Food, Health and Survival

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[The final version of this, with references, can be read in Pat's book, *Plan C: Community Survival Strategies for Peak Oil and Climate Change*, New Society Publishers, 2008.]

The application of fossil fuels to our food system has affected not only how we grow food but also what we grow, with disastrous results for the planet. Our major grain and oil crops, along with hay, are transformed into foods high in fat and artificial sweeteners and low in nutrients. Fresh, diverse whole foods that were the basis of our pre-industrial diet are sparse in today's highly processed foods.

It is important to understand the negative effects of the American diet and to analyze the wide variety of plant food crops that are available as options to corporate foods made from corn, white flour and soybeans. The relationship between the acreage of food and feed harvested and the food eaten was discussed in the last paper. Now we will look at what we eat, who manufactures our food, the consequences to our health and the environment, and what to do about it. Transitioning to a low-energy diet could be the most important way to save the planet.

Analyzing the American Diet

To fully understand America's diet, we need to know what foods are consumed, measured in pounds. Equally important are the number of Calories obtained from each of the foods (Calories per pound).

Calorie Intense Foods	**Pounds**	**Nutrient Intense Foods**	**Pounds**
Dairy Products	591.8	Vegetables	411.6
Caloric Sweeteners	141.5	Fruits	274.3
Red Meat	111.9	Flour and Cereal	192.3
Fats and Oils	93.7	Nuts	9.9
Poultry	72.6	Beans and Legumes	7.0
Eggs	33.0	Other	24.0
Fish	16.5	**Subtotal**	**919.1**
Subtotal	**1,061.0**		

To analyze them I have divided foods into eight groups and subdivided those into two classes – Calorie foods and nutrient foods. Calorie foods are those that typically (but not in all cases) provide more Calories but proportionately fewer minerals, vitamins and phytochemicals. I have sub-divided these into three categories, *meat-milk-eggs* (animal products produced mostly from soy and corn feeds); *fats and oils* (mostly from soybeans); and *sweeteners* (mostly from corn). Nutrient foods are those that provide proportionally more vitamins, minerals, phytochemicals and fiber with fewer Calories and are typically associated with good health. I have sub-divided these into five categories.

Calorie Intense	**Nutrient Intense**
Meat-Milk-Eggs	Vegetables
Fats-Oils	Fruits
Sweeteners	Grains
	Nuts
	Legumes

In the following Tables, I have listed the principle foods consumed in each of the eight categories and included the pounds and calories consumed annually. The most frequently eaten foods are at the top of the table and the least frequently eaten foods are at the bottom. Each entry also includes the percent of pounds and calories consumed. These tables provide a perspective on the distribution of foods eaten by listing the annual per capita consumption in the US.

Caloric Intense Foods

Calorie intense foods include meat, fish, milk and eggs produced primarily from some form of Containment Animal Feeding Operation (CAFO) which convert hay, corn and soybeans into animal products. Other highly processed calorie foods are those made with large amounts of fats and oils, which, along with salt and sweeteners, are key components of manufactured foods.

Meat Milk and Eggs – Animal Products

The US yearly per capita consumption of meat, fish, milk products (including cheese) and eggs is 826 pounds.

	Annual pounds	Cals. / lbs.	Cals. Yearly	% lbs	% cal
Milk Products	591.8	1218	720,920	71.7%	77.6%
Beef	62.9	1332	83,771	7.6%	9.0%
Chicken	59.2	782	46,284	7.2%	5.0%
Pork	47.8	868	41,499	5.8%	4.5%
Eggs	33.0	595	19,650	4.0%	2.1%
Fish & shellfish	16.5	373	6,150	2.0%	0.7%
Turkey	13.4	714	9,563	1.6%	1.0%
Lamb	0.8	1109	887	0.1%	0.1%
Veal	0.4	945	378	0.0%	0.0%

These foods contain on average 938 Calories per pound and provide 13.2% of a person's yearly total calories (188,532 Calories). The top four foods – milk products, beef, chicken and pork - provide 86.4% of the pounds consumed and 91.6% of the calories consumed in this category.

Fats and Oils

Yearly US consumption of fats and oils is 95.3 pounds per person. Oils contain 3,892 calories per pound and provide 370,777 Calories per capita per year, 26% of our total calories.

Total lbs.	Total lbs %	Cal / lbs.	Cal (lbs.) Yearly	% cal

Salad Oil	40.8	42.8%	4018	163941.8	44.2%
Shortening	32.6	34.2%	4018	130992.7	35.3%
Canola	5.4	5.7%	4018	21658.0	5.8%
Margarine	5.3	5.6%	3205	16984.1	4.6%
Butter	4.6	4.8%	2268	10433.6	2.8%
Tallow	4.0	4.2%	4100	16400.0	4.4%
Olive Oil	1.8	1.9%	4018	7152.4	1.9%
Lard	0.8	0.8%	4018	3214.5	0.9%
Total Pounds	**95.3**	**100.0%**		**370777.2**	

The top two oils are Salad Oil (mostly from soybeans) and shortening (also from plants) which provide about 80% of the calories and weight. These oils are a key component of manufactured foods and are partially responsible for the increase in obesity.

Sweeteners

The yearly per capita consumption of sweeteners in the U.S. is 140.9 pounds. There are 1,490 Calories in each pound of sugar. The percent of total yearly calories obtained from sweeteners is 14.8%.

	Total lbs.	Total lbs %	Cal / lbs.	Yearly Calories	% cal
Cane and Beet Sugar	61.5	43.6%	1759	108184.1	51.5%
Corn - HFCS	59.2	42.0%	1277	75614.5	36.0%
Corn - Glucose	15.6	11.1%	1286	20067.3	9.6%
Corn - Dextrose	3.3	2.3%	1300	4290.0	2.0%
Honey	1.0	0.7%	1382	1381.8	0.7%
Edible Syrups	0.3	0.2%	1450	435.0	0.2%

The top two sources of sweeteners provide 87% of Calories and 86% of the pounds consumed in this category. With diabetes on the rise, it is obvious that the consumption of sweetened foods and drinks has become a serious national health problem.

Calorie Foods Summary

This class of foods provides most of the calories people consume but less of the nutrients. If these foods are traced back to the fields, we see that about 80% of the acreage is devoted to ~~the~~ calorie intense foods. These crops are the ones that require the most fossil fuel energy. They are also the foods that are most harmful to health, containing high amounts of saturated fats and very little fiber. They provide over half the calories in the average diet.

Calorie Intense Foods Summary

Type	Weight In lbs.	Cal per lbs	Total Calories
Meat-Milk-Eggs	826	1,125	929,025
Fats-Oils	95	3,891	370,812
Sweeteners	141	1,490	209,941
Total	1062	1,422	1,509,778

Nutrient Intense Foods

The words natural, nutritious and nutrient are often used to describe various foods that are considered healthier to eat. A piece of fruit is healthier and more nutritious than a piece of candy made from soybean oil and corn sweeteners. The candy contains substances that are called "empty calories," that is, they contain almost no nutrients but are high in calories. Calories provide the energy to move, digest food and other physical functions but do not contain the minerals, vitamins and phytochemicals which are necessary for the quality of our body's functioning and which also aid our body in resisting diseases and illnesses from colds to cancers to heart disease. The nutrient foods are vegetables, fruits, whole grains (for food – not feed), legumes and nuts.

The most important of these are vegetables. They contain more nutrients than the other types of plant foods. A good diet will include a diversity of vegetables to obtain the most nutrients. Sufficient amounts must be consumed for the greatest health benefits. American's have become less healthy and part of this is based on the kinds and amounts of vegetables eaten, not just the excessive quantities of meat, fats and sugars.

Vegetables

The yearly per capita consumption of vegetables is 411.5 pounds. The average calories per pound from all vegetables are 185 calories. The percentage of daily Calories for all vegetables is 5.3%. Of the 5.3% of total calories that vegetables provide, potatoes provide 2.5% and the remaining 34 vegetables provide 2.8%. Thus potatoes alone provide 47% of the calories from vegetables. Average calories per pound for the other 34 vegetables are 146 compared to the 263 calories for potatoes.

	Total lbs eaten	Total lbs %	Cal (lbs.) Yearly	Cal / lbs.	% cal
Potatoes	134.5	32.7%	35460.4	264.0	46.7%
Tomatoes	89.7	21.8%	7339.6	81.8	9.7%
Sweet corn	26.9	6.5%	10516.6	391.0	13.8%
Onions	22.8	5.5%	4150.3	182.0	5.5%
Head lettuce	22.5	5.5%	1432.1	63.6	1.9%
Romaine& leaf lettuce	12.0	2.9%	927.3	77.3	1.2%
Carrots	11.6	2.8%	2162.8	186.0	2.8%
Cucumbers	10.9	2.6%	742.6	68.2	1.0%
Cabbage	9.5	2.3%	1074.9	114.0	1.4%
Broccoli	8.5	2.1%	1085.8	127.0	1.4%
Snap beans	7.6	1.8%	1063.9	141.0	1.4%
Bell peppers	7.1	1.7%	645.6	90.9	0.8%
Chile peppers	6.0	1.5%	1094.4	182.0	1.4%
Celery	6.0	1.5%	435.9	72.7	0.6%
Pumpkin	4.7	1.1%	558.0	118.0	0.7%
Sweet potatoes	4.7	1.1%	1831.6	391.0	2.4%
Squash	4.5	1.1%	507.8	114.0	0.7%
Mushrooms	4.1	1.0%	414.5	100.0	0.5%

Spinach	3.1	0.7%	322.2	105.0	0.4%
Green peas	2.9	0.7%	1053.6	368.0	1.4%
Garlic	2.6	0.6%	1736.8	677.0	2.3%
Cauliflower	2.2	0.5%	245.9	114.0	0.3%
Asparagus	1.3	0.3%	144.5	114.0	0.2%
Eggplant	0.9	0.2%	95.2	109.0	0.1%
Beets	0.8	0.2%	164.5	195.0	0.2%
Artichokes	0.6	0.1%	130.0	214.0	0.2%
Collard greens	0.6	0.1%	76.5	136.0	0.1%
Radishes	0.5	0.1%	36.8	72.7	0.0%
Mustard greens	0.5	0.1%	56.8	118.0	0.1%
Turnip greens	0.5	0.1%	68.1	145.0	0.1%
Lima beans	0.4	0.1%	209.5	514.0	0.3%
Okra	0.4	0.1%	50.9	141.0	0.1%
Kale	0.3	0.1%	61.6	191.0	0.1%
Escarole	0.3	0.1%	30.6	105.0	0.0%
Brussels sprouts	0.2	0.1%	45.2	195.0	0.1%

The weight of the top five vegetables in terms of consumption - potatoes, tomatoes, corn, head lettuce and onions is 296 pounds, which is 72 percent of the weight and 77 percent of the calories. The weight of the next twelve vegetables consumed is 93 pounds and the weight of the last 18 vegetables consumed is about 22 pounds. The weight of all the vegetables except potatoes is 115 pounds compared to the 134.5 pounds for potatoes alone.

Vegetables are sub-divided into different categories, each category providing different nutrients. One category is starchy vegetables, which include potatoes, lima beans, green peas, winter squash, corn, yams, and sweet potatoes. A second category is that of dark green vegetables, which include spinach, romaine lettuce, broccoli, collards, kale, mustard greens and turnip greens. A third category is deep yellow vegetables, which includes carrots and sweet potatoes. A balanced diet would include choices from each of these categories.

The variety of vegetables measured by government agencies is extensive. However, there are many other vegetables which are not included such as bok choi, eggplant, chicory greens, kohlrabi, leeks, rhubarb, shallots, and turnips. Unfortunately, only a few of the many vegetables available are eaten and not necessarily the most nutritious ones.

Fruits

The annual per capita consumption of fruits is 272 pounds, which provide 64,174 Calories. On average, each pound of fruit contains 236 Calories, almost twice that of vegetables.

Fruit	Total lbs	Total lbs %	Cal / lbs.	Cal (lbs.) Yearly	% cal
Oranges and temples	78.8	28.9%	209.1	16467.4	25.7%
Apples	50.8	18.7%	236.4	12015.8	18.7%
Bananas	25.8	9.5%	404.5	10422.3	16.2%
Grapes	19.1	7.0%	304.5	5824.4	9.1%
Watermelon	13.0	4.8%	136.4	1772.7	2.8%
Pineapple	12.9	4.8%	218.2	2820.2	4.4%

Cantaloupe	9.5	3.5%	154.5	1468.2	2.3%
Peaches and nectarines	9.5	3.5%	177.3	1682.9	2.6%
Grapefruit	7.9	2.9%	136.4	1079.5	1.7%
Strawberries	7.0	2.6%	145.5	1018.3	1.6%
Lemons	6.7	2.5%	90.9	611.7	1.0%
Pears	5.6	2.1%	263.6	1483.7	2.3%
Tangerines and tangelos	3.9	1.4%	240.9	936.2	1.5%
Avocados	2.9	1.1%	759.1	2208.3	3.4%
Limes	2.6	1.0%	136.4	356.9	0.6%
Plums	2.5	0.9%	209.1	526.8	0.8%
Honeydew	2.2	0.8%	163.6	360.0	0.6%
Mangoes	2.0	0.7%	295.5	595.2	0.9%
Cranberries	2.0	0.7%	209.1	420.6	0.7%
Cherries	1.9	0.7%	286.4	551.7	0.9%
Olives	1.3	0.5%	368.2	497.0	0.8%
Papayas	1.0	0.4%	177.3	182.2	0.3%
Apricots	0.9	0.3%	218.2	201.0	0.3%
Blueberries	0.8	0.3%	259.1	203.2	0.3%
Kiwifruit	0.4	0.2%	277.3	122.6	0.2%
Figs	0.4	0.1%	336.4	123.5	0.2%
Raspberries	0.2	0.1%	236.4	52.4	0.1%
Dates	0.1	0.0%	1259.1	153.1	0.2%
Blackberries	0.1	0.0%	227.3	17.1	0.0%

Fruits provide 4.5% of a person's daily Calories - oranges and apples provide 2.0% with the remaining 27 fruits providing 2.5%. There are five fruits, oranges, apples, bananas, grapes and watermelon, which account for 70% of the fruit by weight and 69% by Calories.

Fruits and Vegetables Nutritional Comparison

US vegetable and fruit consumption is not as diverse as might be expected when considering the varieties available. The previous tables show that only a few are eaten in volume and the high volume vegetables and fruits are not necessarily the most nutritious. Table 8 shows the most beneficial vegetables and fruits compared to what is popularly eaten. The more nutritious foods are at the top of the left side of the table. The most eaten foods are listed in the right hand column, the lower number representing the most frequently eaten. Not only are Americans eating far less diversity than is healthy but also the most popular vegetables are towards the low end of nutritional benefits.

Nutritional Density		**Popularity**
What People Should Eat Most		**What People Actually Eat Most**
(highest to lowest)		(highest to lowest
	Rank	
Broccoli	1	Tomatoes
Spinach	2	Oranges
Brussels sprouts	3	Potatoes
Lima beans	4	Lettuce
Peas	5	Sweet corn
Asparagus	6	Bananas
Artichokes	7	Carrots

Cauliflower	8	Cabbage
Sweet potatoes	9	Onions
Carrots	10	Sweet potatoes
Sweet Corn	11	Peas
Potatoes	12	Spinach
Cabbage	13	Broccoli
Tomatoes	14	Lima Beans
Bananas	15	Asparagus
Lettuce	16	Cauliflower
Onions	17	Brussels Sprouts
Oranges	18	Artichokes

Grains

Wheat is the grain eaten most directly in America, followed by corn. Wheat, corn and rice provide 96% of the weight of grains eaten and about 97% of the Calories consumed in this category. 191.5 pounds of grain is consumed annually per person. The average Calories per pound are 1,661. Grains provide 22.3% of the calories in the diet. The top grain (wheat) is 70% of the pounds and Calories consumed. Oats, barley and rye provide only a little more than 3% of food pounds and Calories.

Grains	Total lbs.	Total lbs %	Cal / lbs.	Cal (lbs.) Yearly	% cal
Wheat	134.3	70.1%	1664	223426.4	70.2%
Corn	30.9	16.1%	1659	51265.9	16.1%
Rice	20.4	10.7%	1627	33196.4	10.4%
Oats	4.7	2.5%	1768	8310.5	2.6%
Barley	0.7	0.4%	1568	1097.7	0.3%
Rye	0.5	0.3%	1609	804.5	0.3%

95% of the flour used in the United States today is white flour, which has many valuable components removed during processing. These nutritionally valuable components are used to feed chickens and other animals. Some portion of the nutrient materials refined out of wheat is reintroduced into the flour. But this artificial method does not return all the important nutritional components. Table 10 shows an energy and nutrient comparison before and after processing.

	Whole Wheat	White Unenriched
Calories	400	455
Protein (g.)	16	13.1
Fat (g.)	2.4	1.3
Carbohydrates (g.)	85.2	95.1
Calcium (mg.)	49	20
Phosphorus (mg.)	446	109
Iron (mg.)	4	1
Potassium (mg.)	444	119
Thiamin (mg.)	0.66	0.08
Riboflavin (mg.)	0.14	0.06
Niacin (mg.)	5.2	1.1

Nuts

People in the U.S. eat very few nuts. Of the 10.9 pounds per person eaten each year, 6.7 pounds are peanuts.

Nuts	Total lbs.	Total lbs %	Cal / lbs.	Cal (lbs.) Yearly	% cal
Peanuts	6.7	61.6%	2700	18090.0	61.5%
Almonds	1.0	9.2%	2627	2627.3	8.9%
Walnuts	0.6	5.1%	2973	1635.0	5.6%
Coconuts	0.5	5.0%	1609	868.9	3.0%
Pecans	0.4	3.5%	3141	1193.5	4.1%
Pistachios	0.3	2.7%	2532	734.2	2.5%
Macadamia	0.1	1.0%	3264	718.0	2.4%
Filberts	0.1	0.6%	2855	199.8	0.7%
Others	1.2	11.3%	2714	3337.8	11.4%

Nuts have a high Calorie content, 2,705 Calories per pound. The top three nuts consumed – peanuts, almonds and walnuts provide about 75% of the pounds and calories consumed in this category.

Legumes (Dried beans and peas)

This is a list of the most common legumes (beans) eaten in the U.S. The average calories per pound of beans are 1,566. However, beans provide only .7% of the daily Calories in the U.S. The world average consumption for beans is 3 times the consumption in the U.S. – about 22 pounds per person per year. The top four beans listed provide 66% of weight and calories consumed in this category.

Legumes	Total lbs.	Total lbs %	Cal / lbs.	Cal (lbs.) Yearly	% cal
Pinto	2.8	41.6%	1577	4416.4	41.9%
Navy	0.6	8.9%	1541	924.5	8.8%
Black	0.5	7.9%	1550	821.5	7.8%
Red Kidney	0.5	7.4%	1532	765.9	7.3%
Lima	0.1	1.5%	1536	153.6	1.5%
Dry Peas/Lentils	0.7	10.4%	1605	1123.2	10.7%
Others	1.5	22.3%	1557	2335.2	22.2%
Total	6.7	100.0%		10540.4	

Legumes are a minuscule part of the nation's diet since Americans consume meat for protein. This is far different than in the rest of the world where legumes provide the majority of protein. As noted in the previous chapter (Figure X), 100 grams of beans provides 24 grams of protein while 100 grams of beef chuck provide 18 grams. VERIFY.

Nutritious (Natural) Food Summary

The most nutritious foods are natural high nutrient foods. They come from plants and have not been heavily processed, so they have less calories and more nutrients per pound than

manufactured food. They are more subject to decay and loss of nutrient value with time, so freshness is important. Most (except for dried beans and grains) must be frozen or canned (or stored in a root cellar) to have a shelf life like manufactured foods. There are also less "value added" options for marketing purposes so manufacturers are less interested in natural foods.

Nutrient Intense Foods Summary

Type	Weight In lbs.	Cal per lbs	Total Calories
Vegetables	412	186	76,539
Fruits	272	166	45,152
Grains	192	1,661	318,082
Nuts	11	2,705	29,485
Legumes	7	1,566	10,492
Total	893	537	479,749

Challenging Diversity

The often quoted "30,000 products in the average supermarket" can be broken down into combinations of 7 kinds of meat, 8 kinds of grains, 45 vegetables, 34 fruits, 20 legumes, for a total of about 120 foods. There are many different varieties of each food, such as the different potatoes – red, russet, Idaho, etc. Still the numbers are not impressive. Ten variations of the 120 foods give a number of 1,200, only 4% of the 30,000 created by manufacturers.

The previous tables show the wide variety of plant foods that are available. But consumers do not eat that variety. In each of the categories the actual volumes Americans eat are from the top 3 to 4 foods on the lists. For example, of the 35 vegetables listed, about six provide the bulk of the food. There are over 5,000 varieties of potatoes in the world while there are only a few sold in the U.S.

There are few varieties of other vegetables offered in the marketplace today. For example, 80.6 percent of the varieties of tomatoes have been lost since 1903. The main tomatoe is the beefsteak. The list of lost or rarely grown tomatoes include momotoro, nova, lemon boy, better boy, black krim, early girl, celebrity, yellow roma, charlie chaplin, cherokee purple, milano plum, great white, striped german, san marzano, el paka, stupice, yellow brandywine, mister stripey, brandywine, Dixie golden giant, san remo, yellow ruffles, orange queen, carrot paste, reif red, persimmon, marble white, black crimson, sabarocca, chadwick cherry, sunsweet, black plum, sungold, cascade, green vine, rose quartz crystal, sweet 100, yellow pear, red pear, german stripe, Italian gold, golden Pandora, green zebra, red brandywine, chioggia, marvel stripe, caro rich, ropreco, tappy's finest, pale perfect purple, florida pink, peace yellow roma. Mountain gold, anna Russian, mountain, and orange mandarin.

92.8 percent of the varieties of lettuces have been lost since 1903. Forty-six varieties of corn are no longer grown. 86.2% of apples (over 50 varieties) have been lost to consumers since 1903. Of the 30 US varieties of potatoes that were commonly eaten in the past, most are no longer available. The American diet does not provide variety or freshness. Foods that are healthy are basically secondary while the fattening foods (potatoes, meat, and manufactured foods high in fats and sugars) are at the top of the consumption list.

Corporations and the Food Supply –300,000 Products:

Food manufacturers generate a wide variety of brands from a narrow range of food raw materials. A good example is Phillip Morris, a major producer of cigarettes and manufactured food. The company was renamed Altria as a public Relations move to disconnect themselves from the familiar cigarette name. The following list of brand names represent the foods marketed by Altria (Phillip Morris). Brands are added and removed at times and also may be sold or purchased from other companies, thus this list only represents options at a particular point in time. Only five brands are picked within each category, showing about 85 of the approximately 250 brands and products.

Beverages, Desserts and Cereals:

Beverages - Capri Sun, Country Time, Crystal Light, Kool-Aid , Tang
Coffee - Gevalia , Maxim, Maxwell House, Sanka, Starbucks,
Desserts - Baker's, Balance Bar, Calumet, Certo, Cool Whip
Cereals - Alpha-Bits, Fruit & Fibre, Golden Crisp, Oreo O's, Pebbles

Biscuits, Snacks and Confectionery

Cookies/Crackers - Better Cheddars, Oreo, Premium, Ritz, Cheese Nips
Confectionery - Altoids, Tobler, Creme Savers, Farley's, Gummi Savers,

Cheese, Meals and Enhancers

Cheese - Athenos, Cheez Whiz, Churny, Cracker Barrel, Kraft
Dairy Products - cottage cheese, Breyers yogurt, Kraft dips, sour cream, , yogurt
Meals - Kraft macaroni & cheese, Minute, Stove Top, Taco Bell, Velveeta

Oscar Mayer and Pizza

Meats - Louis Rich, Louis Rich Carving Board , Lunchables, Oscar Mayer
Pizza - California Pizza Kitchen, Di Giorno, Jack's, Tombstone

Selected International Brands

Coffee – Blendy, Carte Noire, Gevalia, Grand'Mère, Kaffee HAG
Powdered Soft Drinks - Clight, Fresh, Frisco, Kool-Aid, Mañanita,
Cheese - Dairylea, Eden, El Caserío, Invernizzi, Kraft Cracker Barrel
Snacks/Confectionery - Aladdin, Artic, Cerealitas, Chips Ahoy!, Club Social,
Convenient Meals - Dairylea Lunchables, Fleischmann's, Magic Moments,

Beer

Miller Lite, Miller Genuine Draft, Miller Genuine, Draft Light, Miller High Life,

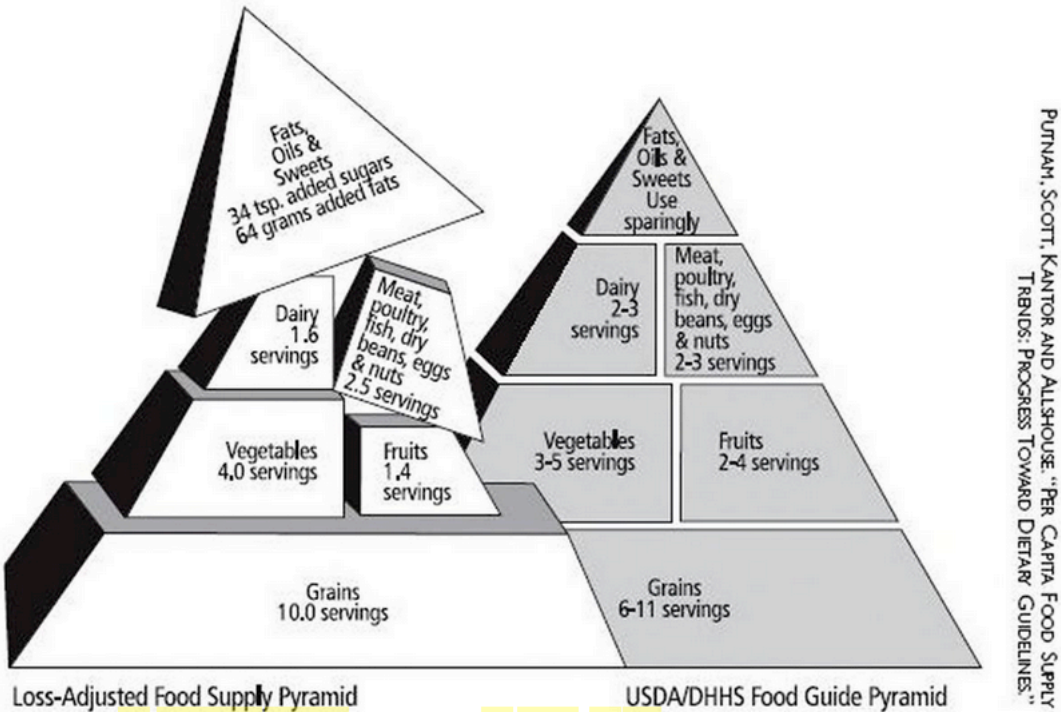
Phillip Morris (Altrea) is only one of the many giant food corporations that determine what Americans eat and thus how healthy we are. Such corporations must continually "add value" to basic foodstuffs, inserting themselves between the farmer and the consumer in order to control the market. By adding numerous layers of food processing and long distance transportation, the corporation takes most of the profit. The farmer makes only a marginal amount and it is difficult for the consumer to easily obtain local, natural, healthy foods.

Governments Role – Spreading Ignorance

Americans are confused about food. Food labeling is a mystery and the language used ~~creates~~ does not provide clarity. Probably the ultimate confusing idea is the Food Pyramid, a construct invented by the United States Department of Agriculture (USDA) to communicate nutrimental information and good dietary practices to the consumer. It actually does the opposite. The

geometric form (a pyramid) used to denote proportions is graphically misrepresentative and the areas of the triangle do not correspond to the "serving numbers" suggested. The definition of "servings" is ambiguous, contradictory and misleading. It is doubtful if one American out of a hundred could clearly explain the concept.

The USDA's recommended minimum servings are calculated based on a 185 lb. middle class Caucasian male office worker and is not adjusted for height, weight, age, activity, sex or state of health. No consideration is given to foods that are fresh, frozen, canned or manufactured. Nor is there any consideration given to conventional versus organic farming. The method of preparation - fried, broiled, grilled, roasted, etc. - is ignored. Manufactured fats, manufactured sugars, and other manufactured foods are not differentiated from fresh whole food. The Food Pyramid assumes that the length or type of storage does not affect the food. There is no direction or consideration given regarding the importance of integrating healthy eating with the modern lifestyle where fully 50-60 percent of meals are eaten outside of the home. There is no additional value assigned to eating fresh vegetables, fruits and grains. Calculating quantities using the serving concept is next to impossible since the USDA allows manufacturers to set serving sizes that are not in concert with the USDA serving sizes. The food pyramid does not communicate the known dangers of eating fatty meats. Figure 1 gives a graphical sense of the degree to which the diet of Americans is seriously out of balance.



The USDA does not protect the health of Americans. That organization's priority is to protect the sales and profits of grocery manufacturers. It also subsidizes the growing of calorie crops like corn and soybeans that are the basis of manufactured food. The USDA's relationship and support of the food industry, at the expense of the citizenry and small farmers, is well known. In practice, food manufacturers must approve of all food labeling information for consumers before it can be released to the public.

Michael Pollen, author of *The Omnivore's Dilemma*, makes the astonishing recommendation that "if you're concerned about your health, you should probably avoid food products that make health claims." He points out that a health claim on a food product is a good indication that it's not really food and food is what humans should eat. Pollen's food advice is threefold - first eat food, not manufactured "food like" products, don't eat too much and eat mostly plants. He suggests that this short advice is the preferred option to the complicated and confusing question of what humans should eat to achieve maximal health. Marion Nestle, author of *Food Politics* and *What to Eat*, has similar advice, bypassing the complexity of the Food Pyramid and the other complex and confusing advice from the USDA. Her short summary is eat less, move more, eat lots of fruits and vegetables. She adds a clarifier "go easy on junk foods." In the broadest sense junk food is the popular term for manufactured food, often those with extravagant health claims on the label.

Governments Role – Subsidizing Manufactured Food

Michael Pollen noted that Adam Drewnowski, an obesity researcher at the University of Washington, wondered why the people who spend the least on food are most likely to be overweight. Drewnoski discovered that the most calories that could be bought for a fixed amount of money are processed foods and soft drinks. For example, one dollar bought 1,200 calories of cookies or potato chips, 875 calories of soda, 250 calories of carrots, or 170 calories of orange juice. In general, processed foods are more calorie intense and nutrient poor than fresh foods, particularly since they include added fats (soybeans), white flour (wheat) and sweeteners (corn). Calories from these kinds of products may be cheap but they are the least healthful foods to eat. Thus people with the smallest budgets must consume the poorer quality, fattening foods. Farm bills once supported prices and limited production but now they support volume production. The result of the policy is that the price of fruits and vegetables between 1985 and 2000 increased by approximately 40 percent while the price of soft drinks (based on corn sweeteners) declined by approximately 23 percent. The reason the least healthful calories in the supermarket are the cheapest is that those are the ones the farm bill encourages farmers to grow. Small farmers and organic farms do not receive government aid. Pollen further notes that the Farm Bill also helps determine the kind of food in school lunch programs. In addition, the bill affects the landscape and environment of the country, either setting the priorities for land preservation and recovery or setting them for maximum production with maximum use of fossil fuel chemicals. The Farm Bill affects the health of soil, the purity of water, and biodiversity.

Although some recognize the real cost of artificially cheap food measured in poor health, degraded land, tormented animals, and the loss of family farms. Government policies are needed that make the most healthful calories "price competitive" with the least healthful ones. Policies are also needed that encourage schools to provide children fresh food from local farms. New policies that focus on long-term land preservation and the health of soil and water supplies are needed to replace those that support industrial agriculture based on commodities. A Farm Bill that focuses on health and food quality and support of family farmers is desperately needed.

Evaluating the Results

Possibly the most succinct comment to set the context for evaluating our food system is one by David Pimentel, who points out that the world population is 6.5 billion people and 3.7 billion of those are undernourished. Since globalization is the rule of the day and agriculture is one of its key industries, this statement is a damning one. Inequity in food availability has grown during the decades of the industrialization of agriculture. Pimentel notes that the average person in the U. S. consumes 2,200 pounds of food in a year and consumes 3,600 Calories (actually kilocalories) per day. However, humans only need 2,500 Calories (kilocalories) per day so food consumption could be reduced by 1/3, which would improve health. As previously noted, 2/3 of the population is overweight or obese. Making foods artificially cheap has encouraged gluttony in the country.

Factory farming has decimated small farmers in this country and around the world, replacing sustainable hand labor and land practices with unsustainable fossil fuels for many different kinds of activities. Mechanized agriculture has destroyed the soil. Loss of topsoil may appear to be slow, that is, one or two inches every decade. However, in geological time, the destruction is proceeding at a blinding pace implying the total destruction of good topsoil within a generation or two. There are a number of land practices that can protect and enhance soil including organic farming, small farms and biodynamic farming. None of these can thrive and develop in a time of subsidized industrial agriculture.

There is now a new kind of wage slavery in the U.S. based on the exploitation of Latin American immigrants. Americans now consider food growing beneath them and this contempt shows up in the willingness to pay non-livable wages to those who work the fields. Farmers must do complex tasks while others – waiters, waitresses, janitors and truck drivers – do not require the same level of skill. Americans must stop assuming food growers are inferior humans and that food growing is beneath their dignity.

The Bottom Line – Changing Diets

As we search for options to combat oil depletion and global warming, we must look carefully at all our patterns of living that consume fossil fuel and generate CO2. Without a car, a person can walk or ride a bike. If the situation is desperate and homes have no heat, he or she can use a down sleeping bag. But people cannot live without food. As fossil fuel resources decline and as the climate changes, food shortages will occur. Change is required and an important first step is to modifying food purchasing, cooking and eating habits. Lobbying for government policy change is useful and community food development is important. But such practices will do little as long as Americans consume food in their habitual way. Diet change offers a way to dramatically cut energy consumption, reduce exploitation of farm workers and support rebuilding of the soil. Personal change is necessary before making national change.

Steps to Take

As usual there is theory and practice – study and action. The first big step is to allocate time for studying. This is vital for surviving the coming energy crisis, but it can also be both educational and enjoyable. In past times, people enjoyed gardening and food processing, often sharing the work and the food. – Below are some options for you to consider when determining your own strategy for change.

Gardening

Replace some part of your lawn with a vegetable garden or find a garden plot to use or share. One can start small, developing a single bed and begin composting kitchen scraps. Urban gardens helped hold off starvation during the early years of the Cuban Special Period. Between 1994 and 2001 production of vegetables more than doubled every year. Cuba's urban gardens now produce 60% of all vegetables consumed in Cuba and 50% of the vegetables eaten in Havana. In smaller cities and towns, urban agriculture supplies 80-100% of the fruits and vegetables eaten. Many farms produce excess that can be transported to other locations. Cuba now protects agricultural land around each city and town from development, maintaining it for growing food close to where it is needed.

US gardening stores and nurseries are major businesses, showing that many people still enjoy a natural affinity for soil and plants. It is important to learn how to garden without using petrochemicals. This means using what nature naturally provides. In Cuba in the 1990s, out of necessity the country began developing bio-pesticides from plants, now use 21 times fewer pesticides because of its large-scale production of these materials and bio-fertilizers. All food and animal waste products are collected, composted and returned to the soil. Healthy soil means fewer pesticides are needed. Today 80 percent of Cuba's agricultural production is organic, and production has risen to be equal to and in some cases greater than what was produced previously using petrochemicals.

The objective is not only to provide food but to reestablish and cultivate a natural connection to the land. The actual experience of providing some food is essential. Through this effort, you will learn about the richness and complexity of our plant foods.

Learn about food production

The information in this chapter and chapter 13 (or 14) provides a unique overview of the food system. Without understanding the roles that government, corporations, media and the medical industry (including dieticians) have played in developing the current wasteful and unhealthy way of obtaining food, systemic change will be more difficult. Most people of a generation or two ago had a better understanding of food and nutrition than a person with a graduate degree today. US citizens have been dumbed down by the advertising and public relations efforts of big growers, distributors, super markets and the USDA. Americans have been target markets for the manufactured food industry, and the physical health of people today has been as severely compromised as if they had been gradually poisoned. It will not be an easy task to become knowledgeable and skilled about the food system but without such knowledge, making the necessary changes in all aspects of food is next to impossible.

Study nutrition

It is important to understand the components of food and what vitamins, minerals and phytochemicals are essential to health. It is also necessary to understand which foods provide what nutrients. This information cannot be obtained from the government mandated food label or from food corporations. Furthermore, the diet industry is committed to the existing food system and can be obstructive to understanding. Knowledge about nutrition was ubiquitous in earlier times when people took responsibility for their own health.

Eat Less

The most straightforward way to reduce climate change and save energy is to eat less. Overeating is basically a destructive act to the eater and to the planet. The message "overeating causes health problems" has been repeated countless times. Excess weight can limit one physically, and can cause psychological problems.

Eat Differently

Eating differently is important. Cubans made fundamental changes to their diet when fossil fuels and imported foods were cut off in the early 1990s, eating less and in a new way. Importing food from Europe had meant that most foods were processed, canned or bottled and shipped thousands of miles. Cubans learned to eat more fresh fruits and vegetables, avoiding the energy costs of processing and refrigeration. Cubans had been large consumers of meat, but meat required fossil fuel inputs to which they no longer had access. The amount of meat eaten was reduced significantly, and the energy available went into producing basic foods. The result has been a much healthier diet (and reduce heart disease and diabetes), improved soil fertility, and reduced fossil fuel consumption. Healthy low energy foods typically imply more fresh vegetables and fruits while giving up high fat and sweetened manufactured foods.

Eat seasonally

Eating foods out of the season in which they can be grown locally, means they must be refrigerated or processed in some way and then transported – usually – long distances. For this reason, a person should know what foods are available and in what season and eat accordingly. As fossil fuels become scarcer, learning how to do this will become an enjoyable challenge. Books like Robert Coleman's, *Eating From the Backside of the Calendar* show us that we can still have incredible variety in fresh food.

Don't eat grain-fed animals

Factory meat is the most fossil fuel intensive food per unit for energy and nutrients and also, as it is raised today, is unhealthy for the consumer. Excessive consumption of industrial meats leads to heart disease, cancer and other illnesses. Containment feeding operations are inhumane and are an important contributor to global warming and water pollution. Meat requires grains, which could be used to feed people if eaten directly. The eating of fish contributes to the dangerous decline of ocean fish populations.

Don't eat manufactured groceries

Giving up manufactured groceries means abandoning corn sweeteners, excessive salt, hydrogenated soybean oil, and white flour. Manufactured foods are very expensive when health effects are included. They also are more destructive to the environment because of their processing and packaging. Fresh natural foods require little if no processing and do not require the same level of packaging. As our societal crisis deepens, maintaining physical health will become more critical. In times of crisis, medical care may be too expensive or not easily available. Eating organic food that comes from your own garden or a local farm will help.

Don't imbibe refreshments

Avoid eating or drinking refrigerated beverages such as soda pops and anything else with sugar added (up to 14 teaspoons of sugar per soft drink). Canned and bottled drink factories need enormous amounts of water for their products. They are sugar intensive and harmful to health plus the crops from which sweetener are made require natural gas-based fertilizers for growing and processing. Making cans and bottles for Soft drinks and juices consumes energy and they also require constant energy for cooling in retail stores and homes. A 12-ounce can of diet soda requires a total of 2,200 kcal to produce (over 70% of which goes toward the aluminum can) and may provide only 1 kcal in food energy. [44]

Prepare your own food

Avoid *convenience food* – that is, prepackaged and highly processed food – both solid and liquid. This means frozen food, snacks, fast food and precooked meals. It is a way to avoid the additives, fats and sugars in most prepared foods. When we cook using natural fresh ingredients we eat closer to the sources of our food and the food is more nutritious.

Use pressure cookers

Pressure cookers, double boilers and insulated cookers are some of the ways to reduce the energy used in preparing foods. Much of the energy used ~~ing~~ in cooking food (over 50%) can be saved by using a pressure cooker. Dried beans that would take two to three hours to cook in a pot boiling on a stove can be cooked in a pressure cooker in 20 to 30 minutes.

Start canning and eat less frozen foods

Part of learning about food is to learn about storing it. Gaining experience in canning and bottling is well worth doing. This is especially important as refrigerators may no longer be used as they are today. In the future, communities will be able to process and can large amounts of food from local sources during the farming season.

Eat locally grown food

Food should be produced as close as possible to the place where it will be eaten. The benefits are many fold, the two main ones being that local food production reduces fossil fuel use in transportation and the more quickly it gets to the consumer the more nutrients it retains, providing more health benefits when eaten. Reduction in transportation is particularly true for vegetables and fruits, which have a high weight per calorie ratio. They also need to be eaten fresher than staples such as beans and grains. If food is transported, it should be dense food such as grains and beans that require less energy for transportation per calories contained and none for cooling. As we begin supplying our food needs from local farms and business, we will stop being so dependant on agribusiness and manufacturing corporations.

Buy organically grown food

Organic agriculture is the only way to raise food sustainably year after year. Hopefully it is beginning to become clear, as you read this book, that ongoing use of petrochemicals is doomed, first because we will eventually run out of natural gas, from which the chemicals are made, and/or they will just become too expensive – making food costs exorbitant for the average consumer. Second, to reduce our fossil fuel use 80%, agriculture, as we do it today,

will have to go. Third, it is the only way for us to rebuild our depleted soils – which needs to be done before we are forced into a desperate crisis as happened in Cuba's *Special Period*. Fourth, buying organic foods means the farm workers were not exposed to health endangering chemicals. Organic agriculture is also a way to develop food security for today and for generations to come.

Feeding Change

Global warming and the foreseeable shortages of fossil fuels call for revolutionary changes in all areas of living, including food. This change will require new knowledge and new practices. Americans consider food growing beneath them and this contempt shows up in the willingness to pay non-livable wages to those who work the fields. This has resulted in a new kind of wage slavery in the U.S. based on the exploitation of Latin American immigrants. Farmers must do complex tasks while others – waiters, waitresses, janitors and truck drivers – do not require the same level of skill. Americans must stop assuming food growers are inferior humans and that food growing is beneath their dignity. Soon everyone should become involved at some level of the food process. It must become a valued part of the culture. Those who love growing, storing and preparing fresh foods will become models for the community instead of anachronisms. Diets must change, and methods of food production must change. Farmers and farm workers must be paid a living wage.

The ideas I have presented here are ~~a~~ pointing towards a new direction for us to take rather than a prescription for the way it has to be. The problems with manufactured food; industrial agriculture and farm labor exploitation are not new. What is new is that peak oil and climate change means we can no longer avoid dealing with these issues. Shortages or global climate degradation will probably be driving forces for making changes. But each person can choose now to change how and what they eat.

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