



## The World Foundation for Natural Science™

The New World Franciscan Scientific Endeavour of The New World Church

Restoring and Healing the World through Responsibility and Commitment in accord with Natural and Divine Law!

FACT SHEET

# Agriculture

JUNE 2015

## The hidden use of Genetically Modified Organisms and their impact on Human Beings, Animals and Nature

**“Soil anaemia also breeds human anaemia. Micronutrient deficiency in the soil results in micronutrient malnutrition in people, since crops grown on such soils tend to be deficient in the nutrients needed to fight hidden hunger ... Managing our soil and water resources in a sustainable and equitable manner needs a new political vision.”**

*M.S. Swaminathan – UN International Year of Soils 2015 – Food and Agricultural Organization of the United Nations*

### **Healthy Soil, Healthy Plants, Healthy Animals, Healthy People and a Healthy Planet!**

There has been a huge increase in Genetically Engineered (GE) foods appearing on the market and a growing concern that these Genetically Modified Organisms (GMO) are harmful to animals and humans. GE or GMO products have crept into the food chain without us knowing. Food products are not labelled correctly, sometimes not at all. The supermarkets are aware of this ambiguity<sup>1,2</sup> but continue to sell contaminated food stuff. GMO products have slipped into ‘processed’ foods; and almost all livestock is now fed on GM feed.<sup>3,4</sup> There is conclusive research and evidence to show that GMO eaten by animals is also passed on to humans through its meat, milk, eggs and cheese.<sup>5-12</sup> In 2007, it was found that over 90% of animal feed contains GM ingredients.<sup>13</sup>

90% of baby food products,<sup>14-16</sup> fast foods, vegetable oils, juices, biscuits, cakes and sweets have been contaminated by corn and soya products that are genetically modified. Grown primarily in the USA, Brazil and Argentina, 90% of corn, soya and beet crops are genetically modified.<sup>17,18</sup> At least 80% of processed foods in the USA contain GMO ingredients<sup>14</sup>.

The health effects on animals, pets, children and ourselves are potentially catastrophic; ranging from allergies to cancerous tumours.<sup>16,19</sup> The behav-

our effects on people and animals from eating GM foods are unknown and requires more research. It could be that we are becoming sugar craving addicts,<sup>20</sup> due to the new genes (DNA) being spliced into GM crops and ultimately fed to us.

The high toxicity of GE crops and their pesticide complements are also destroying the soils, contaminating the water sources, and wiping out nature by killing millions of insects and thus also birds and animals daily.<sup>21-26</sup>

**So are GMOs really dangerous for human beings, for animals, and for nature, especially for plants, soil and water? Read on for an overview of Genetically Modified Organisms; the state of our food today; and what you can do about it to ensure that your family, friends and pets are safe from this silent invasion.**



*Fig. 1: Some people say that GMO stands for ‘God Move Over’. Here’s an example of man acting like God.*

### **Why were GMOs developed?**

Genetically engineered crops were designed to grow in difficult conditions, with less water, less pesticide use, and to guarantee a good yield. Their manufacturers also claim that you can grow bigger crops and more quickly;<sup>27,28</sup> i.e. you can speed up nature and alter nature for economic purposes. Fruits and vegetables are grown by volume and sold by weight, not by nutrient quality.<sup>29</sup>

They say: Farmers no longer need to worry about troublesome insects and weeds, because their seeds have been genetically modified to be resistant to insects, and other plants, and resistant to the herbicide and pesticide sprayed on it. You can grow GE crops anywhere and increase yields.

However, the evidence is contrary to the claims made by the Biotech companies. You can obtain better growth, yield, and more nutrient rich plants by ecological and organic farming.<sup>30,31,32</sup> For a healthy crop and for biodiversity to flourish you need: the eco-system around crops to include hedgerows, thus making homes for a myriad of birds and insects. The pleasant vibration of bird song is known to increase crop yield.<sup>33,34</sup> Particular insects are attracted to a particular plant (crop), and so a variety of crops attracts a multitude of insects; and the “weeds” or other plants growing help to make the soil nutrient rich. Insect life manages itself, and the birds keep the insect life at a manageable, natural level. All of

## What is a Gene?

A gene is a heredity molecular structure of a living organism. It is used in science to define or name specific DNA and RNA that make a polypeptide chain and is thought to determine the behaviour and characteristics of plants and animals, including humans. For example: eye colour; flower colour and so on.



### Another example:

Bt corn and soy are made resistant to insects by inserting the toxic bacterium, *Bacillus thuringiensis*, into the DNA. Other genes are added to stabilise this process. Those genes are antibacterial and cause tumours.<sup>19</sup> Bt works by breaking down the gut wall of insects; and allows the toxins and gut bacteria

to invade the body cavity. It has been shown that it does the same to humans by making small holes in our stomachs.<sup>11</sup> GMO and pesticides also kill other insects; for example Round Up Ready GMO and Round Up glyphosate have been identified as killing off the milkweed plant that the Monarch butterfly needs to lay eggs and for its young to feed.<sup>56</sup>

Nature: plants, insects, birds and even the micro-organisms that make up our soil are working in equilibrium.<sup>33</sup> Everything is in perfect balance.

## What is a GMO?

The idea behind Genetically Modified Organisms is that you can add pest resistant, plant resistant, or pesticide resistant genes into a seed. The resulting plant grows without any hindrance from nature.

These GMO plants can then be singly isolated from all pests (insects) and weeds and grow in all and any conditions.

## How to make a GMO?

A plant seed is genetically modified by inserting a gene from another organism grown in a laboratory, but not grown in nature. The insertion of the new gene is fired into the DNA of the plant seed by a type of gene gun. This is not cross pollination. GE modification is forcing together genes that would never be joined in the first place. **The resulting DNA behaviour of the plant is unpredictable and unknown, because it is a completely new organism to this planet.**

**For example:** nearly all corn, soybeans, sugar beets, canola and cotton grown in many parts of the world are genetically modified.<sup>17</sup> A Biotech company not only sells the GMO seed, it sells the pesticide too. So, Monsanto's Roundup Ready corn is made resistant to the pesticide Roundup by inserting a gene into the plant that is Roundup resistant. A toxic chemical that is in no way natural at all.

## Farming

The farmer is sold a set of seeds and the complementary pesticide to be sprayed on the plants. **The pesticide is designed to kill all insects and plant life other than the GM crop.**

**Genetically modified seeds** are grown to produce a monoculture crop. A GM singular crop does not attract a multitude of other plants, insects and animals, because it is the only crop being grown on a farm. There is no biodiversity. There is no variation in organisms. One crop - no seasonal variety. Which again is not natural. The soil is less rich because there is only one crop and there are fewer varieties of weeds and pollinating insects. In order to grow genetically modified crops, farmers have to buy genetically modified seeds every year and to spray the crops with a powerful and toxic pesticide. The pesticide kills the weeds, animal and insect life around the crop. The crop itself can absorb the toxins in the pesticide, making the crop, in the case of Bt corn, 1,000 times more toxic than the pesticide: the GM Bt plant produces toxin in every cell continuously, whereas the Bt pesticide spray is mostly blown or washed off within 48 hours.<sup>19</sup> The soil becomes

poisoned over time because the increased usage of pesticides builds up in the soil and this eventually turns the soil into a desert. To keep the crops alive, farmers use more water than organic farmers to irrigate their crops. This excess use of water washes the pesticides into nearby streams and rivers, polluting the water systems and the seas.<sup>26,35,36,37</sup>

**Superweeds:** Nature fights back. After time even the chemicals do not work effectively and now new strains of plant are growing that are resistant to all pesticides, known as superweeds.<sup>19</sup> And now the farmer is forced to use more and more pesticide. In fact, there is now a huge increase in the use of chemical, toxic pesticides in order to grow the monocultural crops. This applies to both GMO and non-GM crops; as pesticide usage is on the increase in general.<sup>18</sup>

**Cross-pollination:** If you are an organic farmer and your crops are cross pollinated by a GM crop, then the Biotech company is able to force the farmer to buy their seeds and pesticides;<sup>27</sup> because effectively the farmer is now using their GE patented product! **In this way the Biotech companies are trying to patent nature!**



*Fig. 2: The insertion of the new gene is fired into the DNA of the plant seed by a type of gene gun. The resulting DNA behaviour of the plant is unpredictable and unknown, because it is a completely new organism to this planet.*

## Types of pesticides

Roundup Ready (Glyphosate), Neonicotinoids and Agent Orange.

Many pesticides are used on genetically modified crops. Glyphosate pesticides such as Monsanto's Roundup work by suffocating the weed so nutrients can't get to it. **The GM crop itself is designed to absorb and store the pesticide – this is why GM foods are so toxic.**<sup>52</sup> In recent years, weeds have become resistant to Roundup. This has led to a massive increase in pesticide use and the American chemical company, Dow, has now developed genetically modified crops that are resistant to 2,4-D, one of the chemicals in Agent Orange (used in the Vietnam War), a recognised carcinogen and a cause of Parkinson's disease.<sup>38</sup> Agent Orange is approved by the UK and US Governments<sup>39,40</sup> for spraying on these genetically modified crops. Neonicotinoid pesticides are genetically modified from nicotine. Neonics are painted onto seeds; this toxin is absorbed by the plant into every cell. When an insect bites the plant the neonic passes into it and explodes its stomach. Neonics are also sprayed on plants, and are recognised as deadly to pollinating insects such as honey bees. Neonics are so toxic, they should be banned worldwide.

**War and Profits:** Certain BioTech companies have been known to profit from war, (e.g. Second World War, Vietnam and others), by selling their lethal herbicide to the Military. The Military sprayed enemy crops; towns and people to poison them; their land; their water and their food. The very same herbicide is being used on our crops (food), land, and waters today.<sup>27</sup>

## Dangers of GMO

**GM food:** The major concerns are that GM food is shown to cause tumours, allergies and are endocrine disruptors (the cause of many cancers, birth defects and various development disorders). Almost all of our animals are fed GM feed. Plant DNA has been shown to pass from the GM feed into the animal and then into its products (i.e. milk, eggs, meat etc).<sup>5-12</sup> The Food Standards Agency, (FSA in the UK), carried out research on humans at Newcastle University, (in 2004), and found the same effects (known as "horizontal gene transfer.")<sup>10,11</sup> The significance of this means that the gene from

the GMO is transferred directly from the GM food into the human gut.<sup>11</sup> **GM products pass directly into our own DNA, or Genes, and they immediately have an effect on us.**<sup>12</sup> Due to the abnormal GM behaviours this could cause addictive, toxic or worse effects.

**Unborn babies:** The Biotech companies have claimed that GE toxins are not passed from mother to child through the gut lining. Yet, **93% of unborn babies in Canada were found to have GE toxins in their blood.** A landmark study found 93 per cent of blood samples taken from pregnant women and 80 per cent from umbilical cords tested posi-

2A; based upon animal studies showing glyphosate does cause cancer.<sup>57</sup>

**Our soil and waters:** The heavy pollutants used to grow GM crops destroy the soil and contaminate our waters with toxins. The Biotech companies have stated that you need less water, when in fact you need more, they also say that the pesticides are safe. Yet they are deadly as they have been designed to kill all life.<sup>26,27</sup>

**Nature – insects and plants:** GMO farming kills all insects and most plant life,<sup>25,26</sup> which has a knock-on effect in the "food" chain. Without certain plants

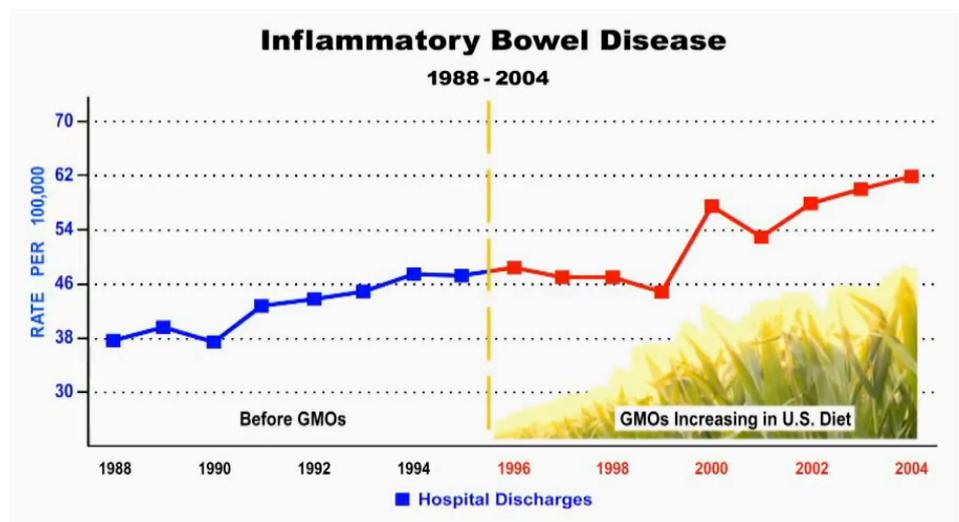


Fig. 3: Since the introduction of GMO foods in the US diet, there has been a steep increase in Inflammatory Bowel Disease.

tive for traces of the chemicals.<sup>16</sup> This shows that the mothers eating these GM foods are passing the toxins from their guts into the blood streams of their babies before birth.

**Breast cancer:** "Low levels of glyphosate (the main chemical ingredient of Roundup herbicide, which most GM crops are engineered to tolerate) mimicked the hormone estrogen and stimulated the growth of breast cancer cells. The level of glyphosate that had this effect was below the level allowed in drinking water in Europe and far below the level allowed in the USA. It was also below the level found in GM glyphosate-tolerant soy, which is imported into Europe for animal feed and human food. If confirmed in animal studies, this finding would overturn regulatory assumptions of safe levels of glyphosate."<sup>28,51</sup> In March 2015, the World Health Organisation classified glyphosate as a probable human carcinogen, rating it class

for the insects, the insect life no longer flourishes and without insects there is no natural pollination. And without the pollinating insects (such as bees) other plants on our planet will become extinct. This downward spiral goes on and on, eventually threatening human existence.

**Economics and Yield:** Farmers are becoming financially in debt to the GMO industry. Why? GM crops do not increase yield;<sup>28,31,32</sup> they use more water; and more pesticides. The cost of the GM seed has increased dramatically in comparison to the non-GM seeds.<sup>41,42,43</sup> The economics of the increase in prices and narrowing of the profit margins, means the farmers are being unduly squeezed, and in many ways owned (controlled) by the Biotech companies.<sup>42,43</sup>

**Misinformation:** Safety studies were carried out on GM potatoes and tomatoes in the 1990's by the US and UK Governments, which were abruptly stopped and GM products were banned as they

were found to be deadly. (GMO feed tests on laboratory animals caused: cancers, kidney and liver disease, stomach lesions, holes in intestinal walls, birth defects, malformed and smaller internal organs, shorter life spans and sterility.<sup>19</sup>) So what has changed? The safety tests have changed<sup>44,45</sup>; and trials are no longer carried out on animals. The safety of a GM product is measured in a laboratory paid by the Biotech company, and is misleading and based upon very flimsy science.<sup>46</sup> The tests are more dependent on the commerciality of the GM product (i.e. yield); rather than safety (the tests are not biochemical or toxicological). Now the GM industry is avoiding any trial studies or regulation by altering genes within crops, rather than inserting new genes. This is still genetic engineering but means in the US a GM crop can get to market without any checks performed on it.<sup>53</sup>

**Hunger and famine:** Biotech companies argue that GM is the answer to famine. Whereas the cause of hunger is not a shortage of food, but poverty and lack of access to land to grow food. According to the UN Food and Agriculture Organization, we already produce more than enough food to feed the world's population and could produce enough with existing agricultural methods to feed 12 billion people. GM is a dangerous distraction from finding real solutions to hunger.<sup>28</sup> Most GM crops are grown for animal feed, biofuels for cars, and processed foods - these are products for wealthy nations and have nothing to do with addressing the food requirements for the poor and needy.

**Salmon and Pigs:** If we do not do something about this monstrosity of GE then all of our food may become genetically engineered. For example: Salmon (AquaBounty) and pigs (Enviropig™) have already been genetically engineered and are awaiting approvals to be released to the public.<sup>28</sup>

AquaBounty have developed a GM salmon called the AquAdvantage®. The GM salmon is intended to grow faster and reach the market more quickly than natural salmon, due to injected growth hormones. AquaBounty has applied to the US government to sell GM salmon in the USA. If approved it would set a precedent for the GM meat and seafood market there.<sup>54</sup>

The Enviropig™ is a genetically modified pig that can digest plant phosphorous more efficiently than natural pigs.

## GMOs are also found in

- most baby foods and milks
- processed foods
- fast food and foods fried in soya oil, canola oil and rapeseed oil (vegetable oil blends)
- sugars – artificial, white, aspartame, fructose, molasses, sucrose
- amino acids, ascorbic acid, sodium ascorbate, Vitamin C, citric acid, sodium citrate, ethanol, flavourings (“natural” and “artificial”), lactic acid, maltodextrins, monosodium glutamate, textured vegetable protein (TVP), xanthan gum, Vitamins, and yeast products

Facilitating reduced feed costs and reduced phosphorous pollution in their manure etc, thus allowing the high use of cheap GM grain feed. The safety of this meat has not been assessed (or passed safety standards yet).<sup>55</sup>

**Addiction:** It is known that artificial, white, modified sugars are more addictive than cocaine.<sup>20</sup>

## The Truth

- Genetically engineered seeds (plants) do not increase yield<sup>28</sup> and they require more water, sometimes four or five times as much,<sup>28</sup> as they hungrily soak up as much as they can to grow more quickly.
- GMO crops contain less nutrients. GM food (and conventionally grown food) is less nutritious than Organic food.<sup>30</sup>
- The inserted DNA toxins and pesticides such as neonicotinoids, Roundup and Agent Orange... are deadly to all life. And have been found to be passed on from mother to child.

- The waters are contaminated by pesticide spray run off.

- The soil is contaminated; and the micro-organisms within it are wiped out... leaving soil without nutrients.

- GM and Industrial farming methods are not more efficient - small organic farms are!<sup>47,48,49,50</sup>

## Are humans in danger?

The harmful bacteria found in GM foods has been known to pass on to the consumer; be it animal or human. If we eat the plant then, yes. If it is in your food (i.e. hidden as an emulsifier or artificial sweetener or sugar), if it is in another animal product, for example: milk, cheese, chicken, beef... the harmful effect of the gene mutation is passed on to you and you will slowly but surely encounter the same effect. The pesticides spliced into the plant's genes get directly into your blood stream and tissue by making holes in your stomach lining. The effects are known to be harmful: allergies, inflammation, cancerous tumours, endocrine disruption and so on. Behavioural changes are not understood i.e. are we becoming more addicted to eating genetically engineered sugars? Yes, the fact is that they are genetically modified and they do make you addicted to their sugars, which are in nearly all foods.<sup>20</sup>

## How to avoid Genetically Engineered Foods

- **Buy Organic.**
- **Look for “Non-GMO” labels.**
- **Read the labels and avoid at-risk ingredients:**

**CORN:** corn flour, meal, oil, starch, gluten, and syrup. Sweeteners such as fructose, dextrose and glucose. Modified food starch.

**SUGAR BEET:** sugar not specified as 100% cane sugar is likely from GE sugar beets.

**SOY:** soy flour, lecithin, emulsifier, protein, isolate, and isoflavone, vegetable oil and vegetable protein.

**CANOLA:** canola oil (rapeseed oil).

**COTTON:** cottonseed oil.

- **Talk to the responsible people of your supermarket:** Supermarkets are not required to label animal products

that have been fed GM feed. Although you will find many of their own brands (meat, poultry and dairy products), are protected and are normally non-GM.<sup>1</sup>

▪ **Grow your own produce.** Share allotments, and work with your neighbours.

▪ **Support your local farmers and Farmers Markets.** Educate your farmers too. In a recent survey 60% of farmers were ignorant of the fact they are using GM feed!<sup>1</sup>

▪ **Support Organic Farming:** We can regenerate and rejuvenate the soil ourselves by applying organic farming and composting techniques without the use of harmful pesticides. Organic farming has been shown to be more productive, with greater yields, uses less water and is far more economical... so why is it not widely used and why is organic produce more expensive in the supermarkets? That is a question for our policy makers in Government and the supermarkets who control the subsidies and pricing, especially when there is substantial evidence against industrial farming and more support for organic farming methods.<sup>37,48,50</sup>

## Healthy Soil, Healthy Plants, Healthy Animals, Healthy People and a Healthy Planet!

For us to live a healthy life, we need a healthy soil, full of nutrients, that grows healthy food crops. GM crops do not provide us with any of these. Organic farming is proven to be healthier, have higher yield and because it does not use any toxic pesticides, there are no poisons being ingested by the soil, by the plant, by insects and animals, or by us, mankind. In the end, it all comes down to love, respect and gratitude for this beautiful planet Earth. If we do not reconsider our attitude and behavior and make the necessary changes, we will find ourselves on a rollercoaster ride of self-destruction. Spend your money wisely. You can make a difference in the world by showing you care.

## References

<sup>1</sup> "Silent Invasion - the hidden use of GM crops in livestock feed.", *Soil Association (Organic Standard) 2007.*  
<sup>2</sup> "Supermarket policies on the use of GM animal feed in own brand products", *Friends of the Earth, www.foe.co.uk, August 2006*

<sup>3</sup> "GM material in animal feed", *Food Standards Agency, May 15<sup>th</sup> 2006*

<sup>4</sup> "GM material in animal feed", *Food Standards Agency, August 2<sup>nd</sup> 2007*

<sup>5</sup> "Detection of transgenic and endogenous plant DNA in rumen fluid, duodenal digesta, milk, blood, and feces of lactating dairy cows", *J.Diary Sci. vol86, pp. 4070-4078, Phipps R.H., Deaville E.R., and Madison B.C., 2003*

<sup>6</sup> "Fate of maize intrinsic and recombinant genes in calves fed genetically modified maize Bt11", *J Food Prot, vol. 67, pp. 365-370, Chowdhury E.H., Mikami O., Murata H., Sultana P., Shimada N., Miyazaki S., Yamanka N. and Nakajima Y., 2004*

<sup>7</sup> "The fate of forage plant DNA in farm animals: a collaborative case-study investigating cattle and chicken fed recombinant plant material", *European food research and technology, vol 212, pp. 129-134, Einspanier R., Klotz A., Kraft J., Aulrich k., Poser R., Schwagele F., Jahreis G. and Flachowsky G., 2001*

<sup>8</sup> "Detection of transgenic DNA in milk from cows receiving herbicide tolerant (CP4EPSPS) soybean meal", *Livestock Production Science, Phipps R.H., Beaver D.E. and Humphries D.J., vol 74, pp. 269-273, 2002*

<sup>9</sup> "Detection of Transgenic and Endogenous Plant DNA in Digesta and Tissues of Sheep and Pigs Fed Roundup Ready Canola Meal", *J. Agric. Food Chem., vol. 54, pp. 1699-1709, Sharma R., Damgaard D., Alexander T.W., Dugan M.E.R., Aalhus J.L., Stanford K. and McAllister T.A., 2006*

<sup>10</sup> "Assessing the transfer of genetically modified DNA from feed to animal tissues", *Transgenic Res., vol. 14, pp. 775-784 Mazza R., Soave M., Morlacchini M., Piva G. and Marocco A., 2005*

*Natural Society, Sarich C., October 2013*

<sup>16</sup> "GM food toxins found in the blood of 93% of unborn babies", *Poulter S., Daily Mail, http://www.dailymail.co.uk/health/article-1388888/GM-food-toxins-blood-93-unborn-babies.html, May 20<sup>th</sup> 2011*

<sup>17</sup> *USDA: American Sugar Beet Growers Association. Wall Street Journal, August 8<sup>th</sup> 2014 and http://www.ers.usda.gov/topics/crops.aspx*

<sup>18</sup> "Genetically Engineered Crops in the United States.", *United States Department of Agriculture (USDA) - Economic Research Service (ERS) - Report 162, Fernandez-Cornejo J., Wechsler S., Livingston M. and Mitchell L., February 2014*

<sup>19</sup> "Genetic Roulette", *Jeffrey M. Smith, YES! Books, 2007*

<sup>20</sup> "Intense Sweetness Surpasses Cocaine Reward", *Lenoir M., Fuschia S., Cantin L., Ahmed SH., Université Bordeaux, PLoS ONE 2(8): e698. doi:10.1371/journal.pone.0000698, August 2007*

<sup>21</sup> "Monarch butterfly eyed for possible US endangered species protection", *GMWatch.org, Zuckerman L., Reuters, December 30<sup>th</sup> 2014*

<sup>22</sup> "GMOs Are Killing the Bees, Butterflies, Birds and . . . ?", *Organic Consumers Association, Paul K., and Cummins R., https://www.organicconsumers.org/essays/gmos-are-killing-bees-butterflies-birds-and, February 14<sup>th</sup> 2014*

<sup>23</sup> "Mystery of the disappearing bees: Solved!", *Reuters, Schiffman R., April 2012*

<sup>24</sup> "37 Million Bees found dead in Canada after large GMO crop planting", *Natural Society, Sarich C., http://naturalsociety.com/37-million-bees-found-dead-canada-large-gmo-crop-planting/, November 9<sup>th</sup> 2014*

<sup>25</sup> "A new study on the impact of systemic pesticides reveals the full impact of their use on soils, wildlife and biodiversity", *http://www.tfsp.info*

<sup>26</sup> "Conclusions of the World-wide Integrated Assessment on the risks of neonicotinoids and fipronil to biodiversity and ecosystem functioning", *Environ Sci Pollut Res, J. P. van der Sluijs & V. Amaral-Rogers & L. P. Belzunces & M. F. I. J. Bijleveld van Lexmond & J-M. Bonmatin & M. Chagnon & C. A. Downs & L. Furlan & D. W. Gibbons & C. Giorio & V. Girolami & D. Goulson & D. P. Kreutzweiser & C. Krupke & M. Liess & E. Long & M. McField & P. Mineau & E. A. D. Mitchell &*

*C. A. Morrissey & D. A. Noome & L. Pisa & J. Settle & N. Simon-Delso & J. D. Stark & A. Tapparo & H. Van Dyck & J. van Praagh & P. R. Whitehorn & M. Wiemers, June 11<sup>th</sup> 2014*

<sup>27</sup> "The World According to Monsanto - Pollution, corruption, and the control of our food supply." *The New Press, Robin M., 2010*

<sup>28</sup> "GMO Myths and Truths", *EarthOpenSource, Fagan J., Antoniou M., Robinson C., 2014*

<sup>29</sup> "Fruits, Veggies Not as Vitamin-Rich as in Past, Says New Data. Larger Fruits and Vegetables Mean More Proliferous but Less Potent Bounty", *ABCNews, Megan Carpenter, March 1<sup>st</sup> 2006*

<sup>30</sup> "Higher antioxidant concentrations, and less cadmium and pesticides residues, in organically grown



Fig. 4: Grow your own produce or support your local and organic farmers.

<sup>11</sup> "Assessing the survival of transgenic plant DNA in the human gastrointestinal tract", *Nature Biotechnology, vol. 22, pp. 204-209, Netherwood T., Martin-Orúe S.M., O'Donnell A.G.O., Gockling S., Graham J., Mathers J.C. and Gilbert H.J., 2004*

<sup>12</sup> "Fate of genetically modified maize DNA in the oral cavity and rumen of sheep", *British Journal of Nutrition, 89(2): 159-166, Duggan et al, 2003*

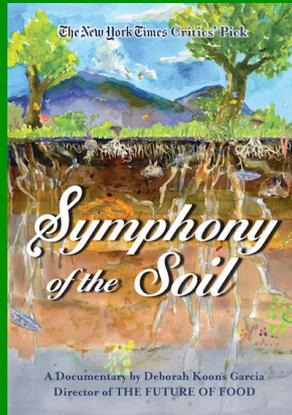
<sup>13</sup> "Silent Invasion - the hidden use of GM crops in livestock feed.", p 31, *Soil Association (Organic Standard) 2007.*

<sup>14</sup> "GMO in processed and baby foods", *NON GMO Project, http://www.nongmoproject.org/learn-more/*

<sup>15</sup> "3 Companies Using GMOs in Baby Formula",

## Recommended documentaries to watch

- **“Symphony of the Soil” – Deborah Koons Garcia (Lily Films)** We would like to call your attention to the sensational movie “Symphony of the Soil”. This splendidly created documentary of 104 minutes is about the complex and mysterious ‘organism’ we call soil and which is the foundation for all life on Earth. Filmed on four continents, featuring esteemed scientists and working farmers and ranchers, Symphony of the Soil is an intriguing presentation that highlights the possibilities of healthy soil creating healthy plants creating healthy humans living on a healthy planet.



*“Unfolding with gentle joy and an unexpected beauty, this ode to the miracle of the Earth’s topmost layer gives us a newfound respect for the ground beneath our feet.”*  
The New York Times

- **“Genetic Roulette” – Jeffrey M. Smith**

Never before seen evidence points to genetically engineered foods as a major contributor to rising disease rates in the US population, especially among children...

*“This film is an unsettling tour through a myriad of serious health conditions implicated with genetically altered crops, from allergies... to diabetes and autism.”* ST Frequency

- **“Food, Inc.” – Robert Kenner (Dogwoof.com)**
- **“Seeds of Death” – Gary Null Productions**

crops: a systematic literature review and meta-analysis.” Leifert C. et al (2014) - British Journal of Nutrition, July 2014

31 “Africa: Save climate and double food production with eco-farming.” IPS News, Leahy S., <http://allafrica.com/stories/201103090055.html>. March 2011

32 “Eco-farming can double food production in 10 years”, United Nations Human Rights Council. <http://bit.ly/Lkfa9U>, March 2011

33 “Organic Farming and Increased Yield through Bird Song”, [http://www.relfe.com/sonic\\_bloom.html](http://www.relfe.com/sonic_bloom.html)

34 “Researcher has found a link between bird songs and habitat change”, American Naturalist, Derryberry, E., <http://phys.org/news164036897.html>, July 2009

35 “Economics of Organic versus Conventional Farming”, Steiner Farming Chickens - <http://www.steinerfamilyfarm.com/cost-vs-value.html>

36 “Livestock a major threat to environment”, Food and Agriculture Organisation of the United Nations, FAO, <http://www.fao.org/newsroom/en/News/2006/1000448/index.html>, November 2006

37 “Organic farming can feed the world if done right, scientists claim”, Independent Newspaper, Bawden T., <http://www.independent.co.uk/environment/organic-farming-can-feed-the-world-if-done-right-scientists-claim-9913651.html>

38 “Occupation and Risk of Parkinsonism”, JAMA

Neurology, Tanner C., MD, PhD et al., 66(9), 1106-1113, 2009

39 Food and Environment Research Agency (FERA), Department for Environment, Food and Rural Affairs statistics on pesticide usage found at: <https://secure.fera.defra.gov.uk/pusstats/>

40 “EPA Approves Dow’s Enlist Herbicide for GMOs”, Scientific American, Gillam, C., <http://www.scientificamerican.com/article/epa-approves-dow-s-enlist-herbicide-for-gmos/>, October 2014

41 “The magnitude and impacts of the biotech and organic seed price premium.” Washington, DC: The Organic Center; Benbrook CM. 2009. [http://www.organic-center.org/reportfiles/Seeds\\_Final\\_11-30-09.pdf](http://www.organic-center.org/reportfiles/Seeds_Final_11-30-09.pdf)

42 “Visualizing consolidation in the global seed industry: 1996–2008.”, Sustainability. Howard P. pp1266-1287, 2009

43 “Rapid rise in seed prices draws US scrutiny.” New York Times. Neuman W. [http://www.nytimes.com/2010/03/12/business/12seed.html?\\_r=1](http://www.nytimes.com/2010/03/12/business/12seed.html?_r=1), March 2010

44 “Beyond substantial equivalence”, Nature, vol. 401, pp525–526, Millstone E., Brunner E. and Mayer S., 1999

45 “The use of substantial equivalence in the risk assessment of GM food”, www.royalsoc.ac.uk, Janet Bainbridge, May 2001

46 “Safety assessment of Roundup Ready soybean event 40–3–2”, Monsanto, www.monsanto.com

47 “Small is beautiful: Evidence of an inverse relationship between farm size and yield in Turkey.”, Annandale-on-Hudson, NY: The Levy Economics Institute of Bard College; Ünal FG. 2008. [http://www.levyinstitute.org/pubs/wp\\_551.pdf](http://www.levyinstitute.org/pubs/wp_551.pdf)

48 “Farm size, land yields and the agricultural production function: An analysis for fifteen developing countries.” pp513–34, World Dev., Cornia G., 1985

49 “Rural market imperfections and the farm size-productivity relationship: Evidence from Pakistan.”, World Dev., pp1807–1826, Heltberg R., 1998

50 “The adoption of organic agriculture among small farmers in Latin America and the Caribbean: Thematic evaluation”, International Fund for Agricultural Development (IFAD). Rome, Italy; 2003

51 “Glyphosate induces human breast cancer cells growth via estrogen receptors.”, J. Food Chem Toxicol. Thongprakaisang S., Thiantanawat A., Rangkadilok N., Suriyo T., Satayavivad, 59, 129-136, September 2013

52 “GMO Food Poison Handbook”, Charles W. Sutherland, CreateSpace Publishing, 2014

53 “By ‘Editing’ Plant Genes, Companies Avoid Regulation”, New York Times, Andrew Pollock, January 1<sup>st</sup> 2015

54 “GM salmon company Aquabounty fined by Panama”, The Guardian, Biron C., <http://www.theguardian.com/lifeandstyle/2014/oct/29/panama-regulators-could-slow-us-approval-of-gm-salmon>, October 2014

55 <http://www.uoguelph.ca/enviropig/>

56 Letter from US Congress to the President, <http://agri-pulse.com/uploaded/Rep-monarch-letter-32015.pdf>, March 13<sup>th</sup> 2015

57 “IARC Monographs Volume 112: evaluation of five organophosphate insecticides and herbicides”, International Agency on Research on Cancer, <http://www.iarc.fr/en/media-centre/iarcnews/pdf/MonographVolume112.pdf>, 2015

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