

## Food Choices and the Environment

*by Dale Lugenbehl. Mr. Lugenbehl teaches philosophy at Lane Community College, Eugene, Oregon.*

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Many people adopt a plant-based diet out of concern for their health or from a desire not cause animal suffering. However, often people do not know that their day-to-day food choices have a profound effect on their contribution to environmental damage.

A hundred years ago, there were only one billion humans on this planet. Today, there are 6.4 billion. Our space ship, Earth, has not gotten any larger or better stocked, but we continue to add people with each passing year.

### **Excessive Consumption**

Because of the way we consume, the humans who live here today are effectively much larger than the humans who lived here just a short time ago. Recent research by Bill McKibben is instructive here (see "A Special Moment in History," *The Atlantic Monthly*, May 1998).

The native American hunter-gatherers who lived here 150 years ago used only about 2,500 calories of energy a day to sustain themselves. Almost all of this energy was in the form of food, and a small amount in the form of wood burning. Today, the average global citizen uses 31,000 calories of energy -- still about 2,500 in the form of food; the rest of the energy is derived from burning fossil fuels. 31,000 calories is the amount of daily energy required to keep a pilot whale alive, an animal that is 12-15 feet long and weighs around 6,000 pounds. So not only are there more of us today but, in terms of our ecological footprint, we have become much larger creatures.

Furthermore, that 31,000 calories per day is a global average and includes people living in less developed countries whose energy usage is still quite low. One might ask what the daily energy consumption is for the average U.S. citizen: an astounding 186,000 calories each day. This is the same daily amount of energy required to keep alive a sperm whale, a creature 50 to 60 feet long and weighing 45 to 70 tons -- well over 100,000 pounds.

The U.S. constitutes 5% of the Earth's population, yet consumes 30% of all the Earth's resources used each year and contributes 30% of annual global pollution. If everyone on the planet lived the way we do, it would take four planet Earths to provide the wherewithal (see *All Consuming Passion* by New Roadmap Foundation). Much of this increase in our demands on the environment comes from the way we now eat. This is something we can change now, at the personal level, without having to wait for new legislation in Washington.

## **Use of Land, Water, and Energy in Food Production**

Eating a diet that contains a good deal of animal-derived foods means that we are essentially eating our agricultural crops secondhand; instead of eating the plant foods directly we feed them to animals and then eat their flesh, milk, and eggs. This is an enormously inefficient way to produce food. Consider the following, which may be found in books by Frances Moore Lappé (*Diet For A Small Planet*), John Robbins (*Diet For A New America, The Food Revolution*), and numerous other sources.

According to the USDA, it takes 16 pounds of grain and soy to produce one pound of beef. This is like going to a supermarket, buying 16 one-pound boxes of cornflakes, taking them home, and then eating one of those boxes and flushing the other 15 down the toilet. Obviously, eating in this way is an extremely wasteful practice. If the crops are being fed to pigs, it takes six pounds of edible grain to produce one pound of pig flesh. For turkey, the ratio is four to one, and the ratio is three to one for chicken and eggs. In fact, of all the corn, oats, barley, and soybeans grown in this country, 90% is fed to livestock and only 10% is consumed by humans. A full 50% of all the crops grown in the U.S. are fed to livestock.

**Land:** How much food can be produced from one acre of good farmland? It depends on the food being produced. The USDA tells us that one acre can produce 356 pounds of protein from soybeans, 265 pounds from rice, 211 from corn, or 192 from legumes. As soon as that acre is used for the production of animal-derived foods these numbers drop drastically: only 82 pounds of protein can be produced from milk, 78 from eggs, 45 for meat (the average for all meats), and only 20 pounds of protein if the acre is being used to produce beef.

As a consequence, vastly differing amounts of land are required to produce our food, depending on what it is we are eating. For a person eating the standard American diet -- a mix of animal and plant foods -- it takes 3.25 acres of land to produce one person's food on a continuing basis. However, for someone eating a diet of plants, eggs, and dairy, only 1/3 of an acre is required -- only 10% of land needed to produce a meat eater's food. And for a person eating a totally plant-based diet, only 1/6 of an acre is needed to produce that person's food on an ongoing basis. Only 5% of the land currently devoted to food production would be used to produce our food if we all ate an all-plant diet. This means only 5% of the fertilizers, 5% of the pesticides (assuming we continue to use them) would be needed, and that much of the land now under cultivation could be returned to forest or grasslands.

**Water:** The story is similar in regard to water. Animal-derived foods require much more water than plant foods. On the average, it takes 2,500 gallons of water to make one pound of meat (much of this coming from irrigation of crops to feed animals). It takes 966 gallons of water to produce just one gallon of cow's milk. On the other hand, plant foods such as wheat, apples, potatoes, etc., are all in the range of 20 to 50 gallons of water to produce one pound of food. When all this is taken into

account, our ability to influence water consumption by dietary choices is huge. To produce food for one person for one day requires 4,200 gallons of water if that person is eating the standard American diet of animal and plant foods. If that person switched to eating plants, eggs, and dairy, their water consumption would drop to 1,200 gallons per day; and eating a totally plant diet would reduce water consumption to only 300 gallons per day. Thus by becoming vegan, one person could save 3,900 gallons of water each day of their life.

Fuel: Lastly, as might be expected, eating food crops firsthand produces a tremendous energy savings. To produce one pound of protein derived from beef requires 20 times as much fossil fuel energy as the same one pound of protein derived from corn or wheat. And protein from beef requires 40 times as much fossil fuel energy as the same amount of protein derived from soybeans.

The really shocking thing about the above information is that it is not controversial among scientists or government agencies; it has been around for more than 35 years. And yet, because most of our information about food comes from the food industry itself, most people are totally unaware of the facts.

### **Deforestation, Water Pollution, and Topsoil Loss**

Not eating a plant-based diet also contributes heavily to deforestation. We think of loss of forests as something that is a concern for tropical rain forests, but the problem is also in the U.S. Relative to when Europeans first landed, the U.S. has lost more than 97% of its original forests and this is not a mistaken practice of our ancestors that has been halted. The rate of deforestation continues in this country at the rate of about one acre every five seconds. We may think that this forest is being lost to urban development, and some of it is; but for every acre of forest that is cleared for houses, shopping centers, and roads, seven acres are lost to clearing land for grazing livestock or growing feed for livestock.

Water pollution is also greatly affected by our personal food choices. Animal manure production in this country is over two billion tons annually. This is a difficult figure to wrap one's mind around. However, 2.0 billion tons of sewage is equivalent to the sewage that would be produced by two billion people -- this is approximately seven times the present population of the United States. Imagine seven times the present population of this country simply dropping their sewage on the ground -- no toilets, no sewage treatment plants. It should not be surprising, then, that the contribution of livestock to water pollution is 10 times that of the human population and three times that of all industry (oil, coal, steel, manufacturing, etc.) combined.

Topsoil is what keeps us all alive; it is that uppermost layer of the Earth, only a few feet thick or less, composed of organic material and microorganisms in which all plants grow. Two hundred years ago, most of the croplands in the U.S had at least 21 inches of topsoil. Today, it is down to six inches, and we are losing about an inch of topsoil every 16 years. Of this topsoil loss, 85% is directly associated with the

raising of livestock.

### **Bioregionalism, Whole Foods, Organic Agriculture**

Eating a plant-based diet is crucial for minimizing negative environmental impact. Also very important in this regard are bioregionalism, whole foods, organic food production, and minimal packaging. Bioregionalism means obtaining the things that support our lives in the local area that we live. Alan Durning (*How Much Is Enough?*) notes that the average bite of food on a U.S. plate has traveled more than 1,300 miles to get there. Obviously, a person living in the Pacific Northwest does a lot less environmental damage eating apples in season than someone who consumes South American grapes in January (25% of the grapes eaten in the U.S. are grown in Chile).

Bananas, coconut, chocolate, pineapple, and coffee are all crops that are shipped thousands of miles and contain huge amounts of embodied energy and pollution. The ultimate in bioregional food production is, of course, a backyard garden -- no shipping, no trip to the store, no packaging, it's fresh and you know exactly how it was grown.

In a similar fashion, foods that are whole and unprocessed -- a baked potato vs potato chips or whole wheat berries vs white flour crackers -- also require much less energy and release much less pollution in their production. If your food is also organic, clearly fewer toxic chemicals are released into the environment so that you may have something to eat each day. It should also be kept in mind that nonorganic agriculture requires much higher fossil fuel inputs -- pesticides are made from petroleum, and synthetic fertilizers are made from natural gas.

Lastly, if the foods we consume are bought in bulk, even less environmental damage is brought about -- instead of buying conventional cereal (plastic bag inside of a colored-ink-saturated box) we can buy rolled oats (a whole food) in a 25- or 5-pound brown-paper sack.

People may wonder whether anything a single individual does can really make a difference. The reality is that each of us does make a difference every day -- the only question is, what kind of a difference will we make?