf courses, of which L.A. has plenty.
- In our City, there is a blossoming urban agriculture movement. GMO pollen drift hurts them economically.
- In our City, there are plenty of people who are growing food organically. GMO pollen drift pollutes their gardens.
- There are plenty of people who are seedsavers, working to conserve heirloom and culturally-important food crop varieties - including Mother Corn. GMO pollen drift destroys their work.
- There are plenty of people who care about our birds, fish, butterflies, bees, soil, rivers and waterways. GMO pollution will desecrate this.

The Biotechnology Industry Organization would have you disregard all of this local goodness, in favor of biotech profits, to further their monopoly.

A "no action" scenario would mean that here in L.A. there are no governmental restrictions (federal, state, or local) on growing GMOs in our city; that there are no governmental oversights to protect human health; that genetically engineered grasses, citrus trees, and vegetables could soon be grown here, together with their inextricable chemical load; that our wildlands and rivers and wildlife could soon be infiltrated with GM contamination; and that 502 square miles of potential "safe zone" for growing out GMO-Free seeds is eliminated to the detriment of the future

19 Fact sheet for "Family Farms Measure 15-110" compiled by Our Family Farms Coalition
20 Quote from Manatt letter of December 8, 2014 in City Clerk's file
21 Marin, Mendocino, Santa Cruz, Humboldt, Trinity counties, and the cities of Arcata and Point Arena
22 Quote from the L.A. City attorney's urgency clause

of our food supply and the detriment of humanity as a whole.

Follow the Precautionary Principle

Overwhelmingly, the Biotechnology Industry Organization is asking you to lay aside the Precautionary Principle:

> "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action."[23]

We, your constituents - the people you have sworn to protect and serve - ask you to take up the mantle of the Precautionary Principle and vote YES to approve this Ordinance.

Sincerely,

Joanne Poyourow

a volunteer writing for the Seed Freedom LA coalition

encl: 21 Reasons it in important to have a GMO-Free Zone in Los Angeles

23 Wingspread definition of "Precautionary Principle" http://www.sehn.org/wing.html

21 Reasons it is important to have a GMO-Free Zone in Los Angeles

From children in the inner city, to wildlife in the mountains, to the economics of urban agriculture, creating a GMO-Free Zone would positively impact multiple sectors of Los Angeles society.

(issues in alphabetical order)

1. **Bees** – Bees are critical to our food supply because they pollinate the majority of our food crops. Our urban bees would benefit from a GMO-Free Zone. While the definitive cause of Colony Collapse Disorder has not yet been scientifically proven, "chemical toxins in the environment" remains on the short list of suspected causes.[1] The increased chemical load which accompanies GMO-growing is not helpful to a weakened bee population, and as science progresses, chemicals and GMOs may eventually prove to be part of a deadly cocktail which is killing off bees. As GMO grasses come to the market,[2] this threatens to bring increased chemical pollution into L.A. Additionally, bioengineers are working to create genetically-engineered bees, and have proven that the GMO traits can carry to bees' offspring.[3]
   A GMO-Free Zone would support L.A. efforts to protect our bee populations (Council Files 12-0785 and 13-1660). A GMO-Free Zone would join the growing movement to create areas where genetic engineering is not permitted.

2. **Biodiversity** - In past generations humanity developed considerable diversity in vegetable crop varieties: plants had been developed to grow in a wide variety of climates, and produce a great variety of favors. Over the past century, a vast number of these varieties have been lost. For instance, in 1903 there were 307 varieties of sweet corn available on the commercial market; by 1983 only 12 existed.[4] Large-scale seed producers have actively discouraged the preservation of vegetable crop diversity.[5] Large-scale seed producers have consolidated the crop varieties available, and have used patent law to further control the global food supply.[6]
   Here in Los Angeles, local gardeners are actively working to preserve heirloom vegetable varieties. A GMO-Free Zone would support preservation efforts, and would create a safe zone --free of GMO contamination-- where seeds could be saved.

3. **Chemical pollution** - GMO crops are developed specifically to work in tandem with chemicals. Studies reveal that growing GMOs brings with it increased pesticide and herbicide use.[7] Additional studies link exposure to agricultural chemicals to autism and developmental disorders.[8] As GMO grasses come to the market,[9] this threatens to bring increased chemical pollution into our parks and neighborhoods.
   Declaring a GMO-Free Zone would help keep this increased chemical threat out of our city lands, waterways, air, parks and neighborhoods.

4. **Cost of food** - GMO seeds cost farmers more money[10], and as more and more crops become genetically engineered we can be sure this cost will be passed through to consumers. On an individual family level, in economic hard times many people turn to growing their own food.
   A GMO-Free Zone would would empower local self-sufficiency. A GMO-Free Zone would help with affordable access to clean, safe food. A GMO-Free Zone would create a safe zone where urban ag farmers and individual citizens could save their own seeds --for free.

5. **Cultural resources** - Maize / corn holds a very special place within Latino cultures, and humanity has already lost or destroyed many of the heirloom varieties which were entrusted to us by generations of ancestors.[11] Corn is a wind-pollinated plant, which means it is particularly vulnerable to pollution from escaped GMO pollen, and GMO growers do little to prevent this pollen spread.

Heirloom corn varieties are currently being grown for preservation within the City of Los Angeles. A GMO-Free Zone would create a safe space --free of GMO contamination-- for local people to grow out and preserve these precious heirloom corn varieties.

6. **Drought-tolerance** – GMO crops aren't drought-tolerant even though company publicity promises that their labs are working on it. Drought-tolerance is a highly complex trait that doesn't lend itself well to genetic manipulation. In reality, genetic engineering is many years away from developing drought-tolerant food plants (some sources say 10 years). By contrast, traditional plant breeding has developed hundreds of drought-tolerant varieties which already thrive,[12] and one study is currently examining 153 varieties of traditionally-bred, drought-tolerant corn.[13]
Drought-tolerant food plant varieties are currently being grown for preservation within the City of Los Angeles. For a climate-changed future we need to preserve the diversity of drought-tolerant food plant varieties, and a GMO-Free Zone sets aside physical space where we can do so.

7. **Economics and Urban Agriculture** – Here in L.A. the urban agriculture business sector is growing. A GMO-Free Zone in L.A. would support local urban agriculture, truck gardening, cottage industries, and small businesses. The Public Health Commission of Santa Cruz County found that the threat of GMO contamination places small local growers at economic risk in several ways, including potential loss of organic certification, loss of market reputation, and loss of market due to consumer rejection.[14] "GM crops are not compatible with organic farming or other alternative forms of production."[15]
A GMO-Free Zone would support and protect L.A.'s urban agriculture sector. A GMO-Free Zone would work in tandem with initiatives such as the California Homemade Food Act (AB 1616, Council File 12-0002-S79), Edible Landscaping in parkways (Council File 13-0478), Rooftop garden program (Council File 13-0546), and the Urban Agriculture Incentive Zones (AB 551, Council File 14-1378). With a GMO-Free Zone L.A.'s urban agriculture gains a unique and precious branding opportunity: "Grown in L.A." will mean GMO-Free.

8. **Future of the food supply** - The policies of modern agriculture must change, and the future of food is in small-scale agriculture, United Nations officials say.[16] Meanwhile, "GE research is currently being performed on a number of crops … including ... strawberries, raspberries, broccoli, lettuce, apples, and various ornamental flowers …. cucumbers, onions, peas, peppers, pumpkins, grapes, squash, sweet corn, tomatoes, avocados, persimmons, plums, and walnuts."[17] All of these are being altered to be dependent upon chemicals, subjected to a mutagenic process[18], and pulled within the umbrella of corporate control[19].
A GMO-Free Zone would join the movement to protect open-pollinated seeds (the seed world's equivalent to "open source" software). Open-pollinated seeds are not controlled by patents nor proprietary to corporate interests; thus individual gardeners and urban farmers can save their own seeds. These are the seeds which are necessary for small-scale agriculture. A GMO-Free Zone preserves a clean space --free of GMO contamination-- where local seedsavers can preserve and expand the supply of these "open source" seeds for the future of food.

9. **Grasses** - Corporate interests are now testing genetically modified grasses, aimed at the park and golf course market,[20] and these grasses are currently being tested in home gardens in other states.[21]
Genetically modified grasses are specifically designed to work in concert with herbicides and other chemicals, which means if they came to L.A., chemical applications would increase. Additionally, these GMO grasses fit the USDA's own criteria of a noxious weed, yet USDA has refused to regulate them.[22]
They could easily spread into wildlands as invasive plants, or transfer herbicide-resistant traits to local weeds through cross-pollination.[23] *Declaring a GMO-Free zone keeps genetically modified grasses out of our City neighborhoods, parks, and wildlands.*

10. **Human health** - Scientific studies in Europe are raising very serious questions about whether consuming GMOs is healthful. These studies link the consumption of GMO food to the development of tumors, cancers, hormonal and endocrine disruptions.[24] Rather than looking further into the results of these studies, the companies which produce and distribute GMOs have sought to discredit the independent scientists.[25] Other studies link GMOs to intestinal and immune system reactions.[26] And still other studies are investigating whether there is a link between GMOs and allergies and asthma. A recent study in China raises the issue of whether antibiotic resistance in humans is attributable to escaped synthetic vectors from genetic engineering.[27] Astonishingly, "Health testing of the effects of exposure to GE organisms is not required by any government agency."[28]
A GMO-Free Zone opens the path for L.A. urban agriculture to produce safe, clean, GMO-Free food for our citizens. A GMO-Free Zone in L.A. would join the worldwide effort to "push back" and help protect the public from these horrific health impacts, in any way we can.

11. **Inadequately studied** - A study of the published scientific literature raised alarm at how very few "in vivo" studies are available (studies on live animals and humans).[29] Many scientific studies available on GMOs were run by the companies which produce and promote GMOs, and in many cases these companies have actively blocked the independent scientific community from studying GMOs. As to long-term health studies, there are very few: Most scientific studies available were run on a 3-month timeframe, and did not study the effect of GMOs on mammals over the mammal's entire lifespan. There are three noteworthy long-term independent studies, and these raise very serious questions about whether GMOs are healthful.[30]
In the face of such manipulations of information, creating a GMO-Free Zone would be exercising the Precautionary Principle and taking the responsible path toward protecting citizens.

12. **Labeling** - L.A. City Council has already demonstrated its support for the labeling of GMO food (SB 1381 / Council File 14-0002-S31 and Prop. 37 / Council File 12-0002-S67). Creating a GMO-Free Zone is a parallel and necessary initiative to political efforts to label our food. In order to have clean, GMO-free food to label, you have to grow clean plants; and in order to grow clean plants you have to have clean seeds (often called "Safe Seeds"). The way to produce Safe Seeds seeds is to set aside physical areas where Safe Seeds can be raised and saved, without threat from GMO pollution.
Seedsavers are now beginning to look to our cities as a place to isolate and preserve precious heirloom food crop varieties. To produce Safe Seeds in L.A., we need a GMO-Free Zone.

13. **Lack of transparency** - The companies which develop and promote GMOs have not allowed the independent scientific community freedom of access to study GMOs. Or when they do, the GMO-producing companies reserve "veto power" over the publication of the study.[31] When independent studies raised serious questions about health concerns, rather than doing more studies, the GMO-producing companies attempted to discredit the independent scientists.[32]
In the face of such manipulations of information, creating a GMO-Free Zone would be exercising the Precautionary Principle and taking the responsible path toward protecting citizens.

14. **Lack of government monitoring** - GMOs came into the markets through loopholes in federal laws. They have not been tested by the government, and they are not regulated by the federal government.[33] The Public Health Commission of Santa Cruz County found that "Health testing of the effects of exposure to GE organisms is not required by any government agency."[34] The FDA standard does not require testing for presence of potential toxins, mutagens, carcinogens or new allergens created during the production of GMO foods.[35] GMO grasses fit the USDA's own criteria of a noxious weed, yet USDA has refused to regulate them.[36] The State of California is poised to codify less stringent environmental controls:

California's AB 2470 is written in such a way as to preserve the current lack of regulation. AB 2470, when it comes into effect in January 2015, will prohibit a city, county, or district from regulating plants, crops, or seeds, thus assuring that there is no regulation over GMOs.
A GMO-Free Zone in Los Angeles would stand alongside parallel local legislation in Marin County, Mendocino County, Santa Cruz County, Humboldt County, the city of Arcata, and the city of Point Arena, in beginning to protect citizens from the significant and varied detriments of GMOs.

15. **Protecting urban farmers** – At present, farmers who intend to grow GMO-Free have no legal avenues to protect their crops and their livelihoods. When GMO pollen drift contaminates their crops, farmers who intended to grow GMO-Free are being sued by the GMO-producing polluters.[37]
A GMO-Free Zone could help protect L.A.'s blossoming urban agriculture industry by giving local farmers rights they have not experienced elsewhere under the laws. A GMO-Free Zone would create a safe place where local producers could grow GMO-Free without fear of GMO contamination.

16. **Precautionary principle** - "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action."[38]
In the case of the proposal to create a GMO-Free Zone in Los Angeles, a "no action" scenario would mean that there are no governmental restrictions (federal, state, or local) on growing GMOs in our city; that there are no governmental oversights to protect human health; that genetically engineered grasses, citrus trees, and vegetables could soon be grown here, together with their inextricable chemical load; that our wildlands and rivers and wildlife could soon be infiltrated with GM contamination; and that 502 square miles of potential "safe zone" for growing out GMO-Free seeds is eliminated to the detriment of the future of our food supply and the detriment of humanity as a whole. Creating a GMO-Free Zone is the responsible path.

17. **Rivers** - Genetic modification can escape into rivers. Scientists studying rivers in China have discovered that microbes in rivers are developing antibiotic resistance, which was traced to synthetic vectors from genetic engineering.[39] As GMO grasses come to the market,[40] this will bring increased chemical pollution into our city, which becomes a threat to our waterways.
A GMO-Free Zone would prevent local escapes into our local waterways. A GMO-Free Zone would support and supplement ongoing local efforts to protect the L.A. River and local streams and wetlands.

18. **Superweeds and Superbugs** - The use of GMOs together with their interrelated chemicals is encouraging the development of superweeds and superbugs.[41] Studies have proven that escaped transgenes [GMOs] are making weedy problems worse.[42] GMO grasses fit the USDA's own criteria of a noxious weed, yet USDA has refused to regulate them.[43]
A GMO-Free Zone would help prevent superweeds from starting to develop locally here in L.A., and would help protect our urban environment and local ecosystems. A GMO-Free Zone would help "push back" against the advancement of GMOs, to join the fight and prevent these ecological disasters.

19. **Sustainability** - The business practices of the companies which develop GMOs in many ways run contrary to widely accepted principles of sustainability. These companies are promoting pesticide resistance, increasing herbicide use, spreading gene contamination, expanding monocultures, marginalizing alternatives, suppressing free inquiry and research, and spreading false and misleading messages through media and advertising.[44] In climate science, cutting-edge research is now showing that

soil sequestration (locking excess carbon into the soil) is a powerful tool against global warming,[45] and to accomplish soil sequestration we need a healthy population of live soil organisms. Yet GMO traits which kill other organisms (such as the Bt trait), and GMO growing practices, are non-specific and annihilate a broad spectrum of life[46] – this undermines greenhouse-gas-reducing soil sequestration efforts.
A GMO-Free Zone would support other L.A. efforts toward sustainability (for example Greenhouse Gas Emissions Reduction, Council File 14-0907). A GMO-Free Zone would help "push back" against practices which undermine societal efforts toward greater sustainability. Making L.A. be GMO-Free is a major step toward a more-sustainable future.

20. **Unintended mutations** - The process of creating GMOs is an imprecise technology and often produces unintended alterations to the genetic material.[47] These alterations are inadequately controlled and currently have received little-to-no scientific study.
A GMO-Free Zone would be a big step in the efforts to protect the public from the spread of these wildcard mutations.

21. **Wildlife** – Scientific studies have already proven how GMO-growing practices have been detrimental to wildlife in other areas (for instance the well-known study that showed 81% decline in Monarch butterflies because GMO-related agricultural practices had annihilated the Monarch's larval food plants[48]). "Direct risks from GMOs may include toxicity of transgenic [genetically modified] organisms to wildlife, competitive displacement of native species by transgenic organisms or hybrids with wild species, and effects on soil and aquatic ecosystems. Indirect risks include changes in land and water use and management that are detrimental to the wildlife that use farmland, woodland, freshwater, or the seas."[49] The US Fish and Wildlife Service is eliminating GMOs in wildlife refuges across the nation. The Service is sufficiently concerned about GMOs to take action and no longer use GMOs "to achieve wildlife management objectives."[50]
A GMO-Free Zone extends this protection to L.A.'s urban wildlife, and expands it to protect human children within our City.

Please support the Ordinance that would make L.A. a GMO-Free Zone

City File 13-1374

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