



[Table of Contents](#)
[Feature Articles](#)
[Masthead Magazine List](#)
[Shopping](#)
[Contact Us](#)
[Sitemap](#)
[Home](#)



Heirloom Seeds

Getting Off the
GMO Bandwagon

with Ronnie
Cummings
and Steve Peters

by Julia Griffin

The following interview with Ronnie Cummings talks about the relatively new menace of genetically engineered, or GE, foods (also called GMO, meaning "genetically modified"). What are the consequences of our thoughtless meddling with life? How do these new designer-foods affect us? And what can we do to reverse the trend toward methods of growing food that may have disastrous effects upon us and upon the Earth?

The answer for many activists like Cummings has been to form seed banks (see also the sidebar about [Seed Banks](#), with Steve Peters), preserving the genetic material of the original crops in what are now referred to as "heirloom seeds." Seed banks collect and sell these heirloom seeds, making them available to growers and assuring that our remaining pool of unmodified, natural foods will not be lost.

Julia: How did you become the co-author of *Genetically Engineered Foods*? What made you become so interested in the subject that you decided to write the book?

Ronnie: I was working as a public interest advocate, and I became aware, on many different levels, of the far-reaching effects of genetic engineering. It's frightening when you bring the pieces of the puzzle together: the genetically engineered foods and crops and the long-range effect. Books and information were out there with some of information, but there really wasn't one source that brought all of it together.

Julia: Genetic engineering affects us physically in many different ways. It also affects the environment. And from what I've read, genetically engineered food is everywhere. You can't avoid it.

Ronnie: Not if you eat in a restaurant, eat fast foods, shop in a grocery store, or allow your child to eat school lunches. You'll definitely encounter genetically engineered foods in those places. It is in all processed foods. If you are eating any processed foods, then you're eating genetically engineered products. It's in cotton oil, 75 percent of soybeans, and 50 percent of corn products, potatoes, squash, tomatoes, and canola.

Recombinant Bovine Growth Hormone, or rBGH — now found throughout our milk supply — is the result of genetic engineering. It causes cows to produce huge quantities of milk. It also causes mastitis, an infection of the udder. Then the cow is treated with antibiotics to combat the infection. So unless it's organic, one consumes hormones, pus, and antibiotics in milk.

Julia: Can you list a few of the brand names or large companies that use genetically engineered foods?

Ronnie: Starbucks, Kraft, Coca-Cola, Hershey, McDonald, Campbell Soup, and Proctor & Gamble use them almost exclusively.

But people really don't want GE foods, and so some companies are changing their policies. General Mills and Frito-Lay, for example, have begun to use non-GE foods.

Julia: A few of the food products mentioned in your book included corn chips, oatmeal, salad dressing, chocolate, and taco shells. I wouldn't want to buy these products if they contained genetically engineered ingredients — but not all foods are labeled. . .

Ronnie: No, genetically engineered foods are not generally labeled. Consumers have repeatedly asked for labeling. The public has been totally behind the labeling effort, a full 90 percent. It hasn't happened because the large companies know that people will avoid buying their products if they label them as genetically engineered.

There is a statewide ballot this year in Oregon asking for labeling of GE foods, and it will probably pass. If it does, then there is a chance it will happen in other states.

Julia: I've heard that Europe and other countries don't want to consume genetically engineered foods.

Ronnie: That's correct. GE foods have been banned in Europe. Other countries don't want to buy our food if it has been genetically altered.

Julia: And genetically engineered foods have been proven to adversely affect our health?

Ronnie: The main effect is on the gut. Many digestive disorders are caused by GE foods. There are clinical and subclinical allergies caused by GE soybeans and by the pesticides in soybeans, cotton, corn, and canola. GE foods also cause weight fluctuations and behavior problems. And there is an increased cancer risk from the hormones used with cows.

Probably most disconcerting is Dr. Pusztai's research. He spliced potatoes with a viral promoter, Cauliflower Mosaic Virus (CaMV), that has been spliced into nearly all GE foods and crops. Then he fed the potatoes to rats. The potatoes damaged the rats' vital organs and immune systems. More

seriously, they caused a severe viral infection in the rats' stomachs and intestines.

Essentially, it's a giant genetic experiment in which we are unwilling volunteers. We don't know how genetic engineering will affect us. Genetic manipulation can increase the level of natural plant toxins or allergens in foods in unexpected ways. And it's not regulated, so we won't know we've been damaged until after we ingest the food.

Julia: What's in the genetically altered food? How do they create it? My understanding is that the DNA is like a computer in the nucleus of the cell, and that the entire program is changed through splicing in bacteria, viruses, and proteins.

Ronnie: That's correct. Genes from bacteria, viruses, and other living organisms are spliced into the cell, thus changing the genetic program. Gene engineers are changing everything, with little or no regulatory restraints. Biotechnology corporations are becoming architects of genetic life.

The spliced genes are from non-related species — combinations that would never occur in nature. Also, the gene-splicing capability is crude and unpredictable. It can give birth to an organism that is new and "foreign," and that's part of the danger: Plants cross-pollinate with other plants and exchange the DNA code, so in that way the DNA is being permanently altered. We don't know if the strains will die out or if they will instead become stronger and eliminate the existing gene pool.

Genetic engineering also involves transplanting and splicing genetic material across species barriers. Molecular biologists permanently alter genetic codes, not only between species, but between plants, animals, and humans. Some field experiments have included vegetables spliced with scorpion genes, cows that produce human breast milk, and potatoes with jellyfish genes.

Those were just field experiments. I'm more interested in the genetically engineered foods and their long-term effect.

Julia: Okay, let's talk about agriculture. I grew up on a large commercial farm, and I knew that hybrid seeds were used because they had larger yields. But I wasn't aware of the large farms using GE seeds. When did this begin to happen?

Ronnie: The genetically engineered foods were introduced about ten years ago, in 1992. Most soybeans, corn, cotton, and canola are genetically engineered now. There are about 80 million acres of GE crops being grown. Sixty percent of soybeans, 38 percent of corn, and 50 percent of canola, for example, are grown now from GE seeds.

Monsanto is one of the major companies doing this. Their director of communications states that Monsanto "should not have to vouchsafe the safety of its food products"! Dow, Novartis, DuPont, and Aventis sell GE seeds, also.

The big companies came up with some great myths about GE seeds. These plants would feed the world with incredible yields. They said that the foods would have increased nutritional value. Not true: They actually have less nutritional value than conventionally grown foods.

GE foods were said to reduce the need for pesticides and herbicides — but only organic farming methods can do that. The yields and prices were going to be higher, but in fact, yields are not higher, and prices are lower. And the afterlife of these plants, after they cross-pollinate with other plants, is not known. None of the hype is true.

Julia: Cotton, corn, and soybeans are about the only crops that a commercial farmer can still make money on today. I think the companies that produce the seeds also produce the pesticides and herbicides. Don't they make more of a profit if the farmer has to use more chemicals?

Ronnie: That's right. GE foods are all about big business. It's all about money and not about the consumer. It's good business for them to market more pesticides and herbicides. It's biotech. None of this should ever have happened.

Julia: Tell me about the pesticides and herbicides. What does your research show?

Ronnie: One example is *Bacillus thuringiensis*. Bt is a natural biopesticide that repels potato beetles, corn borers, and cotton boll weevils. It naturally breaks down in sunlight, and is used sparingly by organic farmers. Bt genetically engineered seeds were designed to continually manufacture the toxin. But Bt in GE foods remains as a residue on the plant. It also leaches into the soil and pollutes the soil. Tests show that Bt eventually causes the very pests it repels to turn into "superpests": insects that are Bt resistant. This makes it impossible for organic farmers to have a natural biopesticide to fight infestations.

That's just one pesticide. There are plenty more.

Julia: These "things — genetically engineered materials — can't be tamed or killed." That's a quote from your book. How does that differ from conventional crop breeding? What exactly do you mean that they can't be tamed or killed?

Ronnie: The genetically engineered plants cross-pollinate with other plants, so the gene pool becomes mixed in ways that would never occur in nature. We don't know what the end result of this kind of tampering is going to be — how long the gene mutations will continue. It's the same situation as with the half-life of nuclear power plants: You can close the power plant, but the toxins from the nuclear waste go on and on.

Genetic engineering also threatens bio-diversity. Canola is one of the worst case scenarios. You can't grow organic canola. It's impossible now. The gene pool has been ruined, and the widespread contamination and genetic pollution are

what caused that to happen. "Frankenfoods," we call them.

Julia: Our farm is in trees now, because I don't want to expose my children to the chemicals needed for commercial farming. Also, that type of farming harms the earth. But organic farming is very labor intensive. I'm not sure how you can change a commercial farm over to organic. I'm interested, though. Do you have thoughts on this?

Ronnie: Many people like yourself who have grown up in farming families don't want to change to organic methods. It's not particularly lucrative now to do that, but as you said, the herbicides and pesticides are dangerous. Research shows that our future farmers will be immigrants, and they will farm organically. It is labor intensive, and it's hard work, but it can be done. We're going to have to move toward organic farming. It's the only answer.

Julia: What is the best way to deal with genetically engineered foods in the present?

Ronnie: On the individual level? Eat only organic foods. If you shop at a supermarket, buy only organic foods. If you live away from metropolitan areas, form a food co-op from which you can buy organic foods.

Find a way to buy wholesale to reduce the expense. I do this. Organic food is not particularly available in Minnesota, but I belong to a co-op that was formed here for that purpose. You can create a buying club for the products. This is what we do. I think if we can make the effort, then you can do it too.

We should look at the grocery stores as voting booths. What we buy becomes our vote for what's going to be in the grocery stores of the future. People in the United States spend a hundred and twenty billion dollars per year on fast food and only a little over eleven billion on organic food. The organic food market is growing, but compare those numbers.

If you shop in a supermarket, you should buy foods that are labeled organic or non-GE and, by all means, buy rBGH-free dairy products. I think buying organic dairy is really important.

We also need to change the way we live. People are losing their cooking skills. I'm not sure I like the new healthy organic fast foods and TV dinners. In Europe, there is an emphasis on meals that are well rounded and well prepared. We need to have that emphasis.

It's about changing our entire attitude about food: taking time to cook, taking time with the family. These things are important.

Increasing awareness also is important. On the group level, you can communicate this information to friends and help to create a bigger market for organics. You can write to your legislators.

Julia: What about the use of "heirloom seeds." What are those, and how can food growers obtain them?

Ronnie: At present rates of extinction, as many as sixty thousand plant species, or one-fourth of the world's total, may be lost or endangered within the next fifty years. Heirloom seeds are open-pollinated varieties of seed that protect the diversity of plant life on Earth. Many of our traditional and heirloom seeds came from Europe and indigenous peoples. The seeds preserve genetic material for domesticated crop plants (see [Seed Banks](#)).

Julia: Is there anything else you would like to say about genetic engineering and agriculture?

Ronnie: I'd like to say that the last fifty years in farming have been a terrible experiment. We have done horrific damage in public health through pesticides, herbicides, and genetic engineering.

There is unknown pollution to the gene pool through genetic

engineering. If we kill the gene pool, then we won't have any varieties to grow new crops. For example, in 1973 the corn blight seriously impacted the world's corn harvest. Then they found the original corn, with its important genetic makeup, in Mexico. Now, the big companies are growing genetically engineered corn in Mexico, and if that cross-pollinates with that gene pool, we'll lose it.

On the plus side, there are only four countries in the world currently cultivating GE foods. Unfortunately, the United States is one. The other three are Canada, China, and Argentina.

Julia: And the solution. . . ?

Ronnie: If we compare conventional farming with organic farming, we see that the only true solution is to make the move to organic farming.

Organic farming works with the climate changes, builds the earth, and promotes biodiversity. This is the direction in which we need go. Genetic engineering versus commercial farming should never have happened.

By supporting organic farming, we can move into a future that is better for everyone. This used to be the way my grandfather — everyone — farmed, and it's been lost in the past fifty years. This is occurring slowly, but it's the food movement of the future.

Seed Banks and Heirloom Seeds

We interviewed Steve Peters about seed banks, which are depositories for large collections of open-pollinated, or heirloom, seeds.

At Seeds of Change, for example, Peters cultivates more than fifteen hundred varieties of heirloom seeds (see [Seeds of Change](#)). The seeds vary from more than six hundred catalog selections to a smaller,

botanical collection containing selections from different species. The botanical collection is mainly varietal — in other words, it represents varieties of plants within species more than it does different species.

Peters said that there were two methods of promoting seed diversity: growing the seeds in the natural habitat, and growing seeds in another climate or location. Seed qualities such as hardiness, flavor, and vigor can be bred from one generation of a plant to the next.

Hybrid seeds are owned by big business. "Hybrid seed is promoted mainly because of the company's proprietary rights," Peters says. "It's about the money. Seed saving is a labor of love and passion, with little profit. But there is a very small underground movement toward seed saving and farming the way it should be."

Saving, buying, and exchanging seed helps to protect the Earth for future generations of inhabitants.

For more on heirloom seeds and an understanding of our current knowledge about plant consciousness, see also [The Secret Life of Plants](#).

Ronnie Cummings, current national director of the Organic Consumers Association, has been a public interest activist since the 1960s and is heavily involved in the campaign around sustainable agriculture. He is the author of *Genetically Engineered Food: A Self-Defense Guide for Consumers*.

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Steve Peters is seed procurement and seed development manager for Seeds of Change, whose website is at SeedsOfChange.com. Peters can be reached by email at Steve.Peters@effem.com and by phone at 505-438-6507.

Here are three more links for heirloom seeds: VictorySeeds.com, Sheffields.com, and HomeHarvestSeeds.com.

[Top of Page](#)

[Print Version](#)