Abra Brynne
PO Box 684. Nelson, BC V1L 5R4
TEL 250.352.5342 (GMT - 8)
abra@peelingtheonion.ca
www.peelingtheonion.ca

A Canadian Consumer's Guide to ingredients which may have been genetically engineered

~ or ~

How to become a detective in your own food system.

Researched and written by Abra Brynne
Second Edition
January 2009

Peeling the Onion

Embedding local action in global awareness

just community

Preface to the Second Edition

In the mid 1990's I first heard about and then became increasingly alarmed by the genetic engineering of our food crops. I was sufficiently concerned that I overcame my deep dislike of public speaking and undertook a self-funded and organized tour of communities throughout my foodshed to try to educate others about the dangers of genetic engineering, at least in terms of agricultural products and our food systems.

The groups I spoke to in each of the communities varied in size and knowledge of what is now commonly referred to as "biotech" but they almost all responded as I did - with varying levels of horror and concern about how they could feel confident about their food sources.

From those consistent responses I was catapulted into a new direction with my work on food systems. I undertook educational initiatives on a broader scale than I had previously, as there was clearly a need to share information, and I delved ever more deeply into the solution to the genetic engineering of our food system.

At that time, there were few Canadians working on genetic engineering and agriculture and the resources were scarce on the ground. I organized petitions, wrote editorials, and eventually wrote this booklet. I am very grateful to those who guided my first steps in this work, many of whom are still very engaged in these issues. This includes Brewster and Cathleen Kneen, E Ann Clark, Lucy Sharratt, Michael Hansen, Hope Shand and others at ETC Group (then RAFI).

I have always seen biotech as the logical but ultimate extension of an industrialized food system. It carries on all the same paradigms but to an terrifying extreme: monoculture, heavy reliance on chemicals for fertilizers and "pest" management, corporate monopolies, and a disdain for the natural systems that we are all ultimately so dependent on.

The natural solution to biotech, it seemed to me, was to foster an increase in local production and consumption of food. What better way for people to know and understand their food sources, and indeed, their life source?

The intent of the booklet was, and still is, to empower those who eat with as much information as possible to enable them to decipher and understand the potential risks in their food choices. I eschewed the idea of a brand names list for a number of reasons. The chief of these came from my own communication with food manufacturers which led me to believe that many of them were, at that time (and possibly still are) either ignorant of the whole issue and the possible repercussions for their own product lines, or did not consider it to be of significant concern. I was also very aware, as someone who was then working in the food industry, that food manufacturers change their ingredients with no obligation to notify their buyers.

Thus it seemed to me that the best plan was first, to identify the crops that were being genetically engineered and entering into our food supply, and then to understand all the forms in which they appear in processed foods. That research led to this booklet. The first edition was printed in Nelson BC and distributed for a fee of $2.50 each around the world, based on notification through various relevant networks and listservs.

One such notification went out in 2001 through the Agnet listserv and announced the following: “the 16-page booklet is crammed with useful and accurate information about the hidden food elements such as derivatives and enzymes, as well as helpful resources for people seeking alternatives to GE foods. Although it is aimed at Canadians, all the information (except for rBGH, which is banned in Canada) is relevant to US readers as well.”

I stumbled across that notice in Dec 2008 and it was the catalyst for me to recirculate the Guide, since I continue to believe it is a useful tool - not only to assist people in avoiding GE foods, but also as a political tool in the effort to reclaim our food systems.

I will not be publishing a print version of the Second Edition. However, I encourage people to use this Guide, print copies if that makes sense, and circulate it as you see fit.

We are all in this together

Lastly, I ask the people who read and use this Guide realize that eating is not only an incredibly intimate act that sustains us every day, it is also a political act. On the current list of approved GE crops in Canada are alfalfa and wheat. Though they are not yet being commercially grown in Canada, there is widespread belief that the introduction of those two crops will have a devastating impact on our environments, our food and the viability of any farmer who strives to not grow GE crops.

Only our individual actions, collectively, will bring about food sovereignty - that is, the control of our food systems back in the hands of those they feed, not those who make profits from them (where profits are distinct from the livelihoods necessary for all farmers and food gatherers).

Food is glorious. Let’s ensure it stays that way.

Biotech Crops Update since the First Edition

The first edition was researched and written in 1999 and 2000. In the original text (below), I identify the crops which had been approved in Canada at that time. The list has since lengthened considerably and can be found, ironically[1], on Health Canada's website: http://www.hc-sc.gc.ca/fn-an/gmf-agm/appro/index-eng.php[2]

However, despite that longer list, it is slightly heartening to note that there are still only really four main crops that make up the vast majority of the acres planted to genetically engineered crops in North America: corn, cotton, canola and soy.

Genetically engineered potatoes are no longer being commercially produced in Canada, though they remain approved. However, as of the 2008 growing season, genetically engineered sugar beet is being grown in Canada. According to the Canadian Biotech Action Network, the 2008 harvest of Canadian GE sugar beet is all being processed in Michigan by the Michigan Sugar Company.

For those concerned about avoiding sugar from GE sugar beet, I encourage you to explore the resources available for diabetics as they will help you to identify obvious and hidden sources of sugar. As there were no GE sugar beets in commercial production at the time of the First Edition, they are not covered in depth in this Guide.

There are three other GE crops currently grown in Canada: corn, canola and soy. GE foods that can be legally imported into Canada are: cottonseed oil, papaya (in fruit juices and as a sweetener), and squash. Milk products from cows injected with Recombinant Bovine Growth Hormone can also be legally imported into Canada.

It is essential to note that the USA and Canadian food systems are heavily integrated so derivatives from GE crops grown in the USA but not Canada are still undoubtedly in our food system.

---

[1] I say "ironically" since many of us have shared deep concerns about the health repercussions of GE food on animals and humans. And since virtually no GE foods are labelled, there is no way of knowing the impact on our health - there are too many unknowns and variables. The fact that the health impacts of GE foods has not been thoroughly studied by our government, ideally BEFORE they were introduced into our diets, is reprehensible. For more information on the health issues around GE foods, see the web site of the Canadian Biotech Action Network (CBAN): http://www.cban.ca/Resources/Topics/Human-Health-Risks

[2] The list on Health Canada's website is somewhat confusing as they are using the term "Novel" to include new food technologies that are not actually genetic engineering. CBAN published a list in January 2008 of the twelve different crops that have been approved in Canada. It can be found on their website under Resources: http://www.cban.ca/Resources Note that this is a list of all the types of crops that have been approved, not of those which are currently being grown. The list of crops being grown can also be found on the same page of the CBAN website.

**The goal of this booklet is to help you understand where,
in the North American food system,
you might find genetically engineered foods.**

Which crops are engineered:

It is important to realize that in order to get an adequate return on all the research and development dollars that went into producing genetically engineered foods, only certain crops have been engineered. (In this paper, I will abbreviate genetically engineered to"GE".)

Thus, in a shopping cart full of 40 packaged food products (where processing has occurred and there are for instance, more than three ingredients), at least 24 of them will include some form of canola, soy, corn or cotton. Virtually none of them will include broccoli or rutabaga.

Consequently, a walk down the local fresh produce aisle need not fill you with alarm if you are concerned about genetically engineered foods. However, it never hurts to talk it over with the produce manager, just to ensure that they know what your needs are and you know what their policy on GE is.

However, once you leave the fresh produce aisle you find yourself surrounded by a food system which relies very heavily on what are known as the commodity products – those crops and livestock which are raised in very large volume. Traveling through the vast farmlands of North America, you will see thousands and thousands of acres of wheat or of corn, but not of onions. This is what is called "mono-cropping", where only one crop will be grown on a huge acreage.

From these mono-crops, many products or "derivatives" are created. These derivatives help the food scientists who create the majority of the processed foods on our grocery shelves to produce a product which has a pleasing colour, nice texture, long shelf life and appealing flavour. (You will notice that I do not mention nutritional value.)

The crops (in other words, the foods which can be planted in the soil) which have been approved in Canada include the following:

- 13 (3) varieties of canola
- 3 (5) varieties of tomatoes
- 5 (3) varieties of potatoes
- 14 (14) varieties of corn
- 2 (3) varieties of soybeans
- 1 (1) variety of flax
- 4 (5) varieties of cotton
- 1 variety of wheat

- 2 (2) varieties of squash

The approved crops in the United States of America are in brackets in the list above with the following additions:

- 1 variety of papaya
- 2 varieties of sugarbeet

The reason that the crops approved in the US are relevant is due to the integration of our food systems and the "global sourcing" practiced by large food manufacturers and grocery chains.

As of late in the harvest 2000, it is difficult to obtain conclusive figures on the amount of genetically engineered crops which were grown and harvested this year. However, we do know that the amount of genetically engineered potatoes has gone down substantially, due in part to the pressure applied by consumers on manufacturers of potato products such as McCains, Cavendish Farms (Irvings), Lamb-Weston (Con-Agra), and Frito-Lay.

Flax, though approved, has not been commercially planted. The Flax Council of Canada was successful in keeping the GE flax from being planted commercially. It appears that after a few unsuccessful years of commercial GE tomato crops grown in the United States, they are no longer being grown for the food market.

The approval of GE squash can be applied to other varieties and, to date, there are four varieties which are known to be genetically engineered. The target market for the squash has been the baby food market and other such products.

As of 1999, cotton and canola each made up 9% of the global acreage of genetically engineered crops, and corn made up 28%. Soybeans topped the list with 54% of the total acreage of genetically engineered crops. The United States planted 72% of this acreage, Argentine 17% and Canada 10%.

Since less than 10% of the US grain industry (which includes soy and corn) are segregating GE from non-GE crops, the commodity market contains a blend of them both. Most manufacturers of food derivatives have continued to purchase from the commodity market to make their products. With the European Union, Japan and the United Kingdom refusing to import GE foods, the concentration of GE-contaminated food is increasing in North America. (Though substantial quantities of GE crops are being dumped in the Third World under the guise of "food aid" to countries in crisis.)

In order to absorb the volume which is being planted and to justify the next season's planting, these crops have found their way onto our tables disguised as "starch", "vegetable oil" or "protein isolates".

The next section of this booklet lists some of the many derivatives from each of the five main genetically engineered crops: soy, canola, cotton, corn and potatoes. There is also a section on recombinant bovine growth hormone which is injected into dairy cows in the United States.

Soy

Soy is a leguminous plant, prized for its protein and the widespread use of the many derivatives from the crop.

Soy Protein: used to improve texture, hold moisture, whiten bread, extend shelf life, enhance "mouth feel" and improve manufacturing, handling and machine ability; found in breads, cookies, crackers and baked goods, hot cereal mixes and breakfast bars, processed and whole meat products, imitation milk, imitation cheese, non-dairy frozen desserts, coffee whiteners and yogurt.

Soy Protein Concentrate: used to add extra nutritional value or to aid in fat absorption or emulsification; found in baked goods, breakfast cereals, pastas, meat, poultry and fish products.

Soy Protein Isolate: the most highly refined of soy protein products, isolates are used in emulsification/emulsion stabilization, water and fat absorption, and for their adhesive/fibre-forming properties. Soy protein isolates can be found in infant formula, nutritional supplements, coffee whiteners, liquid whipped and pre-whipped toppings, sour cream dressings, instant beverage meal replacements, meat and dairy products and meat analogs (vegetarian "meat" products).

Soy Flour: available as a protein rich alternative or addition to traditional wheat flour; comes in either low or high fat versions, the low fat version being the more highly processed. Found in processed meat products, baked goods, simulated meats, pastas, sausage casings.

Soybean Oil: the world's most widely used edible oil accounting for almost 80% of the edible oil consumption in the United States of America. Found in most margarines and shortenings, mayonnaise, salad dressings, frozen foods, imitation dairy and meat products as well as commercially baked goods. It can also be found in soft and low-fat spreads, non-dairy creamers, whipped toppings, breakfast cereals, ice cream, soups, confectionery products, cooking oils, frozen dairy desserts, peanut butter, sandwich spreads, snack foods, potato chips, as well as breaded and battered snacks and vegetables. Soybean oil is used for commercial deep-frying and grilling.

Soy Lecithin: widely used as an emulsifying agent, which means that it aids in the dispersion of one liquid into another and keeps them from separating. In that role it can be found in sauces and salad dressings, chocolate, candy coatings, margarine, shortenings, yeast, alcohol and "wetting agents".

Whole soybeans are used to make tofu, soy nuts, and textured vegetable protein (TVP), miso and tempeh. It must also be noted that soybeans are used extensively for feeding livestock as a primary source of protein, including calf milk replacers.

There are also many industrial, non-food uses of soy products. A partial list includes: rubber, adhesives, antibiotics, asphalt, wood and resin binders, cosmetics, inks, paints, particle boards, pharmaceuticals, pesticides, insecticides and fungicides, soap, shampoo and detergent, anti-static agents, disinfectants, diesel fuel, linoleum backing and epoxy.

Canola

Canola was developed in Canada from the rapeseed through traditional breeding methods. More recently it has been genetically engineered to be herbicide tolerant. Because canola oil is bland in flavour and stable at higher temperatures, it has quickly become the oil of choice in the Canadian food system. It is used in the United States as well, though not to the same degree.

Canola, as an oil seed, is pressed to extract the oil and then both the oil and the remaining "meal" are used. According Agriculture Canada, using 1996 data, canola oil accounts for 75 percent of all vegetable oils produced in Canada, 87 percent of salad oils, 49 percent of margarine oils and 64 percent of shortening.

On the grocery store shelf, the oil can also be found in chips, cookies, soy cheeses, mayonnaise, sandwich spreads, coffee whiteners, creamers, cake mixes, breads, microwave popcorn and fried snack foods. The food industry may also use canola oil for spray oils (for removing baked goods from the pans), and as the oil used to fry foods in the so-called "fast food" outlets.

There are a number of inedible applications for canola oil such as soaps, detergents, cosmetics and printing inks.

Canola meal is used as a feed for livestock, poultry and pets. The meal is also applied as a fertilizer on both farms and backyard gardens.

Cotton

Cotton is often overlooked in Canada as an element of our food system. Cottonseed oil is used in many of the same applications as canola oil.

Of course, cotton cloth is widely used in a variety of cloths and garments.

Corn

Next to soy, corn is probably the crop which lends itself most readily to a range of highly processed derivatives. As Archer Daniels Midland (ADM) claims on their website:

"Consumers might not be aware of it, but ADM's Food Additives Division touches their lives every day. All over the world, grocery shelves are lined with products made better by our value-added food ingredients….. The range of applications for these ingredients covers virtually the entire food industry: baking, beverages, confections, canned goods, meats, dairy, and more." (www.admworld.com)

"Consumers might not be aware of it, but ADM's Food Additives Division touches their lives every day."

The following is a partial list of the names of common corn derivatives: corn syrup, high fructose corn syrup, corn syrup solids, invert sugar or syrup, starch, citric acid, benzoates, citrates, sorbates, erythritol, ethanol, mannitol, dextrose, dextrin, fructose, glucose, sucrose, gluten, glucona delta lactone (GDL), hydrolyzed corn and corn protein, corn flour, corn oil, corn alcohol, maltodextrin, malt syrup or extract, mono- and di- glycerides, monosodium glutamate (MSG), sorbitol, modified corn starch, and vegetable gum.

The places where you might find these and other forms of corn include: baking powder, "flavouring" (natural or artificial), food starch, vegetable starch, powdered sugar, vitamin C, meat analogs (vegetarian "meats"), chips, candies, ice cream, infant formula, salad dressings, tomato sauces, breads, cookies, cereals, alcohol, vanilla extract, margarine, soy sauce and tamari, carbonated and alcoholic beverages, enriched flours and pastas, prepared mixes, gravies, cough drops, vitamins and nutritional supplements, jams and jellies, syrups, marshmallows, canned goods, caramel, hot dogs, French fries, fish sticks, potato puffs, chocolate, golden syrup and treacle, sweetened applesauce, baby formula, cold cuts, grits and hominy.

Other ways in which corn finds its way into our lives include: as animal feed (cattle, hogs, poultry – using up over 50% of the corn produced); as "excipients" which are used to bind the contents of a pill or tablet; as an additive in the meat curing process; in toothpaste and mouthwashes; as "zein", a substance which is used in the manufacturing of textiles, plastics and paper coatings (including cardboard); many solid and liquid medications, including intravenous solutions; and in the glue on stamps and envelopes.

Potatoes

Atlantic, Russet Burbank, Russet Norkatah, and Shepody potatoes are the potato varieties which have been genetically engineered. However, consumer rejection has played a major role in reducing the volume of GE potatoes planted to less than 1% of the total crop in Canada.

It is unlikely, but still possible that GE whole potatoes may find their way into your local food system if someone planted them and then could not find a large purchaser. Other places you will find potatoes include: processed or institutional/restaurant potato products such as fries, mashed or baked potatoes; potato chips, Passover products, vegetable pies, soups. Since many restaurants and institutions such as hospitals and airlines purchase prepared foods which require minimal processing in their kitchens, they rely heavily on such products.

A word about "starch"

While many plants contain starch, the food industry globally uses starch which is derived primarily from potato, cassava, corn and wheat. Starch is used in its "native" form and is also further processed into a range of modified starches and syrups which have an enormous range of uses. Because most starch products are so highly processed, the original plant it is derived from becomes almost irrelevant since its individual taste and texture have long since been lost in the process. Therefore, many forms of starch will be a blend of those four primary crops, two of which have been genetically engineered.

Starch can be found in the following foods: mayonnaise, baby food, bread and buns, meat sausages and loaves, ketchup, soups (dehydrated or otherwise), snacks, pizza sauces, low fat foods, noodles, soft drinks, vinegar, beer, cordials and liqueurs, wine, coffee, candy and confectionery, chewing gum, dried citrus juice, condensed milk, frozen and dried eggs, extracts and flavours, frostings and icings, fruit butters, frozen fish, peanut butter, pickles, canned pork and beans, canned sweet potatoes, jellies, marshmallows, marmalades and jams, ice cream, dairy cream, milkshakes, fruit juices and drinks, fruit fillings, and canned, frozen, glazed and candied fruits,. Starch may also be used in the fermentation process.

In agriculture, starch is used in animal feed (cattle, fish, and pet food), as a coating on seeds to help them germinate, and as part of potting soil mixes to improve water retention.

Starch is also used as surgical dusting powder, in hygienic and baby diapers, sanitary napkins, and in medicinal tablets. The manufacture of paper, cardboard, packaging material, mineral fibre tiles, gypsum boards, concrete, coal briquettes, detergent, stain remover and biodegradable plastics may all use starch at some point in the process.

Starch can be used as a "flocculant" in water treatment systems, as a "finishing agent" in the production of fabrics, and to help suspend excavated mud when drilling for oil. Starch is also used as a cheap and reliable source of energy in the creation of enzymes, alcohol, and fine chemicals.

Recombinant Bovine Growth Hormone

Recombinant Bovine Growth Hormone (rBGH) was approved in 1993 in the United States of America for use on dairy cows. It is estimated that between 15 and 30% of the dairy herds in the US are currently being injected with rBGH.

While it has never been approved for use in Canada, much of the food on our grocery store shelves contains milk products, some of which originated in the US. Like the GE crops, most of the conventional milk produced is pooled together for purchasing by food manufacturers. You may want to examine the place of origin of many of the more familiar milk products: liquid milk, cheese, ice cream, yogurt, sour cream. Ask the manufacturer if they get any of their milk from the US and if it is rBGH-free.

There is also a vast range of milk derivatives with less familiar names which can easily hide on the ingredients list. Any of the names on the following list indicate the presence of milk derivatives: milk solids (curds); dry milk solids; milk powder; whey; lactose; galactose; recaldant; casein; sodium, calcium, potassium or aluminum caseinate; lactalbumin; lactoglobulin. The following list may have been derived from milk: protein (hydrolyzed protein, protein concentrates or isolates), lactates, lactic acid, lactones or lactylates.

These milk products can appear in any of the following foods: margarine; non-dairy anything, including frozen desserts; bread, cakes, crackers and doughnuts; hydrolyzed vegetable protein; baby formula; soy cheeses; canned and luncheon meats; hot dogs and sausages; meat broths and gravies; seasoning mixes; breakfast cereals; instant potatoes, soups and breakfast drinks; salad dressings; chocolate, gum, marshmallows and candy; pancake, biscuit and cookie mixes; powdered coffee creamer; whipped toppings, bakery glazes and cream fillings; jams and jellies; beverages including beer, water ices, protein fortified drinks, hot chocolate, sports and health drinks; egg white replacer; dough conditioners; mold inhibitors; nutrition bars and nutritional supplements. Milk derivatives may be the “carrier” for food colouring and for natural or artificial flavours.

In the non-food realm, they can be found in many vitamins and medications (lactose is used as the filler). If the product specifically says “milk free” then lactose was not used. The complete list of ingredients for medications can be found in the Physicians Desk Reference – ask your family doctor if you have any concerns.

Because of the high protein value of some of the milk derivatives, they are used widely in animal food, both pet and farm. Milk derivatives can also be found in paints, inks, adhesives, on textiles, and in grout.

A final word about rBGH: because the use of rBGH substantially reduces the life expectancy of dairy cows, they are entering the meat production segment of the industry at a faster rate. No

one knows what the impact will be on human health of consuming beef from cows injected with rBGH.

And then there's enzymes!

Enzymes are a special kind of protein which act as a catalyst to speed up chemical processes. Due to this quality, enzymes play a large role in producing many of the various ingredients that are part of the North American food system. They can be found in meat tenderizers, cheese products, laundry detergents, baked goods, and digestive aids. Three different enzymes are used to convert starch into high fructose corn syrup, which is used widely as a sweetener.

Of the enzymes used commercially, 50% are used in the creation of detergents; 20% in wet-milling (where a grain such as corn is soaked and then crushed) and fuel alcohol manufacturing; 10% each in textile and baking processes; and the last 10% is divided among feed, dairy, brewing and distilling, pulp and paper, wine and juice, and leather manufacturing.[3]

Why enzymes are an issue in the face of genetic engineering is the fact that they fall into a "gray" area when it comes to regulation. The use of enzymes in the production of a food does not need to be listed on its label. Nor is the manufacturer required to notify anyone if they have genetically engineered an enzyme.

Enzymes are involved in the production of the following categories of food: beers, wines and fruit juices; sugar; oils; dairy products; and baked goods.

This is a partial list of genetically engineered enzymes:

- Chymosin—used in the production of cheese
- Novamyl(TM)—used in baked goods to help preserve freshness
- Alpha amylase—used in the production of white sugar, maltodextrins and nutritive carbohydrate sweeteners (corn syrup)
- Aspartic (proteinase enzyme from R. miehei)—used in the production of cheese
- Pullulanase—used in the production of high fructose corn syrup

Not all enzymes are genetically engineered and it is worthwhile asking the food manufacturer if they are using GE enzymes.

Let's talk labels

Labeling legislation for food products is a complicated thing – just ask any small-scale producer who has tried to have a label approved. Labels are further complicated by the fact that we eat many foods imported from the US – which, theoretically, will have received approval for their

[3] While these statistics are based on 1999 and 2000 research, it is unlikely that they will have changed significantly.

labels before they enter the Canadian market. Canadian labeling standards are considerably less detailed than their American counterpart and are subservient.

However, when it comes to what information must be included on the labeling, you need to know that the processing methods do not need to be on the label. This means it is not necessary to indicate on the final product label any enzymes used to process an individual ingredient which is part of a final product.

According to the Food and Drug Administration, which governs food labeling in the United States, "incidental additives that are present in a food at insignificant levels and do not have any technical or functional effect in that food" need not be on the label. They define "incidental additives" as those which have "no technical or functional effect but are present in a food by reason of having been incorporated into the food as an ingredient of another food".

These incidental additives also cover processing aids that are "added to the food during the processing of such food but are removed in some manner from the food before it is packaged in its finished form… [or which] are converted into constituents normally present in the food, and do not significantly increase the amount of the constituents naturally found in the food".

Other items exempt from inclusion on the label include "substances that are added to a food for their functional effect in the processing but are present in the finished food at insignificant levels and do not have any technical or functional effect in that food." (from the Code of Federal Regulations, Title 21, Volume 2, Parts 100-169)

Thus, Avebe, which is the world's largest manufacturer of potato starch derivatives, sells a product to the food industry which serves a function but need never be mentioned to the consumer:

"Whole meat products require that a brine be incorporated into the meat muscles. This is done by a variety of means such as, massaging, tumbling and injection. It helps improve colour and sensory properties while maintaining the quality. AVEBE's starches increase product yield by binding the moisture during thermal processing. They improve the texture, juiciness and because potato based starches have a bland taste they do not interfere with the meat flavour. …..In products like turkey breasts you will need a functional moisture binder." (ref: www.avebe.com)

So what about organics?

Consumers would not have many options when it comes to avoiding GE foods, if it were not for organics. The philosophical underpinnings of organic farming prohibit something as alien to natural processes as the terribly invasive procedures of genetic engineering.

Further in order to preserve the integrity and purity of organic foods, organic farmers and processors developed a system to keep their foods distinct from conventional foods. The lessons learned in developing and maintaining a system which preserves a distinct identity of foods is readily transferable to segregating non-GE from GE foods, apart from the issue of genetic contamination. (It must be said that the food laws of some religions, such as Judaism and Islam, require the same sort of segregation and special handling.)

As a result, within a very short time of the introduction of commercial scale GE crops in 1996, organic certifying bodies all over North America and around the world clearly spelled out that genetically engineered organisms are not acceptable at any stage of organic food production.

Therefore, when food comes from outside of your geographical area and you cannot know the farmer and the food producer, you can rely on the certification process to verify that the food is indeed being produced according to organic standards.

However, when it comes to processed foods, the onus is on the individual consumer to carefully read the label. If each ingredient does not state that it is certified organic, it is not. And even if the whole product is labeled organic – such as a certified organic salsa – the General Organic Food Labeling Standards adopted in 1995 by the US National Organic Standards Board, indicate that up to 5% of the product need not be organic.

The US National Organics Standards Board do indicate, however, that while they accept the "incidental food additives" labeling exemption, these additives will be subjected to a national list to determine if they are appropriate for use in an organic product.

In an ideal world, the responsibility for any contamination of organic crops by GE should be solely that of the governments who have allowed their uncontrolled release into the environment.

Canada does not yet have comparable national organic standards[4]. It is reasonable to expect that Canada's national regulations concerning both incidental food additives and organic product labeling will be similar to the American model.

Most certifying bodies draw on the list of acceptable materials developed by the Organic Materials Review Institute (OMRI)[5]. Therefore, even if a certifier has not stated that they will **not** accept GE, as long as they are adhering to the OMRI list, they will not allow any GE products.

It is worthwhile, as an individual consumer, to ask to review the actual standards of the certifying body for the organic foods you are eating. This will give you a very clear idea of what is expected of any individual food producer who is certified by that organization.

It must be stated that organic farmers are at risk of loosing their certification and/or of having to change the range of crops grown due to the threat of cross pollination from GE crops grown nearby. Governments who have approved the commercial growing of GE crops created regulations requiring buffer zones around them. But these buffer zones have been shown to be highly inadequate.

The responsibility for any contamination of organic crops by GE should be solely that of the governments who have allowed their uncontrolled release into the environment.

---

[4] The Canadian *Organic Products Regulations* were published in Dec 2006. There is a transition period before the Regulations come into full force on 30 June, 2009. GE crops and materials are prohibited in the Canadian regime.

[5] OMRI has an explicit policy prohibiting GE organisms or their products and uses the US National Organic Standards Board definition of genetic engineering. For more info, check out the OMRI website: http://www.omri.org/OMRI_GMO_policy.html

Suggestions for GE-free eating

It is important to state that eating foods which are free of genetically engineered organisms **is** possible. However, it may take more effort on the part of the individual consumer to bring this about.

Reading the labels is critical when it comes to processed foods. But the closer you get to a whole food – one which has not been processed beyond harvesting and storage – the better your chances are of not eating GE food.

This means that you may have to relearn how to use whole foods or where and how to access locally grown foods. Luckily there is a proliferation of farmers markets all over North America. In British Columbia, we have a newly formed Farmers Markets Association (http://www.bcfarmersmarket.org/) which can assist you in locating the nearest farmers market.

The work of avoiding GE food can turn into a celebration of the goodness and importance of food in our life, our culture, our well-being and our environment.

When the growing season is drawing to a close in your region, try to access good storage vegetables and create or collaborate on a root cellar. Carrots, cabbage, rutabagas, potatoes, onions, garlic and beets are all good storage vegetables. Under good conditions, various fruit will store well for months at a time. And if the fruit have lost some of the juicy crispness, they will still make great sauces, pies, and baked breakfast treats.

If you are fortunate enough to know a grain grower, you can perhaps buy your own supply of grains for grinding or cooking whole. Other sources for bulk grains and legumes (dried beans and peas) are health food stores and buying clubs.

It may take some time to adjust your eating and cooking habits, but it is well worth the effort. This does not apply just to avoiding GE foods – there are many documented health benefits from eating food as naturally as possible.

Switching to a whole foods diet can also be an opportunity for some cross-generational and cultural activities. There are many among our seniors who retain the cooking skills of their younger days. We can also benefit from ad hoc cooking classes from our immigrant neighbours who may have brought whole food recipes and cooking methods with them when they left their country of birth.

The work of avoiding GE food can turn into a celebration of the goodness and importance of food in our life, our culture, our well-being and our environment.

Suggestions for activities

Every product on Canadian grocery store shelves is required to have contact information for the manufacturer on the label. If you have a favourite product that you are concerned about but do not want to eliminate from your diet, contact the manufacturer. They tend to be quite responsive

to those who buy their food – especially if they hear the same message from many different individuals.

Talk to store and food department managers about their GE policy. Get to know who distributes food in your community and what they do about genetic engineering. Contact various levels of government and let them know how you feel.

Look for ways to join with your neighbours in creating and celebrating whole, healthy food. Community kitchens and gardens are springing up all over North America. These are ways to share in the creation of food with those who share your community. And if you are lucky, you may have the world's most amazing samosa maker just down the street from you, looking for new customers.

Research your own cultural roots and food traditions. It could be that your grandma had a way with beets that could make the most finicky child gobble them down.

Resources on Genetic Engineering

There are many resources related to genetic engineering. Some are in book form, many are regularly updated websites, others take the form of a local chapter of an activist group who are devoting their time to campaigning against genetic engineering. Here I note but a few.

My favourite books include: Farmageddon by Brewster Kneen, Exploding the Gene Myth by Ruth Hubbard and Elijah Wald, and Genetic Engineering Dreams or Nightmares by Mae-Wan Ho.

Excellent websites include our very own Canadian Rural Advancement Foundation International[6] (www.rafi.org); Genetic Resources Action International (www.grain.org); the Canadian Biotech Action Network (http://www.cban.ca/); the Mothers for Natural Law GE site (www.safe-food.org); Charles Benbrook's Pest Management at the Crossroads site (www.pmac.net) ; E Ann Clark (www.plant.uoguelph.ca/faculty/eclark); and the Third World Network (www.twnside.org.sg).

In Canada, various groups who have been working on the issue of genetic engineering and food include: the British Columbia Biotech Circle; the Canadian Biotech Action Network, Greenpeace Canada, the Council of Canadians, the Sierra Club among others.

---

[6] RAFI has since changed their name to the ETC Group. They are still doing extraordinarily good work in this field and can be found here: http://www.etcgroup.org Please note that there is another organization that currently goes by the name of RAFI, based in the USA.

Resources to help celebrate whole food

Whole food guides:

The Whole Foods Companion by Dianne Onstad; The New Whole Foods Encyclopedia by Rebecca Wood; The Kitchen Gardener's Companion by Pat Katz.

Cookbooks:

Most of the Moosewood cookbooks; Great Vegetarian Cooking under Pressure by Lorna J Sass; Cooking with the Right Side of the Brain by Vicki Rae Chelf; The New Laurel's Kitchen by Laurel Robertson, Carol Flinders and Brian Ruppenthal; Vegetarian Cooking for Everyone by Deborah Madison; and the ever-so helpful and comprehensive Stocking Up by Carol Hupping and the staff of the Rodale Food Center.

References

The websites below were accessed in 1999 and 2000 and provided a great deal of the information on crop derivatives found in this Guide.

- Archer Daniels Midland: www.admworld.com
- The International Starch Institute: www.starch.dk
- The United Soybean Board website: www.talksoy.com
- The American Soybean Association website: www.amsoy.com
- Avebe website: www.avebe.com
- Agriculture Canada website: www.agcanada.com
- The Canola Council of Canada website: www.canola-council.org
- Cargill Foods website: www.cargillfoods.com
- World Potato Congress: www.potatocongress.org
- Global Potato News: www.potatonews.com
- Mothers for Natural Law GE website: www.safe-food.org
- Organic Materials Review Institute: www.omri.org
- Plant Biotechnology Office, Variety Section, Plant Health and Production Division: www.cfia-acia.agr.ca/english/plaveg/pbo/okays.shtml
- National Cottonseed Products Association: www.cottonseed.com
- Union of Concerned Scientists: www.ucsusa.org
- Ohio Corn Growers Association: www.ohiocorn.org
- Food and Drug Administration Department of Health and Human Services, Part 101 Food Labeling (frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi

- Genetic ID's GMO Newsletter August 31, 2000
- The Canadian Food Inspection Agency Guide to Food Labelling and Advertising, 1998 Edition

Other resources include many conversations, listservs, articles too numerous to list and the following books:

- From Land to Mouth, Farmageddon, and The Rape of Canola, all by Brewster Kneen;
- The Allergy Self-help Cookbook by Marjorie Hurt Jones, R.N.;
- The Unsettling of America: Culture and Agriculture, by Wendell Berry;
- A Consumer's Dictionary of Food Additives by Ruth Winter.