

Farming Can Restore Human and Ecological Health

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Over the past decade, a phenomenal trend has occurred that is changing established concepts in agriculture that in many cases is restoring human and ecological health. The main topics of concern are: global warming, food quality and safety, water and soil quality, and global food crisis. In this essay I will discuss these concepts and how farming can and will make these changes.

An issue that is foremost in the news today is Global Warming, caused primarily by the burning of fossil fuels sending excessive amounts of carbon dioxide into the atmosphere and warming the planet. Global warming is causing climatic shifts, droughts and floods that affect all living systems. It is transforming weather systems, and aiding the spread of malaria and yellow fever from dangerous insects, along with changing growing zones. Global Warming has the potential for devastating results due to loss of land due to the melting of the polar ice caps. The causes have been well documented through the press, but not many solutions have been offered other than the reduction of carbon output. Farming practices offer real solutions that will help reduce carbon in the atmosphere. These practices include the uses of cover crops, composting, and crop rotation. These systems pull carbon from the air and store it in the soil. Research has shown that these practices could sequester nearly forty percent of carbon dioxide in the atmosphere.

Cover crops are temporary plantings that protect the soil from erosion. Common plants used for cover crops are small grains, legumes which absorb atmospheric nitrogen and fix it in the soil, and various grasses. These plants absorb carbon and, when plowed down or killed for a mulch, store carbon in the soil. Composting accomplishes reduction in carbon by taking organic waste material and recycling after it has decomposed then applying it as a soil amendment. Crop Rotation breaks the cycle of disease and insects, while allowing the soil to replenish itself naturally. By leaving organic residue on the surface, carbon storage is increased.

A major concern is food quality and safety. Research has shown that exposure to chemical pesticides contributes to detrimental health effects for all life. Mothers exposed to pesticides while pregnant have had increased blood pressure and diminished ability to copy geometric figures. The solution to the problem is to reduce the use of pesticides. This can be accomplished by growing crops that are more resistant to insects and disease. To accomplish this, farmers use practices, such as increasing soil organic matter and adding natural amendments that build healthier soil which in turn will grow a healthier plant. My family plants our garden according to these principles, which I document as part of my FFA Supervised Agricultural Experience. Many people in the agricultural community believe that genetically modified foods offer the potential to make plants stronger, more resistant to insects and diseases, and more nutritious.

The public is interested in healthier, more nutritious foods. Farmers can fulfill this demand by adopting organic growing practices. Research at the University at Lancaster, England shows that fruit grown using organic methods contain forty percent more nutrients and antioxidants than conventionally raised fruit. In the same study, organic

cheese is shown to have twice as many nutrients and milk has higher levels of vitamin E and between 50 to 80% more antioxidants.

Another concern surrounding food quality is the use of growth hormones and antibiotics in the production of meat. In traditional livestock production, animals are treated with growth hormones to increase the amount of product each animal can produce. Animals are packed into inadequate living spaces and fed foods that, in nature, they wouldn't normally eat. This can cause the meat they produce to carry residue from the antibiotics and the hormones that can alter the development of a human. Eating meat laced with antibiotics can lead to increased resistance to said antibiotic. Growth hormones from meat can cause premature development in children. Many farmers are changing the way they raise livestock by raising them in more natural settings. Mac Baldwin, a cattle farmer in Caswell County, N.C. has done just that. Mac's son and grandsons who were in the Bartlett Yancey FFA grow grass fed beef naturally and ship it all over the country using Baldwin Beef website. Other FFA members have found niche markets such as Justin Klinkner from Cashton FFA Chapter in Wisconsin who grows organic eggs and sells through Organic Valley.

Antibiotics and hormones are not the only problem. The animal waste poses a major environmental problem. Lagoons, open air reservoirs, are used to hold the waste. When one of these lagoons rupture, the waste can spill into water sources, causing massive fish kills. Smell pollution is also a major concern. Property values plummet rapidly if a house is built near a lagoon filled with liquidized hog feces.

There is one solution. Reduction in size and decentralization of the confinement systems would allow the waste to be spread onto nearby fields as a fertilizer, without the

cost of having to truck it long distances. This would also allow the animals to be field raised, leading to the better overall health of the animal and less need for medications. This pasture raised meat is high in omega 3 acids, a chemical necessary to maintain human health.

A long term problem with agriculture has been the degradation of water quality. Conventional farming practices of plowing the soil and leaving it exposed to the elements has contributed to soil erosion and sedimentation of waterways. These sediments can carry destructive pesticides and nutrients that can harm human health when ingested and ecological health as evidenced by the dead zone in the Gulf of Mexico and in the Chesapeake Bay. Fortunately, there are solutions. Through conservation practices these problems are being reduced. Practices such as terracing, strip cropping, no till farming, buffers and grassed waterways, have been incorporated into many farms and have been successful in reducing runoff.

The most significant recent development is the advent of no-till farming. This practice leaves the soil undisturbed and crops are directly planted into the cover crop or plant residue. The conventional system uses herbicides to control unwanted vegetation. The newest system, developed at the Rodale Institute in Pennsylvania, uses a mechanical crimper/roller to kill the cover crop. Both systems provide dramatic reduction in erosion and loss of topsoil. An added benefit to the practice of no till is that, because there are less passes over the field required to plant the seed, energy is saved.

Ground water pollution has caused negative health effects in humans. Generally, this problem is caused by pesticides moving into the ground water and subsequently into wells. Farmers can reduce this problem by the reduction of soluble fertilizers and by

building soil organic matter, which will provide a bond for pesticides and keep it from leaching into the water supply.

World wide health concerns are based primarily on the lack of adequate amounts of food and clean water. Third world countries are unable to produce enough food to sustain its population. Farmers in these nations are unable to purchase inputs for farming systems, such as fertilizers, pesticides and expensive genetically modified seeds. Education about low tech systems is the primary solution. By learning how to harness live stock waste, the wise use of water resources and the incorporation of organic matter and legumes into the soils, farmers will be successful. If farmers understand how to successfully grow crops with low cost inputs, they will more likely be able to build a sustainable agricultural system.

Changing farming practices are restoring human and ecological health; However, the transition is slow to be adopted. The public is driving the demand for change. People want cleaner and safer foods, better water quality, and a healthy environment. Farmers can supply these changes with modifications to current agricultural systems. The changes will make farming more sustainable. These changes clearly suggest a world of opportunities for innovative farmers.

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