### COUNTERING CORPORATE PROPAGANDA



#### A closer examination of the common claims for GMOs

**AGRAWATCH** 

Seattle Washington, USA

http://www.seattleglobaljustice.org/agra-watch/

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#### **PREFACE**

Many opinions are being put forward about the best way to address food security and food sovereignty for people in Africa. As we have watched extravagant claims about the efficacy of GMO technology for this problem— made by Industry( Monsanto, ADM, Bayer, etc), Government (USDA, US State Department, and USAID, etc) and Philanthropy ( Bill and Melinda Gates Foundation)— we have noticed mounting evidence that the claims made for it are not supported on environmental, economic, and social grounds.

We decided to put together the best research and analysis that we could find which documents these failures. We have included materials in an Introduction and Appendix to provide context for users who may not already know a great deal about GMOs.

If you would like to send us comments or reactions to this document, please use our blog on our website, <a href="http://www.seattleglobaljustice.org/agra-watch/">http://www.seattleglobaljustice.org/agra-watch/</a>

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#### INTRODUCTION

#### What are genetically modified crops?

Genetically Modified (GM) crops are plants that have had genetic material inserted from other living organisms (as part of a "package" or "cassette" with other material substances, usually from viruses and bacteria) to give the crop new and different characteristics.

The organism's genetic material has been modified in a way not found in nature under conditions of natural recombination or crossbreeding. Examples of modification techniques, by which genetic material prepared outside of the cell is introduced directly in the organism, include microinjection, macro-injection (blasting by a so-called "gene gun"), micro encapsulation, cell fusion, and hybridization procedures—all of which aim to create living cells containing a new combination of genetic material. The modified organism is a biological unit, which is able to multiply itself and to transmit genetic material to other organisms.

The most widely grown GM crops at present are herbicide tolerant or insect resistant, along with combinations of the two. These have been developed for industrial agricultural farming systems, although the industry is trying to get small farmers to adopt them.

GM crops are very different from conventionally-bred crops (as the companies argue to the Patent Office when they seek to obtain a monopoly) and cannot accurately be said to be "substantially equivalent" to conventional crops as regards environmental biosafety and influences on health

Three crucial questions arise in assessing the merits of GM crops:

- 1) Are they capable of sustainably improving agricultural productivity at a reasonable cost and without imposing severe environmental and human health impacts or unduly disrupting the social and cultural fabric of a society?
- 2) Have the initial promises and claims of each technological innovation been met?
- 3) Does a focus on GM crops divert attention in developing nations from other cost-effective, practical and efficient (agro-ecological) means to increase local food security and agricultural production?

#### Claims and questions about GM technology

GM crops were developed by major agricultural chemical companies such as Monsanto, Syngenta and DuPont. These companies now control the majority of the world's seed market, and — together with industry lobby groups like CropLife, AfricaBio and AgBioWorld — have presented various arguments for the introduction of GM crops into the global agricultural system. Some of the claims made were:

- GMOs are "under control" by the scientists and the biotech industry developing them.
- GM crops would increase food production for the growing global population.

Increased yields would then reduce the demand for agricultural land.

Less water would be required (to grow them).

Drought- and saline-resistant crops could be developed.

Poor farmers would be prime beneficiaries.

- GMOs are environmentally benign (or even beneficial).
- GM crops would reduce agricultural chemical and pesticide use.
- GM crops would be more nutritious.
- GM crops do not require testing as they are equivalent to natural crops.

Although these claims are still largely unsubstantiated more than a decade after the introduction of GM crops, the beliefs are fairly widely-held and persistent that GM crops give higher yields, use less water, chemicals and fertilizer, and can withstand drought. This document has been put together to give access to the growing literature that exposes these claims as false.

(Some of the above text is from <u>GM agriculture – promises or problems for farming in South Africa?</u> Glenn Ashton, May 2011, Biowatch South Africa.

# Countering the Propaganda--A Closer Examination of the Common Claims for GMOs

#### **OVERVIEW**

THE GMO EMPEROR HAS NO CLOTHES: A Global Citizens Report on the State of GMOs - False Promises, Failed Technologies (Navdanya International, October, 2011)

See also <u>How to Win a GMO Debate</u>: 10 Facts Why GM Food is <u>Bad</u> (Jeffrey Smith, December 12, 2011).

#### SPECIFIC REFUTATIONS TO INDUSTRY CLAIMS

#### 1. GM is "under control" by the scientists and the biotech industry developing it.

Actually, genetics does not account for all of an organism's behaviors. See Barry Commoner's <u>Unraveling the DNA myth: The spurious foundation of genetic engineering</u> (*Harper's* magazine, Feb. 2002). The "Central Dogma" of GM is that "an organism's genome...should fully account for its characteristic assemblage of inherited traits." But, this cannot be so since, for example, "there are far too few human genes to account for the complexity of our inherited traits."

For an elaboration and response to his critics, see also <u>Update from Dr. Commoner</u> (January 30).

See also *The Fluid Genome*, by Dr. Mae-Wan Ho, Institute of Science in Society (220 pgs.). "The biotech empire is fast collapsing and for good scientific reasons. It has got the science wrong." video: Watch the video (note listing on right of page —there are several parts).

## 2. GM crops would increase food production for the growing global population ("feed the world").

<u>Failure to Yield: Evaluating the Performance of Genetically Engineered Crops</u> (Doug Gurian-Sherman, Union of Concerned Scientists, April 2009). This report closely evaluates the overall effect genetic engineering has had on crop yields in relation to other agricultural technologies. Over the past 15 years, traditional crop breeding and improved agricultural practices account for most gains in U.S. crop production.

Responses to "Failure to Yield" critics (Doug Gurian-Sherman, GM-Watch, July 30, 2011)

Why GMOs Won't Feed the World (Despite What You Read in the *New York Times*) (Anna Lappé, Civil Eats, August 19th, 2011). This post came in response to Engineering Food for All (Nina Fedoroff, NY Times, August 18<sup>th</sup>, 2011).

<u>Biotechnology and Sustainable Development</u> Findings from the UN-led International Assessment of Agricultural Knowledge, Science and Technology for Development (2009).

Big Ag Won't Feed the World (Tom Philpott, Mother Jones, June 15, 2011).

Bt Crops Failures & Hazards. "The claim that genetically modified organisms are the most promising way of increasing crop yields is falsified by many independent scientific studies, as well as direct experience with GM crops in India, China, Argentina and the United States. The evidence on Bt crops is reviewed here. This report has been submitted to the EPA on behalf of the Institute of Science in Society." (Dr. Eva Sirinathsinghji, Institute of Science in Society, December 14, 2011).

Report: Agroecology and the right to food Olivier **De Schutter**, **UN Special Rapporteur**, March 2011.

<u>Questions and Answers: Who Benefits From GM Crops?</u> (Friends of the Earth International, 2008). Addresses whether small farmers would benefit from planting GMO crops.

#### 3. GMOs are environmentally benign (or even beneficial).

Environmental and health impacts of GM crops - the science (Greenpeace, September 30, 2011).

<u>What We Know</u> — and <u>Don't Know</u> — about the <u>Safety of Eating GMO s</u> (Tom Philpott, Grist, May, 2010).

<u>Alternatives to the use of Roundup Herbicide</u> (Hector Valenzuela, University of Hawaii, Back 40 Group Forum, August, 2011).

William Freese, Senior Science Analyst, International Center for Technology Assessment wrote this unpublished post in response to Engineering Food for All (Nina Fedoroff, NY Times, August 18th, 2011). "Ms. Fedoroff rehashes industry-sponsored myths about genetically-engineered (GM) crops, while ignoring some ugly facts. First, massive adoption of GM crops has coincided with a swelling of the world's hungry by over 100 million, consistent with science showing no yield boost from GM. Second, herbicide-resistant GM crops have not reduced soil erosion (the no till farming revolution preceded their mid-1990s' introduction but they have increased herbicide use, spawned an epidemic of herbicide-resistant weeds, and forced a return to tillage and even hand-weeding for many farmers. That beneficial GM crops have not been developed is due to the technology's high failure rate, not the extremely lax US regulatory system."

**GMOs in water**. Insecticides from Genetically Modified Corn Are Present in Adjacent Streams, New Study Reveals (Science Daily, September, 2010). This article summarizes Jennifer Tank and her colleagues' work at the University of Notre Dame. These researchers found that streams are being polluted with insecticidal proteins from GM crops such as corn — from the pollen, cobs, etc. — even six months after harvest.

**Pests are developing immunity (Superweeds).** At least 9 species of weeds have developed immunity to the pesticides needed for GM crops. To control these "superweeds," farmers are *using additional herbicides*, increasing the frequency and volume of applications, and using multiple applications where previously they applied only one. Cotton bollworms, for one, already are immune to the pesticides produced by GM cotton.

New Reports of Severe Rootworm Damage to Bt Corn (Jennifer Shike, University of Illinois, Ag-Web, September 27, 2011).

New plant disease linked to GM crops and pesticides (Flint Duxfield, ABC Rural, June 16, 2011.)

#### 4. GM crops would reduce agricultural chemical and pesticide use.

The Organic Center – Critical Issue Report: <u>The First Thirteen Years Impacts of Genetically Engineered Crops on Pesticide Use in the United States</u> (Charles Benbrook, 2009). USDA data shows pesticide use increased an *additional* 318.4 million pounds over the first 13 years of GM crops, 1996-2008, primarily due to increased applications of the proprietary pesticides used on GM crops.

#### 5. GM crops will improve nutrition.

No gold in golden rice, says GMO expert (Gerry Albert Corpuz, Dorcas Yee-Bee and John Lloyd Hoffman, August, 2011). "Gold is absent in golden rice." Dr. Michael Hansen, Senior Scientist of the Consumers Union (USA) stressed this concern during a forum on the controversial Golden Rice staged at the University of the Philippines.

#### ADDITIONAL SERIOUS ISSUES

#### **Climate Change**

<u>GRAIN</u> — <u>Food and climate change: the forgotten link</u> (GRAIN, 28 September 2011).

Also, see "Feed the World," above.

#### **Contamination of Conventional Crops by GMOs**

Contamination can occur by seed mixing, pollen flow (wind, birds, etc), horizontal gene flow in the fields, or during shipping and processing. In order to establish best practices and policies to prevent contamination, we need to know the incidence and level of contamination throughout the supply chain. One great challenge is the lack of an available baseline on incidence levels for detection.

Test data released from traders is perhaps the most reliable. Results for corn and soy were shared with an Organic Trade Association task force, representing 17,000 test results over 3 years (OTA GMO White Paper). Bag by bag, pallet by pallet, GM content ranges widely within the same lot of seed. The OTA Task Force proposed a universal standard for genetic purity of organic seed to be no GE seeds in a 3,000 seed sample. "None found" corresponds statistically to a 95% probability that the actual contamination level is between zero and 0.10%.

It is argued whether testing methods consistently capable of detecting GM content in milk, meat, eggs, and other derivative products from livestock are available. Individual tests may spike above the data provided but in general the environmental presence of GMOs (in identity-preserved programs supplying non-organic soybeans) runs less than 0.1% in soy, and less than 0.5% in corn. Organic remains the gold standard for non-GMO.

Note: Although Monsanto has brought patent infringement suits against many farmers whose fields contain GM crops, in North America such suits will not be successful against "innocent" farmers with contaminated fields; indeed, in the US it is clear that these farmers may sue Monsanto for trespass or nuisance (Canada, see the Percy Schmeiser case, 2004; in the US, see MONSANTO CO. *et al. v.* GEERTSON SEED FARMS *et al.*, June 2010)

#### **GMO Seeds and Food Insecurity**

Seed companies promoting genetic engineering are eliminating availability of many seeds, drastically reducing diversity, increasing food insecurity (Responding to the challenges of a changing world:

The role of new plant varieties and high quality seed in agriculture -- Declaration from the Second World Seed Conference, held at the FAO Headquarters in Rome, September 8-10, 2009).

#### **GMOs and Health**

What we know—and don't know—about the safety of eating GMOs (Tom Philpott, Grist, May 16, 2011)

Association of financial or professional conflict of interest to research outcomes on health risks or nutritional assessment studies of genetically modified products (Johan Diels, Mario Cunha, Célia Manai, Bernardo Sabugosa-Madeira, Margarida Silva, *Food Policy*, n.36, 2011)

<u>GM presentations raise concerns over human health</u> (Barry Alston, Farmer's Guardian, October 12, 2011)

**Organ failure**. Three GM corn varieties are linked to organ failure in mammals (rats), mostly kidney and liver failure, indicating hepato-renal toxicity possibly from the pesticides in GM crops. Other effects on the heart, adrenal glands, spleen and blood-making organs and tissues (A Comparison of the Effects of Three GM Corn Varieties on Mammalian Health, Joël Spiroux de Vendômois, François Roullier, Dominique Cellier and Gilles-Eric Séralini, *International J Biol Sci* 2009; 5:706-726).

**Birth defects**. Roundup and birth defects researcher presents findings to German government (Claire Robinson, Eureporter, October 3, 2011). "Published research confirms glyphosate-based herbicides for GM crops, such as Roundup, cause malformations in frog and chicken embryos at doses significantly *lower* than used in agricultural spraying. The findings are compatible with the high rate and type of birth defects observed in humans in Argentina where GM soybeans are sprayed regularly."

Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada (Aris, A. and Leblanc S., Reproductive Toxicology V. 4, May 31, 2011). Researchers found the Bt insecticidal protein, Cry1Ab, for instance, has been documented circulating in the blood of pregnant women and their unborn children.

**Toxicology, allergy and immune function**. The American Academy of Environmental Medicine called for a moratorium on GM foods and warned that they pose "a serious risk in, reproductive health, and metabolic, physiologic, and genetic health" (<u>Genetically Modified Foods</u>, 2009).

**Impacts on animal health.** Toxicology studies with animals on GM foods indicate toxic hepatic, pancreatic, renal and reproductive effects. (<u>Health Risks of Genetically Modified Foods</u>, A. Dona and I.S. Arvanitoyannis, *Critical Reviews in Food Science and Nutrition*, 49:164–175 2009)

#### **APPENDIX**

#### 1. GMO Crops in the United States

Approved (approximations):

Corn - 80% Soy - 92%

Canola – more than 90% Sugar beets – 95%

Papaya, flax, zucchini/yellow crookneck squash – small amounts

#### 2. GMO crops stopped from commercialization (to date):

Tomatoes, potatoes, wheat, rice

GM crops in litigation: alfalfa, sugar beets (see http://www.centerforfoodsafety.org/)

#### 3. Consumer Surveys on GMOs

Many surveys over the past several decades have repeatedly shown that the overwhelming majority of consumers want mandatory labeling of GM foods. For example, in an ABC News survey (6/11)

■93% believe GM foods should be labeled (10/10,Thomson Reuters PULSE™ Healthcare Survey, "National Survey of Healthcare

Consumers: Genetically Engineered Food")

- ■96% believe genetically modified foods should be labeled (6/11, MSNBC)
- ■95% of consumers believe GM foods should be labeled (11/08, Consumers Union, "Food-Labeling Poll: 2008," p. 13)
- ■94% believe genetically modified food should be labeled (9/10, Washington Post)
- ■93% of the American public wants the federal government to require mandatory labeling of genetically engineered foods

From <a href="http://justlabelit.org/why-label">http://justlabelit.org/why-label</a>

#### Also,

- Feb. 2011 poll by MSNBC with nearly 46,000 responses found that 96% support mandatory GM labels.
- Feb. 2011 CBS/ New York Times poll of nearly 750 consumers found 87% want GM foods labeled.

- May 2011 survey (commissioned by an OTA member) found 88% support mandatory labels.
- A 2010 poll by the Hartman Group, a Washington-based research firm, found a majority of respondents believed the term "natural" implied:
  - Absence of pesticides and herbicides
  - Absence of genetically modified foods

Among those who buy organic foods to avoid GMOs, one survey found that 94% are doing so because they're concerned about the health and safety risks.

Secondary reasons to avoid GMOs include:

- Impact on small farmers
- Risks to animal health and safety
- Potential harm to the environment

However, as of this date virtually all foods labeled "natural" are produced by conventional means—ie, with synthetic pesticides, GM crops, etc. This question has been litigated; see *Briseno v. Conagra Foods*, *Inc.*, (C.D. Cal., Nov. 23, 2011) which upheld the right of states to prohibit use of the term "natural" on foods produced through genetic engineering.

#### 4. Precautionary Principle

The precautionary principle originated in US (not EU) law—in the early part of the 20<sup>th</sup> century (e.g., pure food and cosmetics laws), although it is often derided as something strange and "foreign" (the EU adopted it very late—e.g., the thalidomide scandal in Europe in the 1970s when drugs were not subjected to precautionary scrutiny, whereas the drug was blocked by an FDA official under PP guides).

Elements—where there is reason to believe that damage might result, the prudent course of public action is to delay introduction until the proponent of the technology can demonstrate its "safety"—usually by means of some sort of risk assessment. Properly understood, safety is a somewhat subjective evaluation of the results of a risk assessment responding to a social judgment of "how much risk is acceptable." (Thus, it is nonsensical to say in the abstract that a GMO is safe). Note that the burden of proof is on the proponent, not the affected parties or the government agency.

The PP is enshrined in the Cartagena Protocol and is implicit in the procedures of the Codex Alimentarius guidelines for Foods from Modern Biotechnology.

#### 5. National Organic Program's Statutory Prohibition Against GMOs

The USDA originally tried in the 1990s to include GMOS in organic systems but after getting more than 275,000 comments opposing GMOs – the most comments ever received on any issue -- USDA revised its final rule in 2000 to make genetic engineering an "excluded method."

At the time, 2000, NOP didn't believe there was "sufficient consensus" to establish a "threshold" for the unintended presence of GMOs (as products of excluded methods). The testing methodology also was not been fully validated.

<u>In products bearing the organic seal and labeled "Organic,</u>" even the 5% that's not organic still must not be produced using excluded methods – that is, genetic engineering, sewage sludge, and irradiation. Verification is problematic. Companies typically sign a disclaimer saying they cannot be certain.

<u>In products labeled "Made with organic ingredients"</u> (requires 70% organic ingredients), the 30% that's not organic also must not be produced with any excluded methods. They may be produced, however, using volatile synthetic solvents, which are prohibited in products labeled "organic." Verification is problematic. Companies typically sign a disclaimer saying they cannot be certain of sourcing.

<u>In products containing less than 70 percent organically produced ingredients</u> (organics may be identified only in the ingredient panel), the non-organic ingredients may be produced and processed using excluded methods, e.g. genetic engineering, sewage sludge, and irradiation.

Certifiers may require GMO testing. The National Organic Program has proposed requiring them to test annually at least 5 percent of the operations certified.

Private verification—see The Non-GMO Project.

A 2011 survey found that only 13 of the 18 certifiers currently test at all. Only three of the 18 certifiers test periodically.

#### 6. Safety and US (Non)-Regulation

The United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) is entrusted to ensure the safe development of agricultural biotechnology by regulating field-testing, interstate movement, and importation of GM organisms (GMOs). APHIS has undertaken regulation of the testing and release to the environment of GM crops on the basis that the GM crops must not pose a threat to unmodified crops. APHIS determines whether a GMO is as safe for the environment as its traditional counterpart and hence can be freely used in agriculture. APHIS uses the term 'biotechnology' to mean recombinant DNA technology, or genetic engineering (modification) of living organisms. USDA has not asserted or exercised its full authority--the Plant Protection Act (PPA) says USDA can prevent the dissemination of noxious weeds — defined as "Any plant or plant product that can directly or indirectly cause damage to crops, livestock, poultry, or other interests of agriculture ... the public health or the environment."

The United States Environmental Protection Agency (EPA) regulates several biotechnology products, including pesticides produced by plants or microorganisms and non- pesticidal substances such as industrial enzymes, biosensors, and bioremediation agents produced using microorganisms

The Food and Drug Administration (FDA) is responsible for GM foods. It determined in 1992 that bioengineered foods should be regulated like their conventional counterparts (i.e., *they are not regulated*—doctrine of "substantial equivalence"—see below). It has not to-date established any regulations specific to bioengineered food.

#### Safety Testing and Regulation of Genetically Engineered Foods

William Freese and David Shubert show that the FDA made the "[GMOs are] generally regarded as safe" decision over the objections of several agency scientists, who saw significant potential for harm. Moreover, when the agency rubber-stamps the introduction of a GM crop into the food supply, it does so using extremely non-committal language. The authors quote from the letter the FDA sent to Monsanto on approval of Bt corn back in 1996:

"Based on the safety and nutritional assessment you have conducted, it is our understanding that Monsanto has concluded that corn products derived from this new variety are not materially different in composition, safety, and other *relevant* parameters from corn currently on the market, and that the genetically modified corn does not raise issues that would require premarket review or approval by FDA. As you are aware, it is Monsanto's responsibility to ensure that foods marketed by the firm are safe, wholesome and in compliance with all applicable legal and regulatory requirements." (William Freese and David Schubert, *Biotechnology and Genetic Engineering Reviews* – Vol. 21, November 2004); see <a href="http://www.saveourseeds.org/downloads/schubert\_safety\_reg\_us\_11\_2004.pdf">http://www.saveourseeds.org/downloads/schubert\_safety\_reg\_us\_11\_2004.pdf</a>

The article concludes that the US regulatory system has "serious deficiencies in both regulatory oversight and corporate testing procedures" and that "claims regarding the safety of these crops... are founded mostly on unpublished studies conducted by the crop developer." It advocates a mandatory system which is more stringent and transparent, based on new statute(s) specifically designed for GMOs which incorporate "truly sound science."

#### 7. Current Litigation Overview

In Ohio, 2008, a U.S. Court of Appeals upheld the consumer's right to truthful information about whether dairy is produced without GM growth hormones. The court also recognized that milk from cows given rBGH is different than milk from untreated cows. Earlier, a different appeals court had said that Vermont's mandatory labeling of rBGH milk was invalid as imposing too great a burden on interstate commerce. So, the question is still open.

The Center for Food Safety is the lead litigant in GM cases. It currently is in court on GM alfalfa and GM sugar beets. See <a href="http://www.centerforfoodsafety.org/">http://www.centerforfoodsafety.org/</a>

In its first ruling ever on a case involving GM crops, the U.S. Supreme Court left a ban in effect against GM alfalfa (Monsanto v Geertson, June 2010), and agreed that GM contamination is a sufficient cause of environmental and economic harm to support law suits damages and presumably injunctive relief. The District court found USDA's claim that GM alfalfa would not cause contamination "arbitrary and capricious" and ruled that interrelated socio-economic impacts must be considered. Nonetheless, USDA has not prohibited the planting of GM alfalfa.

In May 2011, a federal court of appeals dismissed Monsanto's appeal of a GM sugar beet ruling, finding that USDA flouted the law in not assessing fully the impacts to farmers and related crops. USDA issued a proposed rule for non-regulation of sugar beets in the autumn of 2011and public comments were accepted until mid-December.

#### 8. GMO Thresholds, Labeling, and Trade

The first GMO labeling laws were adopted by the European Union in 1997. Approximately 27 additional countries (in addition to the EU nations) have mandatory GM labeling laws. China and Brazil are the only countries that are major producers of GE crops and also require mandatory labels.

Thresholds for labeling vary from 0.9% (the EU to 5% (Japan). The 0.9% threshold in the EU is the *de facto* threshold for organics (including the Non-GMO Project). Many certification and standard-setting organizations advocate a 0.1% threshold.

The Non-GMO Project is the first certifier of Best Practices and testing throughout the supply chain to verify non-GMO product claims. Most non-GMO labels are not backed up by testing. See "Contamination" above.

#### 9. International Guidelines

#### The UN's Codex Alimentarious

Adopted a guidance document for countries allowing labeling of GM foods, 2011. Any country wanting to label GM foods no longer will face the threat of a legal challenge from the World Trade Organization since national measures based on Codex guidance or standards cannot be challenged as a barrier to trade.

<u>Cartegena Protocol on Biosafety</u> (~170 members, not including the US, Canada) A sub-treaty to the United Nations' Convention on Biological Diversity.

Seeks to protect biological diversity and human health from adverse effects by GMOS crossing national boundaries.

#### Nagoya/Kuala Lumpur Supplemental Protocol on Liability and Redress

A sub-treaty to the Cartagena Protocol, currently receiving ratification, provides for handling damages from the cross-boundary movements (intentional, such as trade, or accidental) of GMOs.

#### 10. GMO-free initiatives outside the U.S.

- Europe has 169 regions, 123 provinces and 4,713 municipalities that have declared themselves GMO-free.
- In six EU countries, GMO-free zones cover almost the entire country: Poland, Greece, France, Austria, Switzerland, and Italy.
- Germany has 190 municipalities with a ban
- Switzerland has a moratorium in effect until 2013
- Ireland has declared itself, the entire country, a GMO-free zone.
- Nearly all Australian states have adopted moratoria
- Thailand has banned GMO field trials and does not allow commercial plantings
- Five states in India have banned GM cultivation
- Some local Japanese governments have banned or restricted GM crops
- Five provinces in the Philippines are GMO-Free zones
- Venezuela has declared itself GMO-free

#### 11. GMO-free initiatives in the U.S. include:

- Five counties in California have moratoriums in place
- Alaska in 2006 adopted a state law requiring labels on GM fish
- Many states have introduced bills to label GM seeds, foods, etc. Most are pending in committee:

Alaska	California	Connecticut
Hawaii	Illinois	Iowa
Maryland	New York	North Carolina
Oregon	Rhode Island	Tennessee
Vermont	West Virginia	Washington

Also, lawmakers in some states have introduced bills that would override local and county measures related to labeling (i.e., often forbidding it). Georgia, Pennsylvania, Iowa, Idaho, N. Dakota, and S. Dakota already have signed them into law. For updated tracking of such pre-emption laws, see <a href="https://www.environmentalcommons.org/gmo-tracker.html">www.environmentalcommons.org/gmo-tracker.html</a>.

#### **LEARN MORE ABOUT GMOS**

http://www.centerforfoodsafety.org/

http://www.geaction.org/

http://organicconsumers.org/monsanto/

http://www.responsibletechnology.org/

http://www.nongmoproject.org/

http://www.panna.org/

http://www.saynotogmos.org/

http://www.foodfirst.org/

http://www.genet-info.org/

http://www.gmwatch.org/

http://www.combat-monsanto.co.uk/

http://www.gmo-free-regions.org/gmo-news.html

#### WATCH FILMS ONLINE (free)

Farmer to Farmer: The Truth About GM Crops (2011)

World According to Monsanto (2008)

The Future of Food (2004

<u>Unnatural Selection: GMOs (2006)</u>