



Harmony Valley Farm

Producers of Fine Organic Produce & Beef

An Update for Our Community Supported Agriculture Members - Since 1993

Twin Cities, Madison & Local Edition

Genetic Engineering: What Is It Anyway? by Andrea Yoder

The biotech industry describes genetic modification of plants and animals as a precise science that is an extension of natural breeding. They reassure the public that GMOs are safe and are the answer to feeding the world. However, genetic modification is not a precise science. It is not the same as natural breeding and reliable impact assessment studies and research have not been conducted or reported truthfully to support the safety of these crops.

We grow some of our own seed for several of our crops. When we are deciding which plants to save seed from, we select those with desirable characteristics and traits. For example, if we are saving pepper seeds, we choose fruit uniform in shape with good color and flavor. We also look at the plant's stature and choose those with good vigor, high yielding, and signs of disease resistance. We improve our crop by selecting plants with desirable characteristics and reproducing them the next year. Genetic science can help plant breeders do more precise breeding by looking at the genetic map. If they are able to identify the gene responsible for a desirable trait in a plant, they can cross that plant with another in the same species and evaluate the genetic makeup of the offspring to see if the gene was passed on. This use of genetic science is drastically different than genetic modification which forces transfer of genetic material and crosses species lines.

In nature, organisms evolve over the course of thousands of years. Dissimilar species do not cross-breed. Nature has developed its own intricate system for protecting cells and safeguarding them against dangerous changes in their genetic makeup. Genetic modification is not natural evolution, it is intrusion.



No GMOs here!

George Wald, a Nobel Laureate was quoted as saying, "It (genetic engineering) places in human hands the capacity to redesign living organisms, the products of some three billion years of evolution." The "science" of genetic modification was originally based on the premise that one gene writes the instruction to make one protein responsible for a specific trait, characteristic or function. We now know that one gene can encode many different proteins.

In genetic modification, a desirable trait is identified in one organism. The gene that expresses that trait is extracted and not precisely inserted, but is literally blasted into the host cells. It is happenstance whether or not the foreign gene will even make it into the cell. One way to determine which cells have the foreign genes is to attach an antibiotic resistant marker (ARM) gene to the foreign gene. After the foreign genes are blasted into the cells, the cells are treated with lethal doses of antibiotics. Cells that have the ARM gene will survive, all others perish. There is concern that ARM genes can be transferred to other organisms. In particular, ARM genes in GMO corn could be transferred to gut bacteria in a human who ingests the corn. Thus, antibiotic resistance is built into our own genetic makeup.

There are many complex activities, checks and balances, occurring within a cell to protect its genetic makeup. When a foreign gene is

blast into a cell, it can interrupt the sequence of the host DNA which messes up the normal function of the cell and results in changes to the proteins the cell is supposed to make. Within a cell, there are times when a gene may be "silenced" so it doesn't produce proteins. When foreign genes interrupt a host cell, genes are sometimes turned off that should not be, or genes that should be silenced are activated. Either way, the cell no longer functions normally.

Another genetic function involves "code scramblers" which receive an order from the gene telling it what protein to make. It takes the order and rearranges the RNA in the cell to build the ordered protein. When the code scrambler starts rearranging unfamiliar foreign RNA, the results are unpredictable. There are also "hitchhiker" molecules that genes pick up depending on where they are, such as sugars, lipids, phosphorus, etc. For instance, the same gene could be in the leaf and the root of a corn plant. In the leaf, a molecule of sugar may attach to the gene and in the root, a molecule of phosphorus may attach to the gene. The presence of the hitchhiker molecule may cause the gene to function differently in each location. It is unpredictable to know how hitchhikers may affect the function of a foreign gene in different parts of the organism. Another built-in genetic tool is "chaperones." For proteins to function as they are intended, they must be folded in a specific way. Chaperones are components of cells that "refold" a protein if it is not right. In doing so, the protein is able to perform its function and the cell is able to protect itself against a "mistake." Chaperones are programmed to refold proteins that are supposed to be made in this cell, but what may happen when the chaperones start refolding foreign proteins is anybody's guess.

Another concern with genetic engineering is the use of “promoter” genes. A promoter gene is made by taking the foreign gene and attaching it to a virus that causes the gene to be dominantly expressed in the cell. One virus commonly used is the Cauliflower Mosaic Virus (CaMV). This can cause a gene to be expressed all the time, which will eventually drain the cell’s battery. Sometimes it will turn on dormant viruses or create new viruses.

The negative health consequences of GMOs to humans, animals, and plants are very real problems. There are reports from farmers that, when given a choice to eat GMO or non-GMO grain, animals choose non-GMO. In the Phillipines and India, there have been reports of people having allergic reactions to pollen from GMO corn and cotton. Farmers have reported sterility in animals fed GMO grain. In lab tests, rats fed GMO corn developed kidney inflammation, liver and kidney lesions, and other health problems. We are essentially being used as lab rats for the biotech industry.

These reports make you stop and think, but where is the proof? The unpredictable changes that may occur in a GMO cell are not fully understood and have not been adequately researched and evaluated. Changes to the genetic makeup of DNA in GMOs may be the cause of new proteins and viruses that nature has not evolved to deal with. They may be the cause of allergies, cancer, changes in nutrient value, changes in the cell’s ability to function properly, and many more problems. As an example, in 1989 people around the country started experiencing health problems later found to be attributed to an L-tryptophan supplement made from an unstable GMO bacteria. Despite an estimated 80-125 deaths, the CDC stopped monitoring these reports and it wasn’t until 1991 that the FDA finally recalled most forms of L-tryptophan. We may be experiencing health problems right now that could be related to GMOs. At present, any research about the safety or risks of GMOs has been covered up, misrepresented, altered, or has not been conducted.

Unfortunately, it will now be a long process to prove whether or not there are health issues attributable to GMOs.

Rest assured that all the produce we grow here at Harmony Valley is GMO free.

Baked Carrot Oven Fries

Enough carrots to satisfy your crowd, washed, trimmed
Extra Virgin Olive Oil
Sea Salt

-Heat oven to 375F

-Cut each carrot in half lengthwise. Toss the entire bunch in a bowl with a couple glugs of olive oil. Arrange cut side down in a single syer on a baking sheet and sprinkle generously with salt. Bake for 30 minutes or until carrots are golden brown where they touch the pan.

-Serve with Chipotle Orange Dipping Sauce

Chipotle Orange Dipping Sauce

4 oz organic tofu

1/4 cup orange juice

Quick squeeze of lime

Scant 1 tsp adobo sauce from a can of chipotle chiles

1/2 tsp fine grain sea salt

-Pureé all ingredients with a hand blender, taste and adjust for seasoning.

Check out www.101cookbooks.com for beautiful pictures of this recipe and many more!

BEEF AVAILABLE FOR FIRST DELIVERY IN MAY!!

We are all anxiously awaiting the official start of the CSA season with the first delivery in May. In addition to kicking off the 2008 season with a box of tasty vegetables, the first delivery in May will also be our first Beef delivery of the season! Just imagine all the tasty spring and summer meals you could enjoy.....*teriyaki sirloin steak salad atop a bed of spicy arugula; beef stir-fry with sugar snap peas and scallions; grilled burgers topped with juicy slices of fresh tomato, sweet onion and Boston lettuce; T-bone steak topped with caramelized onions accompanied by roasted herbed red potatoes.*

When you purchase Grazier’s organic beef, you are buying more than a cooler of meat. Our cattle come from a closed herd of certified organic Angus cattle originating at Deer Run Farm in Coon Valley, Wisconsin. We know the quality of an animal’s life and the quality of their food source have a direct impact on the flavor and nutritional value of the meat they produce. This is why we choose to rotationally graze cattle on certified organic, mineral rich pastures to allow them to live peaceful, healthy lives. We feed a small amount of certified organic grain supplement to produce a lean but tender and tasty meat. You can be assured these animals are raised respectfully with no hormones, antibiotics, or chemical parasite treatment.

We offer a variety of options for you to choose from. Visit our website for details on our selections. All purchases will be delivered directly to your pick-up site, freshly frozen, and in a Styrofoam cooler. Summer cookouts and patio parties are just around the corner. Place your beef orders now!

Supporting organic agriculture through your CSA membership is the first step, the first action, in the food revolution!

The next sign up deadline is fast approaching! **Get your forms in by April 1 in order to be entered into the “Dinner Date” drawing!** When you sign up for Weekly Veggies, Summer & Winter Fruit Shares AND the new Cheese Share you could win a dinner prepared by Chef Andrea in your home, on the date of your choice!