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The Global Food Crisis

A Crisis of Quality More Than Quantity

By Paul W. Syltie, Ph.D.

A well-fed person requires adequate food. Our bodies crave to be satisfied with the nutrients that give us sufficient energy and a feeling of well-being, to live abundantly. Yet, multiple millions across the globe are unable to satisfy their basic nutritional needs with the foods that are available to them.

The Quantity Crisis

John Podesta and Jake Caldwell in a *Foreign Policy* article[1] stated that, "There was already little margin for error in a world where, for the first time in history, 1 billion people are suffering from chronic hunger.... The brutal wildfires and crippling drought in Russia are decimating wheat crops and prompting shortsighted export bans. The ongoing floods and widespread crop destruction in Pakistan are creating a massive humanitarian crisis that has left more than 1,600 dead and some 16 million homeless and hungry in a region vital to U.S. national security. These and other climate crises trigger widespread food-price volatility, disproportionately and relentlessly devastating the world's poor."

As a result of production shortages in various parts of the world, the price of wheat has risen 50% since early June of 2010. While wheat prices climb, demand for other essential food crops will increase, driving up costs for consumers. In Egypt and other countries that import Russian wheat — which stocks have been retained in Russia — dramatic price increases, shortages, and unrest may easily occur.

Hungry hands seek provisions in tropical Africa, but the amount of food provided these needful souls is only part of the equation: food quality is just as important.

As recently as March 2007 to March 2008 an even more dramatic food crisis appeared, when global food prices jumped an average of 43%. According to a USAID report,[2] "During that time period, wheat, soybean, corn, and rice prices increased by 146 percent, 71 percent, 41 percent, and 29 percent, respectively, according to the U.S. Department of Agriculture. Rising food prices contributed to a significant increase in food insecurity worldwide, particularly among poorer populations. Approximately 1 billion people — or one sixth of the world's population — subsist on less than $1 per day. Of this population, 162 million survive on less than $0.50 per day.

"Increasing food prices have the greatest effect on poor and food-insecure populations, who spent 50 to 60 percent or more of their income on food, according

See Many Factors Needed, page 2

A Radish Cover Crop?

A Novel But Effective Way to Boost Yields!

By Larry Reichenberger

[Excerpted from *The Furrow*, Deere&Company, Moline, Illinois, December, 2009]

There's a new way for no-tillers to poke holes in soil compaction concerns. The new tool is a tuber—actually thousands of them per acre—growing from forage radishes that are either planted as a cover crop or included as part of a cover crop mixture.

"Their ability to open the soil for moisture infiltration and root growth is amazing," says Dan Forgey, agronomist on the Cronin Farm, near Gettysburg, S.D. "We include them in our cover crop blend—typically planted after wheat harvest—to reduce the compaction caused by the cows we use to graze the crop off. And, we plant the radishes solid on headlands and driveways that get compacted during wheat harvest."

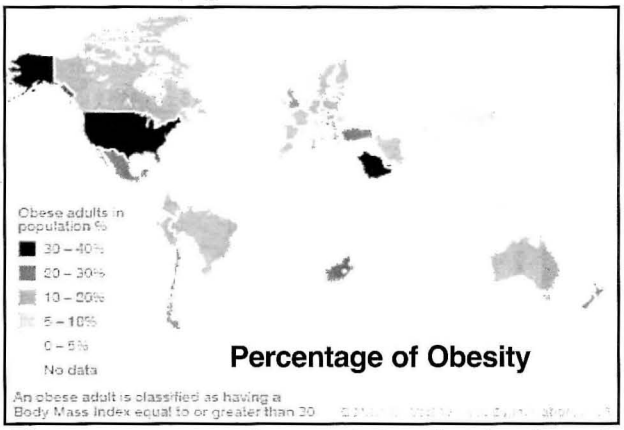
Forgey explains that the tap roots from the radishes can ply three feet deep

See Radish Roots Punch, page 3

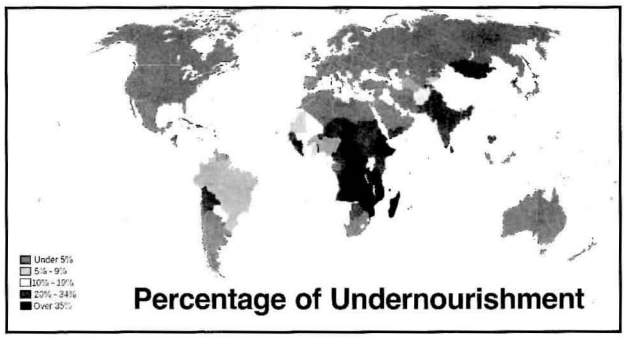
Right: Casey Cronin shows radishes included in the cover crop blend used on his family's South Dakota farm.

Many Factors Are Needed for Health

Continued from page 1



The percentage of the population that is obese is shown on this map. Yellow is least, orange is mid-range, and red is greatest.



The percentage of the population that is undernourished is shown on this map. Burgundy is least nourished, yellow is mid-range, and green is best nourished (but often obese and unhealthy).

to the International Food Policy Research Institute (IFPRI). 'Overall, increased food prices particularly affect developing countries, and the poorest people within those countries, where populations spend a larger proportional share of income on basic food [items].'"

The Quality Crisis

As serious as the global quantity crisis is, an even more insidious and painful dilemma exists in the world: the depletion of food quality due to nutritionally inferior varieties, pesticide and fertilizer applications, crop management techniques, and food processing. Never before in mankind's history has urban man been so far removed from the source of production, unlike his ancestors who usually farmed the land and grew their own household food crops.

Diet is inextricably and intimately tied to health, so a diet of poor quality leads to poor health. Foods grown with the common agricultural practices of today yield the following results:[4]

- **Genetics.** Hybrids are notoriously low in micronutrients, other minerals, and vitamins, but are high in carbohydrates and water, which dilute nutrients. Genetically modified crops contain potent toxic compounds that damage body organs.
- **Pesticides.** Traces of insecticides, fungicides, herbicides, and other chemicals can cause cancer and other diseases, bring on early puberty in children, and cause allergies, heart disease, and other diseases.
- **Crop management.** Tillage destroys soil structure and encourages compaction, limited root and leaf growth, and reduced nutritional value.
- **Fertilizers.** High nitrogen applications lead to diluted plant nutrition. Nutrient shortages or imbalances negatively affect crop quality.
- **Food processing and storage.** Increasing the time from harvest to consumption, heating, fractionating (especially grain flour), refining (such as sugar), adding coloring, flavoring, and emulsifying agents, preservatives, and other chemicals leads to many diseases.

Obesity — Sign of Poor Health

A major indicator of the health status of a population is the degree of obesity. An obese person is defined as someone who weighs 20% more than he should. Such a person has a body mass index (BMI) of 30 or more; the BMI is a statistical measurement derived from one's height and weight.

Note the map of worldwide obesity (above), and its pronounced prevalence in Western countries. This map closely parallels the map of Global Hunger Index (GHI)[5]: where the GHI is high, obesity tends to be low. This effect is in part due to a lack of adequate calories in hungry nations, but poor nutritional value of the diet plays a major role in raising the obesity index of Western nations. Other factors such as a sedentary lifestyle, inadequate sleep, endocrine disruptors (especially fructose, or corn sugar), and drugs also contribute to obesity.[6]

The consequences of obesity are similar to the effects of many other food quality issues: bone and cartilage degeneration, coronary heart disease, gallbladder disease, high blood pressure, breathing problems, cancer, sleep apnea, stroke, and diabetes.[7] Compromises in food quality, together with a high-stress lifestyle, inadequate exercise, too little sleep, and indoor work lacking proper sunlight and fresh air — all so common in today's modern world — will lead to these and many other syndromes all too common within Western society. Ill health chooses no favorites among those who do not obey the laws governing health. A lack of adequate nutritional factors can lead to kwashiorkor (protein deficiency), scurvy (vitamin C deficiency), anemia (iron deficiency), rickets (vitamin D deficiency), goiter (iodine deficiency), beriberi (thiamine deficiency), and many others syndromes.

The Solution

What is the solution to the global food crises? How can an abundance of high-quality foods be assured for nations in every corner of the globe? The answers are simple, but the means to achieve them are more difficult.

The Seven Laws of Health

1. **Eat a proper diet**
2. **Have a positive attitude.**
3. **Get plenty of exercise.**
4. **Sleep adequately.**
5. **Avoid accidents.**
6. **Get lots of sunshine.**
7. **Breath ample fresh air.**

Political stability must be insured so people may live freely, and reap the fruits of their harvests for themselves and for export. The world usually has enough food for all: distribution is oftentimes a problem to areas hit by natural disasters. In times of war, leaders may withhold food from areas of perceived resistance.

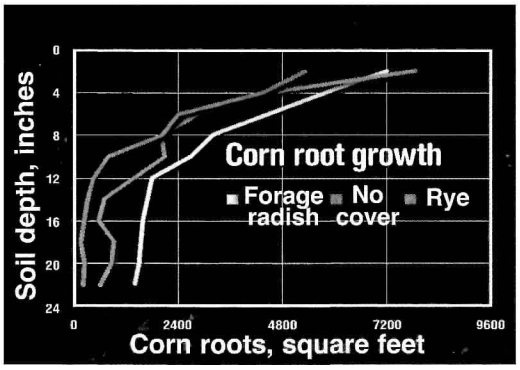
Continued at the bottom of page 3.

Radish Roots Punch Through Hardpan!

Continued from page 1

or more, while the large diameter tubers punch to depths of a foot or more. "The cows eat the tops off the plant, but can't pull the tubers. These quickly deteriorate in the winter, leaving a path right to the subsoil."

Pennsylvania cover-crop advocate Steve Groff is helping spur the run on radishes. Groff, who farms and sells seed at Cedar Meadow Farm, Holtwood, Pennsylvania, has worked with researchers from the University of Maryland since 2001 to fine-tune cover cropping systems. Noting the tremendous potential of forage radishes, he selected a deep-rooting type, trademarked it the "Tillage Radish", and has seen interest spread rapidly among farmers.



Note how forage radishes greatly increase the rooting of. corn grown after the radish crop. The roots "punch holes" through tight soils.

"The cows eat the tops off the plant, but can't pull the tubers. These quickly deteriorate in the winter, leaving a path right to the subsoil."

"Our seed sales are doubling every year," says Groff. "Everybody is interested in tillage radishes—big and small farmers alike. The most frequent comment we hear is that they make the soil more 'mellow.' We don't fully understand it, but the aggressive tap root that 'biodrills' into the soil is a factor. It alleviates compaction, but also cycles nutrients like nitrogen from deep in the soil back to the surface to be used by a following crop."

Groff says corn does particularly well following a radish cover crop. "We've seen yield increases of up to 40 bushels per acre and the average range is 10 to 20 bushels. With soybeans, the yield increase we've seen following radishes is up to 9 bushels."

Research by Ray Weil, soil scientist at the University of Maryland, has found similar yield results and also documented the impact on corn rooting. "We found four times more corn roots penetrating compact subsoil after a forage radish cover crop compared to no cover crop, and twice as many as after a rye cover crop. This improves root access to subsoil water and makes crops more resilient under drought conditions," he says.

There are also other benefits to a radish cover crop. "The nitrogen that is scavenged from the subsoil, and then released to the next crop, is a major factor," says agronomist Forgey.

Weil's studies reveal that, if planted in a timely manner, forage radishes typically take up 100 to 150 pounds of nitrogen. Unlike cereal cover crops—whose residue decomposes slowly and immobilizes N in the spring—forage radish residue decomposes rapidly and releases its N early in the season.

Groff says a radish cover crop also suppresses winter annual weeds and has enabled many growers to eliminate burndown herbicides prior to spring planting. "The dense canopy eliminates weed emergence in the fall and winter before being killed by the frost. Clean seedbeds typically stay weed-free into April," he says.

"Growing a radish cover crop has allowed us to cut our chemical usage in half," adds Forgey.

More Details

A "radish-only" cover crop requires 6 to 8 pounds of seed per acre at a cost of $3 per pound. Cover-crop mixtures typically contain 1 to 2 pounds of radish seed per acre.

"In the Mid-Atlantic and eastern Corn Belt, most growers are planting radish-only cover crops with some even planting in 30-inch rows, then planting corn in the same row—a type of biological strip-till. Others are using 15-inch soybean planters with alternating rows of radishes and Austrian winter peas," says Groff.

Certain radishes can do much for soils besides their feed value for livestock.

"Our only challenge is that the planting window is limited—there's not enough growing season following corn or soybean harvest. Radish cover crops work best if they're planted after summer wheat harvest," he adds. □

Open-pollinated crops usually produce nutritionally superior foods versus varieties plant breeders have developed using hybridization or genetic engineering. Upgrading varieties by selecting favorable nutritional traits should be paramount for any farmer's production program. Moreover, minimum or zero tillage and the use of natural, no-pesticide cultural methods are not only feasible, but in may cases have been shown to be superior to conventional practises.[8]

Finally, it is imperative that people eat foods grown close to their homes to maximize freshness; supermarkets specialize in long shelf-life, and consequently serve inferior quality. Food processing and adulteration, chemicals and refining must give way to pure, nutrient-dense diets so the body may express maximum energy, living fully and abundantly.

The crises of both quality and quantity in food production *can* be achieved. Do we have the will? □

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15-Minute Soils Course

Lesson 32:

Sulfur (S): a Cousin to Nitrogen

Among the 16 or so elements essential to plant life, sulfur is one of the most prominent. It has traits interestingly similar to nitrogen, its cousin of atomic number 7. Soils may contain anywhere from 0.002% to over 5% sulfur, an average for humid-region soils being perhaps 800 lb/acre, and for arid-region soils about 1,600 lb/acre.

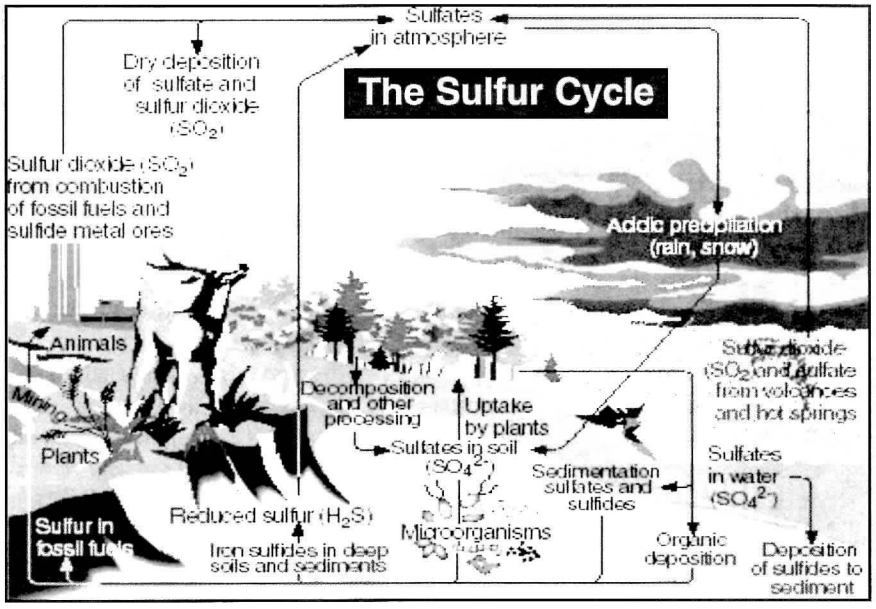
16	32.066
Sulfur	
112.8	444.7
S	

Sulfur occurs usually as gypsum ($CaSO_4$) or pyrite (FeS_2) in mineral form, or as a part of the clay mineral colloid and organic matter. A substantial part of soil sulfur may exist in organic matter, well over 50%, so the loss of organic matter over time through intensive tillage and crop removal leads inexorably to a loss of soil sulfur.

Sulfur mimics the chemistry of nitrogen in the way in which it is taken up by plants and metabolized. Forms present in the soil are SO_3^{-2} (sulfite) and SO_4^{-2} (sulfate), which create ionic salts with calcium, magnesium, potassium and other cations. The element in its dissociated ionic form is somewhat susceptible to leaching, but not so greatly as are nitrates.

Uptake By Plants

Sulfur is taken up by plant roots as SO_4^{-2} (sulfate), and moved into the xylem stream for transfer to the leaves and stems. Once in the leaf cells it is reduced to the sulfide (S^{-2}) form, in the chloroplasts. Most of this sulfur goes through a series of steps involving ATP (adenosine triphosphate) and various enzymes to produce the vital amino acids cysteine and methionine. Amino acids are the "building blocks" of proteins. These two amino acids are especially



Sulfur Compounds and Uses in Plants

Cysteine, Methionine. Up to 70% of total S; essential amino acid in protein formation

Glutathione. 1 to 2% of total S; a transporter of S; helps assimilate selenium; protects against oxidative and environmental stress; neutralizes toxic oxygen radicals; a precursor of phytochelatins; detoxifies harmful xenobiotics

Sulfolipids. 3 to 6% of total S; part of plasmid membranes; helps chloroplast function

Glucosinolates. A sink for excess cellular S; involved in plant-animal and plant-pathogen interactions; produces the flavors of Brassicaceae (broccoli, cabbage, etc.) plants; have anti-cancer properties

Gamma-glutamylpeptides and alliins. In onions, up to 80% of the S of organic-S compounds; likely active as phytopharmaceuticals; enhance flavor and smell

15-Minute Soils Course

important in the structure, conformation, and function of proteins. Up to 70% of the plant's sulfur goes into these two compounds.

Other sulfur compounds are also produced by plants, including thiols, sulfolipids, and "secondary" sulfur compounds such as alliins, glucosinolates, and phytochelatins. These secondary sulfur compounds have been shown to be especially important in plant physiological reactions and protection against environmental stresses and pests. Specific plant groups contain important sulfur compounds highly useful in disease resistance of plants and animals, and in flavor and odor.

Sulfur in the air can be absorbed through leaf stomata and used directly by cells. This is especially true near coal-burning industrial plants that release SO_2 into the air. Unlike nitrate, which requires reduction to be utilized by cells, sulfate can be directly incorporated into certain compounds.

Deficiencies of Sulfur and Their Correction

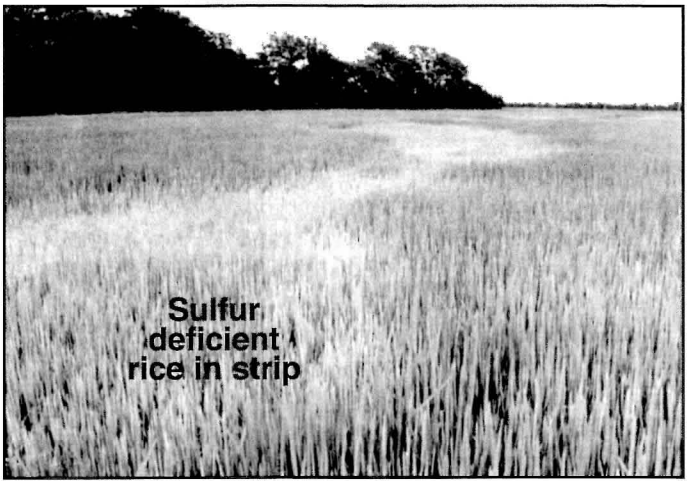
Sulfur deficiency manifests itself somewhat like nitrogen, giving yellowish leaf tissue low in chlorophyll. Plants tend to be stunted, the leaves and stems more than the roots.

Sulfur Fertilizer	S, %
Gypsum ($CaSO_4$)	15 - 18
Ammonium sulfate ($[NH_4]_2SO_4$)	24
Superphosphate ($Ca[H_2PO_4]_2 + CaSO_4$)	12
Potassium magnesium sulfate ($K_2MgO_8S_2$)	23
Potassium sulfate (K_2SO_4)	18

Metabolic processes are inhibited more and more as the deficiency intensifies, and crop yields and quality are reduced. Unlike nitrogen, sulfur in plants is not so easily mobilized

In years past S deficiencies were rare, but with intensive crop removal, the use of purer, high-analysis fertilizers, and reductions in S emissions from coal burning power plants, deficiencies are becoming more common, especially in humid and warm climates with low soil organic matter and native mineral levels.

It is important to test the soil for possible deficiencies, and base fertilizer applications on expert consultation. Build soil organic matter



levels by judicious returns of crop residues and cover crops, and limited or zero tillage. Encourage high levels of microbical activity to insure that plant roots will optimize uptake. Conform to the basic principles of nature, and be assured that your crops and soils will respond by producing higher yields and quality.

See How Much You Learned

1. Sulfur is essential element for plants. T or F
2. Two sulfur-containing amino acids, necessary for proteins, are _____ and _____.
3. Glutathione is thought to a. help assimilate selenium, b. protect against stress, c. neutralize free oxygen radicals, d. all of these.
4. Sulfur reacts in plants somewhat like the element _____.
5. A basic sulfur fertilizer is gypsum. T or F
6. Sulfur for plants can come from soil minerals, the air, and _____.
7. Some typical S deficiencies in plants include a. stunted growth, b. yellowing of leaf issue, c. bolting of the growing point

Answers: 1. T; 2. cysteine, methionine; 3. d; 4. nitrogen; 5. T; 6. organic matter or fertilizer 7. a,b.

Amazing Cures from Vitamin C!

By Paul W. Syltie, Ph.D.
[Condensed from *www.mercola. com*, October 29, 2010.]

The body requires dozens of key food components to live, and many vitamins. Among them is amazing vitamin C, commonly termed ascorbic acid ... though in nature Vitamin C also has several co-factors that empower it.

The near-miraculous power of Vitamin C to cure some diseases is emphasized in the story of Allan Smith from New Zealand, a man conventional doctors claimed "could not survive," after contracting a severe case of swine flu in June of last year. Allan's family refused to accept the hospital's hopeless prognosis and its decision to turn off his life support. Instead, his family insisted the hospital try high dose intravenous (IV) vitamin C.

There seemed to be no hope for Mr. Smith, but there was nothing to lose from alternative treatments. Yet one medical expert after another, throughout this nine week ordeal, refused to administer intravenous vitamin C! They simply "didn't think it would work."

The family ended up enlisting a top legal expert to fight for their right to have vitamin C administered. This case illustrates just how difficult it may be to get a conventional hospital to concede to measures that fall outside the scope of conventional medical practice – even when the suggested treatment is far safer than any drug alternative.

Fortunately, this man's family was both resourceful and insistent on Alan's behalf, whose swine flu was complicated by leukemia. This dramatically worsened his chances of recovery. The family summoned Dr. Samuel Levy, author of several books including *Curing the Incurable: Vitamin C*, and *Infectious Diseases, and Toxins, and Stop America's #1 Killer*, a book about vitamin deficiency and heart disease. He has also written extensively on topics such as dental toxicity issues from mercury amalgams and root canals, vaccine safety, and the clinical uses of vitamin C for infectious diseases.

Dr. Levy went to New Zealand in the middle of the furor following the 60-Minutes program about Allan's case, and gave a PowerPoint presentation, "Vitamin C: The Facts, the Fiction, and

the Law." The Smith family had contacted him for advice, and he referred them to John Appleton in New Zealand. Appleton provided much information on vitamin C and referred the family to the Centre for Advanced Medicine in Auckland.

According to Dr. Levy, adequately dosed vitamin C, to his knowledge, has never failed to cure an acute viral syndrome, and Allan's case couldn't be a better demonstration of the curative power of vitamin C. Not only did the vitamin C cure Allan's swine flu infection, but after spending nine weeks in an induced coma, he walked out of physical rehab after 13 days as opposed to the predicted three months. Even more astounding, today, just over a year later, he also has no further signs of leukemia!

According to Dr. Levy's case report, the vitamin C doses administered to achieve this astonishing turn-around were 25 grams given intravenously on the first day, followed by two 25 gram infusions the next day. At this point, the chest x-ray suddenly showed air pockets in Allan's lungs — a dramatic improvement!

On the third day, Allan received 75 grams intravenously followed by 100 grams IV daily for another 4 to 6 days. A new hospital consultant decided to discontinue the vitamin C treatment at this point, which led to further battles with the hospital administration, but one week later, the intravenous vitamin C (IVC) was restarted, but at only one gram, twice daily. Still, despite this tiny dose his recovery continued.

Once Allan regained consciousness, he started taking 6 grams of oral Lypospheric vitamin C a day, at which point he began to rapidly improve.

According to Dr. Albert Szent-Gyorgyi, "health" occurs when there is an ample flow and interchange of electrons in your cells. Impaired or poor electron flow and interchange equals "disease," and when the flow and interchange cease entirely, your cells die. Oxidation, caused by free radicals in your body, involves the loss of electrons. Antioxidants counter the disease process caused by oxidation (loss of electrons) by supplying electrons.

Vitamin C is a major antioxidant, perhaps the most important "electron donor" to maintain optimal electron flow in your cells. In high doses, vitamin C neutralizes free radicals, helps kill viruses, and strengthens your body's immune system. Taking supplemental vitamin C routinely helps prevent viral infections like the flu. □

Know the Plant-Essential Elements

Learn this little jingle, and the essential elements below the words:

"See Hopkins Cafe managed by mine cousin Clarence Moe and company."

C HOPK NS Ca Fe Mg B Mn Cu Zn Cl Mo Co

Here are the 17 essential elements for growing plants, though cobalt is not always essential, and in some cases other elements such as nickel has been shown to be necessary for some species. These elements are essential for the completion of the plant's vegetative and reproductive cycles. It is likely to be discovered that all of the naturally occurring elements on the Periodic Table are necessary in some way for plant growth and reproduction, though in very small amounts.

Monsanto's Woes Increasing Lately

[Excerpted from a The New York Times, *Oct. 5, 2010, and* mercola.com*]*

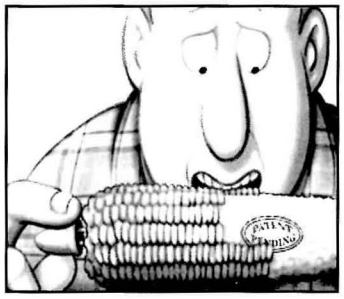
Since the 1980s, Monsanto has become the world leader in genetic modification of seeds, succeeding in at least 674 biotechnology patents, more than any other company — and they showed no signs of stopping ... until now.

It is a remarkable turnaround from last December, when Forbes declared this corporation "company of the year". For example,

- Monsanto's newest genetically modified (GM) product, SmartStax corn, provides no greater yields than older varieties despite costing more.
- Weeds are growing resistant to Monsanto's Roundup.
- The Justice Department is investigating Monsanto for antitrust violations.
- Already, shares of Monsanto's stock have fallen 42 percent since January, and earnings for the fiscal year are expected to be well under projections.

The strongarm tactics of the company account for much of the bad taste that people have come to associate with the company. These include,

- Suing small farmers for patent infringement after Monsanto's GM seeds spread naturally into their fields, contaminating conventional crops
- Secretly discharging PCB-laden toxic waste into an Alabama creek, and dumping millions of pounds of PCBs into open-pit landfills for decades after carcinogenic PCBs were banned in the US
- Being found guilty of bribery to bypass Indonesian law requiring an environmental assessment review for its GM cotton
- In France, being found guilty of falsely advertising its herbicide Roundup as "biodegradable" and "environmentally friendly" despite its being acutely toxic to fish, birds, beneficial insects, and soil organisms
- The South African Advertising Standards Authority found Monsanto guilty of lying when advertising that "no negative reactions to GM food have been reported."
- An EPA scientist said Monsanto doctored studies and covered up dioxin contamination for many of its products, and concluded the company's behavior constituted "a long pattern of fraud."
- In 1999, the New York Times exposed that Monsanto's PR firm, Burson Marsteller, had paid fake "pro-GMO" food demonstrators to counteract a group of anti-biotech protesters outside a Washington, DC, FDA meeting. □



A True Leader Betters Himself!

One of the most difficult things to do in this world is to list one's faults. Few of us can be honest enough with ourselves, or have insight enough, to do it with any depth or breadth. The reason, of course, is that we *fear* our weaknesses. The mind constructs defenses, barriers against our becoming aware of them.

For that reason few of us get far trying to look directly into our own minds. Those who are able to analyze themselves are able to note the irrational things they have done, then look for the reasons.

Most of us are aware that certain of our actions are irrational, but then we justify our actions by blaming others, and thus escape once more from seeing our own faults clearly.

Perhaps nothing is more humbling than deliberately trying to understand our own weaknesses — to try and see ourselves as others see us. There is also nothing more profitable. Those of us who do it with some regularity will be healthier and happier for it.

A leader can best improve the efficiency of his followers by improving himself, or, as one author put it, *"The man who makes himself better makes everyone he comes into contact with better as well."* **From *Bits and Pieces*, August, 1972.**

Statement of Purpose

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