

# New Solutions



*Community, a solution for saving the environment and conserving resources with equity for all.*

## Food, Health and Survival

*During the industrial era, our diet has shifted dramatically to highly manufactured foods and meat products. The application of fossil fuels to our food system has been disastrous, affecting not only how we grow food but what we grow. Our major grain and oil crops, along with hay, are thus transformed by complex factory processes into foods high in fat and artificial sweeteners and low in nutrients.*

*The fresh, diverse fruits, vegetables, legumes, nuts, whole wheat and other whole grains that were the basis of our pre-industrial diet, provided valuable nutrients that are missing in today's highly processed foods. It is, therefore, vital to understand the negative effects of the American diet on health and to analyze the wide variety of plant food crops that are available as options to the foods made from corn, hay, white flour and soybeans.*

*The relation between the acreage of food and feed harvests and the food eaten was discussed in New Solutions #13. This report looks at what we eat, the consequences to our health and our environment, who's to blame for this situation and what to do about it. Transitioning to a low-energy diet could be the most important way to save the planet and to save ourselves.*

### Analyzing the American Diet

To understand America's diet, we first need to know what foods are consumed, measured in pounds. Equally important is the number of Calories obtained from each of the foods, measured in Calories per pounds.<sup>1</sup> To analyze them we can divide foods 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. They come from corn and soybeans, the major crops discussed in the preceding *New Solutions* report. They are sub-divided into animal products (utilizing soybean and corn feeds), including meats, eggs, milk and fish; fats and oils (mostly from soybeans); and caloric sweeteners (mostly from corn).

Nutrient foods are those that provide proportionally more vitamins, minerals, phytochemicals and fiber with fewer Calories and are those that are typically associated with good health. They are sub-divided into vegetables, fruits, grains (flour and cereal), nuts and beans (legumes).

Table 1 shows the breakdown of the major categories of food consumed within

**Table 1: Calorie Foods and Nutrient Foods Consumed Per Capita Annually in the U.S.**

Calorie Foods	Pounds
Dairy Products	592.8
Caloric Sweeteners	141.7
Red Meats	111.9
Fats and Oils	85.8
Poultry	71.2
Eggs	32.8
Fish	16.3
<b>Subtotal</b>	<b>1052.5</b>
Nutrient Foods	Pounds
Vegetables	416.6
Fruits	265.7
Flour and Cereal	194.0
Nuts	10.9
Beans and Legumes	6.7
Other	24.0
<b>Subtotal</b>	<b>917.7</b>
<b>Total</b>	<b>1952.8</b>

the Calorie and nutrient food divisions.<sup>2</sup>

The Economic Research Service (ERS) of the United States Department of Agriculture (USDA)<sup>3</sup> also provides a great deal of information regarding food consumption, however, it is provided in a somewhat differ-

ent manner. This discrepancy highlights one of the difficulties in obtaining accurate food consumption. Different ways of reporting provide different information for the same food. For example, meat can be reported by rough carcass weight or finished weight. Vegetables can be reported by weight either before cleaning and processing or afterwards.

Typically the reports that describe planting and harvest<sup>2</sup> give weight and volumes before processing while the reports on personal consumption<sup>3</sup> take into account waste from cleaning and processing. Planting and harvesting numbers do not include exports and imports, nor do they include foods that are consumed in very small numbers. Fortunately, in the ERS consumption reports, foods from these "minor crops" are included.

Drawing on the many sources of date, our analysis divides foods into nine categories in two groups similar to those in Table 1, but which we call "Calorie-intense" and "nutrient-intense."

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

The first category of Calorie-intense foods is the combination of meat, milk (including cheeses) and eggs. The second Calorie intense category is a combination of fats and oils. The third category is sweeteners.

The nutrient-intense foods are divided into vegetables, fruits, grains, nuts and legumes. The tables for the main foods in each of the eight categories follows, and includes the weight and Calories consumed annually. *The food items are listed in reverse order by consumption weight;* thus the most popular foods are near the top of the tables.

The percentage of weight and Calories

is provided to show the lack of variety in the American diet. This format provides a clear perspective on the distribution of foods eaten. The charts represent one year's consumption for each person in the U.S.

## Calorie-Intense Foods

Calorie-intense foods include animal products – meat, milk and eggs – typically produced from some form of Containment Animal Feeding Operation (CAFO) which converts hay, corn and soybeans into the three animal products noted. Other highly processed Calorie-intense foods are those made with large amounts of fats and oils, which, along with salt, are key components of manufactured foods. Many of these foods are combinations of heavily processed wheat mixed with fats, salt, sweeteners and flavoring agents.

Table 2 shows that the yearly per capita consumption of meat, fish, milk products (including cheese) and eggs is 826 pounds. These foods contain an 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,

About 80% of U.S. acreage is devoted to the crops producing these Calorie-intense foods, crops which also require the most fossil fuel energy.

beef, chicken and pork – provide 86.4% of the pounds consumed and 91.6% of the Calories consumed in this category.

As shown in Table 3, yearly oil consumption per person is 95.3 pounds. Oils contain, on average, 3,892 Calories per pound and provide 370,777 Calories per capita per year – 26% of total Calories. The top two oils are salad oil (mostly from soybeans) and shortening (also from plants) which provide about 80% of the Calories and weight. The amount of fats and oils consumed is surprisingly high and reflects a change in our diet in recent decades. These oils are a key component of manufactured foods and are partially responsible for the increase in obesity.<sup>4</sup>

In spite of continuous warnings from dentists and other medical professionals, consumption of sweeteners continues to

**Table 2: Annual Per Capita U.S. Consumption of Animal Products**

Food	Total Weight	Total Calories	Calories per Pound	Calories per 100g	% Total Weight	% Total Calories
Milk Products	591.8	720,920	1,218	268	71.7%	77.6%
Beef	62.9	83,771	1,332	293	7.6%	9.0%
Chicken	59.2	46,284	782	172	7.2%	5.0%
Pork	47.8	41,499	868	191	5.8%	4.5%
Eggs	33.0	19,650	595	131	4.0%	2.1%
Fish & shellfish	16.5	6,150	373	82	2.0%	0.7%
Turkey	13.4	9,563	714	157	1.6%	1.0%
Lamb	0.8	887	1109	244	0.1%	0.1%
Veal	0.4	378	945	208	0.0%	0.0%
<b>Total Pounds: 825.8 Total Calories: 929,102 Average Calories per Pound: 1,125</b>						

**Table 3: Annual Per Capita U.S. Consumption of Fats and Oils**

Fat or Oil	Total Weight	Total Calories	Calories per Pound	Calories per 100g	% Total Weight	% Total Calories
Salad Oil	40.8	163,941.8	4,018	884	42.8%	44.2%
Shortening	32.6	130,992.7	4,018	884	34.2%	35.3%
Canola	5.4	21,658.0	4,018	884	5.7%	5.8%
Margarine	5.3	16,984.1	3,205	705	5.6%	4.6%
Butter	4.6	10,433.6	2,268	499	4.8%	2.8%
Tallow	4.0	16,400.0	4,100	902	4.2%	4.4%
Olive Oil	1.8	7,152.4	4,018	884	1.9%	1.9%
Lard	0.8	3,214.5	4,018	884	0.8%	0.9%
<b>Total Pounds: 95.3 Total Calories: 370,777.2 Average Calories per Pound: 3,890</b>						

**Table 4: Annual Per Capita U.S. Consumption of Sweeteners**

Sweetener	Total Weight	Total Calories	Calories per Pound	Calories per 100g	% Total Weight	% Total Calories
Cane and Beet	61.5	108,184.1	1,759	387	43.6%	51.5%
Corn - HFCS	59.2	75,614.5	1,277	281	42.0%	36.0%
Corn - Glucose	15.6	20,067.3	1,286	283	11.1%	9.6%
Corn - Dextrose	3.3	4,290.0	1,300	286	2.3%	2.0%
Honey	1.0	1,381.8	1,382	304	0.7%	0.7%
Edible Syrups	0.3	435.0	1,450	319	0.2%	0.2%
<b>Total Pounds: 140.9 Total Calories: 209,972.7 Average Calories per Pound: 1,490</b>						

increase. As shown in Table 4, the per capita consumption of sweeteners in the U.S. is 140.9 pounds per year. There are an average 1,490 Calories in each pound of sugar. The percentage of total yearly Calories obtained from sweeteners is 14.8. The top two sources of sweeteners provide 87% of Calories and 86% of the pounds consumed. With obesity at an all-time high, and the related incidence of diabetes onset on the rise, it seems apparent that the consumption of sweetened foods and drinks has become a national health problem.

## Calorie-Intense Foods Summary

This class of foods provides most of the Calories people consume but less of the nutrients. About 80% of U.S. acreage is devoted to the crops for producing these Calorie-intense foods, crops which also require the most fossil fuel energy. These are also the foods most harmful to health, containing high amounts of saturated fats and very little fiber.

**Table 5: Calorie-Intense Foods Summary**

Type	Weight in Pounds	Avg. Cal. per Pound	Total Calories
Animal Products	826	1,125	929,025
Fats-Oils	95.3	3,891	370,812
Sweeteners	140.9	1,490	209,941
<b>Total</b>	<b>1062.2</b>	<b>1,422</b>	<b>1,509,778</b>

### Nutrient-Intense Foods

The words nutrition, nutritious and nutrients are often used to describe various foods that are considered healthier. 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 a body’s functioning and which also aid a body in resisting diseases and illnesses from colds to cancers to heart disease. The nutrient foods are vegetables, fruits, grains (for food – not feed), legumes and nuts.

The most important of the nutritious foods are vegetables. They contain more nutrients than the other types of plant nutrient foods. Americans have become less healthy, partly because of the kinds and amounts of vegetables eaten, not just the excessive quantities of meat, fats and sugars we consume. A good diet will include a diversity of vegetables to obtain the most nutrients. Sufficient amounts must be consumed for the greatest health benefits.

Table 6 shows that the yearly per capita consumption of vegetables is 411.5 pounds. The average Calories per pound from all vegetables are 185. The percentage of daily Calories for all vegetables is 5.3%.

Americans consume a large amount of potatoes – out of balance relative to the other vegetables – which tends to skew the statistics. Potatoes provide 134.5 pounds, about 1/3 by weight of the vegetables eaten. The weight of all the other 34 vegetables consumed is 277 pounds. There are 263 Calories in a pound of potatoes, significantly

**Table 6: Annual Per Capita U.S. Consumption of Vegetables**

Vegetable	Total Weight	Total Calories	Calories per Pound	Calories per 100g	% Total Weight	% Total Calories
Potatoes	134.5	35,460.4	264.0	58	32.7%	46.7%
Tomatoes	89.7	7,339.6	81.8	18	21.8%	9.7%
Sweet corn	26.9	10,516.6	391.0	86	6.5%	13.8%
Onions	22.8	4,150.3	182.0	40	5.5%	5.5%
Head lettuce	22.5	1432.1	63.6	14	5.5%	1.9%
Romaine& leaf lettuce	12.0	927.3	77.3	17	2.9%	1.2%
Carrots	11.6	2,162.8	186.0	41	2.8%	2.8%
Cucumbers	10.9	742.6	68.2	15	2.6%	1.0%
Cabbage	9.5	1,074.9	114.0	25	2.3%	1.4%
Broccoli	8.5	1,085.8	127.0	28	2.1%	1.4%
Snap beans	7.6	1,063.9	141.0	31	1.8%	1.4%
Bell peppers	7.1	645.6	90.9	20	1.7%	0.8%
Chili peppers	6.0	1,094.4	182.0	40	1.5%	1.4%
Celery	6.0	435.9	72.7	16	1.5%	0.6%
Pumpkin	4.7	558.0	118.0	26	1.1%	0.7%
Sweet potatoes	4.7	1831.6	391.0	86	1.1%	2.4%
Squash	4.5	507.8	114.0	25	1.1%	0.7%
Mushrooms	4.1	414.5	100.0	22	1.0%	0.5%
Spinach	3.1	322.2	105.0	23	0.7%	0.4%
Green peas	2.9	1,053.6	368.0	81	0.7%	1.4%
Garlic	2.6	1,736.8	677.0	149	0.6%	2.3%
Cauliflower	2.2	245.9	114.0	25	0.5%	0.3%
Asparagus	1.3	144.5	114.0	25	0.3%	0.2%
Eggplant	0.9	95.2	109.0	24	0.2%	0.1%
Beets	0.8	164.5	195.0	43	0.2%	0.2%
Artichokes	0.6	130.0	214.0	47	0.1%	0.2%
Collard greens	0.6	76.5	136.0	30	0.1%	0.1%
Radishes	0.5	36.8	72.7	16	0.1%	0.0%
Mustard greens	0.5	56.8	118.0	26	0.1%	0.1%
Turnip greens	0.5	68.1	145.0	32	0.1%	0.1%
Lima beans	0.4	209.5	514.0	113	0.1%	0.3%
Okra	0.4	50.9	141.0	31	0.1%	0.1%
Kale	0.3	61.6	191.0	42	0.1%	0.1%
Escarole	0.3	30.6	105.0	23	0.1%	0.0%
Brussels sprouts	0.2	45.2	195.0	43	0.1%	0.1%

**Total Pounds: 411.7 Total Calories: 75,972.8 Average Calories per Pound: 184.5**

more than the 146 Calories per pound for the other 34 vegetables. Thus potatoes alone provide 47% of the Calories. Of the 5.3% of total Calories that vegetables provide, potatoes provide 2.5% and the remaining 34 vegetables provide 2.8%.

The weight of the top five vegetables in terms of consumption – potatoes, tomatoes, corn, onions and head lettuce – is 296 pounds, which is 72 percent of the total weight and 77 percent of the total Calories. The weight of the next twelve vegetables is 93 pounds. The weight of the last 22 veget-

ables is about 22 pounds. The weight of both groups (34 vegetables) is 115 pounds compared to the 134.5 pounds for potatoes alone.

Vegetables may also be sub-divided into different categories according to the specific nutrients they provide. One category is starchy vegetables which include potatoes, lima beans, green peas, winter squash, corn, yams, and sweet potatoes. A second category, dark green vegetables, includes 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 require choices from each of these categories.

The variety of vegetables measured by the government agencies is extensive. However, there are many other vegetables which are not included such as bok choy, chicory greens, kohlrabi, leeks, rhubarb, shallots, and turnips. The variety of vegetables available in U.S. markets is impressive. Unfortunately, the majority of vegetables eaten is limited to a small number and not necessarily the ones that are most nutritious.

The annual per capita consumption of fruits, as shown in Table 7, is 272 pounds. Fruits provide 64,174 Calories. On average, each pound of fruit contains 236 Calories, almost twice that of vegetables. Fruits provide 4.5% of a person's daily Calories – oranges and apples provide 2.0% with the remaining 27 providing 2.5%. Five fruits – oranges, apples, bananas, grapes and watermelon – account for 70% of the fruit by weight and 69% by Calories.

Unfortunately many of the fruits are highly processed. Of the fruit total of 273 pounds, 113 pounds are consumed as fruit juices. Many nutrients and most of the fiber are lost in the conversion from fruit to juice. Unfortunately, sweeteners and preservatives are also added to most juice drinks.

## What We Actually Eat

Vegetables and fruits consumed by Americans are not as diverse as might be expected when considering the varieties available. The previous tables show that only a few are eaten in volume. Unfortunately, the vegetables and fruits consumed in the greatest quantities are not necessarily the most nutritious.

Table 8<sup>5</sup> shows the most beneficial vegetables and fruits compared to the popularity of what is 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.

This illustrates a fundamental lack of quality in the foods most eaten as provided by the corporate industrial food system. The five most eaten vegetables have high num-

**Table 7: Annual Per Capita U.S. Consumption of Fruits**

Fruit	Total Weight	Total Calories	Calories per Pound	Calories per 100g	% Total Weight	% Total Calories
Oranges & temples	78.8	16,467.4	209.1	46	28.9%	25.7%
Apples	50.8	12,015.8	236.4	52	18.7%	18.7%
Bananas	25.8	10,422.3	404.5	89	9.5%	16.2%
Grapes	19.1	5,824.4	304.5	67	7.0%	9.1%
Watermelon	13.0	1,772.7	136.4	30	4.8%	2.8%
Pineapple	12.9	2,820.2	218.2	48	4.8%	4.4%
Cantaloupe	9.5	1,468.2	154.5	34	3.5%	2.3%
Peaches & nectarines	9.5	1,682.9	177.3	39	3.5%	2.6%
Grapefruit	7.9	1,079.5	136.4	30	2.9%	1.7%
Strawberries	7.0	1,018.3	145.5	32	2.6%	1.6%
Lemons	6.7	611.7	90.9	20	2.5%	1.0%
Pears	5.6	1,483.7	263.6	58	2.1%	2.3%
Tangerines & tangelos	3.9	936.2	240.9	53	1.4%	1.5%
Avocados	2.9	2,208.3	759.1	167	1.1%	3.4%
Limes	2.6	356.9	136.4	30	1.0%	0.6%
Plums	2.5	526.8	209.1	46	0.9%	0.8%
Honeydew	2.2	360.0	163.6	36	0.8%	0.6%
Mangoes	2.0	595.2	295.5	65	0.7%	0.9%
Cranberries	2.0	420.6	209.1	46	0.7%	0.7%
Cherries	1.9	551.7	286.4	63	0.7%	0.9%
Olives	1.3	497.0	368.2	81	0.5%	0.8%
Papayas	1.0	182.2	177.3	39	0.4%	0.3%
Apricots	0.9	201.0	218.2	48	0.3%	0.3%
Blueberries	0.8	203.2	259.1	57	0.3%	0.3%
Kiwifruit	0.4	122.6	277.3	61	0.2%	0.2%
Figs	0.4	123.5	336.4	74	0.1%	0.2%
Raspberries	0.2	52.4	236.4	52	0.1%	0.1%
Dates	0.1	153.1	1,259.1	277	0.0%	0.2%
Blackberries	0.1	171	227.3	50	0.0%	0.0%

**Total Weight in Pounds: 272 Total Calories: 64,174 Average Calories per Pound: 236**

bers representing poorer nutrition, e.g., rank. Their relative positions are numbers 12, 14, 11, 16 and 17 out of a list of 18. Averaging these numbers gives a ranking of 14 out of 18, hardly impressive. Not only are Americans eating far less diversely than is healthy but the most popular vegetables are towards the low end of nutritional benefits.

## Grains

As noted in *New Solutions* #13, wheat is the most popular grain eaten directly in America. Second is corn. That analysis showed that the amount of corn grown in the U.S. per capita is 1,900 pounds, but only 30 pounds are consumed directly. Most of the corn grown serves as raw material in the production of meats and manufactured

foods. Most of the wheat directly consumed is eaten as highly processed white flour.

As shown in Table 9, 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.

About 95% of the flour used in the United States today is white flour, flour that has many valuable components removed during milling (see Table 10). These nutritionally valuable components are used

**Table 8: Nutritional Density and Popularity**

What People Should Eat Most (highest to lowest)		What People Actually Eat Most (highest to lowest)
Food	Rank	Food
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

to feed chickens and other animals.<sup>6</sup> Some portion of the nutrient materials refined out of wheat are reintroduced into the flour. But this artificial method does not return all the important nutritional components.

Table 11 shows that people in the U.S. eat very few nuts. Of 10.9 pounds per person eaten each year, 6.7 pounds are peanuts. The peanut is a tuber rather than a true nut from a tree. 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 in this category.

Table 12 lists the most common legumes (dried beans and peas) eaten in the U.S. (Included in the “Others” are garbanzo, broad, adzuki, white, roman, pink, great northern, and mung beans.) The average Calories per pound of beans is 1,566. Beans provide only 0.7% of the daily Calories in the U.S. The world average consumption for beans is a little more than three times the 6.7 pounds consumed in the U.S. – about 22 pounds per person per year. The top four of the beans listed provide 66% of weight and Calories consumed in this category.

**Table 10: Comparing Flours**

	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

In the rest of the world, legumes provide the majority protein. In the U.S., however, they are a minuscule part of the nation’s diet – Americans consume meat for protein. This is significant because while 100 grams of beef chuck, which requires much more in the way of resources to produce, provides only 18 grams of protein, 100 grams of kidney beans provides 24.

**Nutrient-Intense Food Summary**

The most nutritious foods are natural high nutrient foods. They are plants which have not been heavily processed, so they have fewer Calories and more nutrients per pound than manufactured food. They are

**Table 9: Annual Per Capita U.S. Consumption of Grains**

Grain	Total Weight	Total Calories	Calories per Pound	Calories per 100g	% Total Weight	% Total Calories
Wheat	134.3	223,426.4	1,664	366	70.1%	70.2%
Corn	30.9	51,265.9	1,659	365	16.1%	16.1%
Rice	20.4	33,196.4	1,627	358	10.7%	10.4%
Oats	4.7	8,310.5	1,768	389	2.5%	2.6%
Barley	0.7	1,097.7	1,568	345	0.4%	0.3%
Rye	0.5	804.5	1,609	354	0.3%	0.3%

**Total Pounds: 191.5 Total Calories: 318,101.4 Average Calories per Pound: 1,661**

**Table 11: Annual Per Capita U.S. Consumption of Nuts**

Nut	Total Weight	Total Calories	Calories per Pound	Calories per 100g	% Total Weight	% Total Calories
Peanuts	6.7	18,090.0	2,700	594	61.6%	61.5%
Almonds	1.0	2,627.3	2,627	578	9.2%	8.9%
Walnuts	0.6	1,635.0	2,973	654	5.1%	5.6%
Coconuts	0.5	868.9	1,609	354	5.0%	3.0%
Pecans	0.4	1,193.5	3,141	691	3.5%	4.1%
Pistachios	0.3	734.2	2,532	557	2.7%	2.5%
Macadamia	0.1	718.0	3,264	718	1.0%	2.4%
Filberts	0.1	199.8	2,855	628	0.6%	0.7%
Others	1.2	3,337.8	2,714	597	11.3%	11.4%

**Total Pounds: 10.9 Total Calories: 29,404.5 Average Calories per Pound: 2,698**

**Table 12: Annual Per Capita U.S. Consumption of Legumes**

Legume	Total Weight	Total Calories	Calories per Pound	Calories per 100g	% Total Weight	% Total Calories
Pinto	2.8	4,416.4	1,577	347	41.6%	41.9%
Navy	0.6	924.5	1,541	339	8.9%	8.8%
Black	0.5	821.5	1,550	341	7.9%	7.8%
Red Kidney	0.5	765.9	1,532	337	7.4%	7.3%
Lima	0.1	153.6	1,536	338	1.5%	1.5%
Dry Peas/Lentils	0.7	1,123.2	1,605	353	10.4%	10.7%
Others	1.5	2,335.2	1,557	343	22.3%	22.2%

**Total Pounds: 6.7 Total Calories: 10,540.4 Average Calories per Pound: 1,573**

more subject to decay and loss of nutrient value with time, so freshness is important. They must be frozen or canned to have the same shelf life as manufactured foods. There are also less “value-added” options for marketing purposes so manufacturers are less interested in natural foods.

**Table 13: Nutrient-Intense Foods Summary**

Type	Weight in Pounds	Avg. Cal. per pound	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
<b>Total</b>	<b>893</b>	<b>537</b>	<b>479,749</b>

## The Challenge to Diversity

There is far less food diversity in the American diet than is popularly assumed. The often quoted “30,000 products in the average supermarket” can be broken down into combinations of seven kinds of meat, eight 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. Assuming ten variations of the 120 total gives a number of 1,200, only 4% of the 30,000 created by manufacturers.

The tables show a large variety of plant foods, offering a wide variety of choices. Yet, in actual practice, consumers do not eat that variety. In each of the categories it was shown that the actual volumes eaten are heavily weighted to only three or four of the top choices. Thus, for example, of the 45 vegetables available, about six are predominantly eaten. There are more than 5,000 varieties of potatoes in the world yet only a few are sold in the U.S.<sup>7</sup> The result is that claims for variety are overstated. Americans do not eat a variety of foods. The breakdown of the foods previously listed, shows the surprisingly limited range of our foods – much, much less than 30,000.

One troubling result of the focus on just the few most marketable (most profitable?) foods is the loss in plant diversity.

For example, 80.6 percent of the varieties of tomatoes have been lost since 1903. The main tomato in the U.S. is the Beefsteak. Lost or rarely grown varieties include Momototo, 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. The list of rarely seen lettuces include Marvel of Four Seasons, Red Sails, Royal Oakleaf, Red Rage, Little Gem, Cosmo, Cosmo, Red Majestic, Romance, Rouge D’hiver, Aethna, Black Simpson, Samantha, Kalura, Red Oakleaf, Sierra, Winter Density, Waldeman Green, Red Batavian Cardina, Sangria, Audran, Tango, Redina, Lollo Rossa, Vulcan Red Leaf, and Perilla.

In terms of corn, varieties lost include Alabama Coschatta, Blue Dent, Brown Dent, Cherokee White Eagle, Cheyenne Agency Striped, Gehu, Early Adams Improved, Falconer Dent, Fawn Brown, Fort Totten, Gaspé, Corwin Davis Colored, Green Dent, H & M Yellow Dent, Hackberry White Dent, Mohawk Round Nose, Mohawk Indian Wampum, Mac, Narragansett White, Wampum, Neal’s Paymaster, Northwestern Dent, Norfolk Market, Hickory King, Howard Cory’s Red Dent, Indian Fingers, Jicarilla White, Kemp Yellow Prolific, Leggs Prolific White Dent, Lenore, Oaxacan Green Orange Dent, Piamonte, Pipestone, Pink Dent, Purple Dent, Pigeon, Rainbow Dent, Reid’s Yellow, Rhode Island White Cap, Silvermine, Shorthorn Dent, Rustler’s White Dent, Tama Flint, Tennessee Red Cob and Wapsie Valley Yellow.

86.2% of apples have been lost to consumers since 1903, including Elstar, Gala, Hoople’s Antique Gold, Aroma, Cherry Cox, Tydeman’s Early, Fiesta, Ida Red, Empire, Fameuse’s Snow Apple, Spartan, Queen Cox, Hudson’s Golden Gem, Braeburn, Red Gravenstein, Kandil Sinap, Freyburg, English Golden Russet, Cameo, Cox’s Orange Pippin, Jonagold, Bellflower, Kidd’s Orange Red, Granny Smith, Russet Beauty, Spygold, White Winter Pearmain, Orange Pippin, Rome, My Jewel, Winesap, Pitmaston Pineapple, Ashmead’s Kernel, Fall Pippin, Spitzenburg, Pink Pearl, Honey Crisp, Sierra Beauty, King Of Tomkins, Brown Russet, Hoover, Rhode Island Greening, Black Twig, Connel Red, Mutsu, Liberty, Calville Blanc D’hiver, Gold Rush, Monroe, Criterion, Kinsei, Belle De Boskoop, Gala Supreme and Macoun.

There are 5,000 kinds of potatoes grown worldwide. Familiar names from the past include Augsburg Gold, German Butterball, Warba, Penta, Carola, Bintje, Caribe, Purple Chief, Kerrs Pink, Bliss Triumph, Cherry Red, Rhine Gold, Russian Banana, Red Thumb, Butterfinger, Blue Mad, Ozette, Her Royal Princesse, Maris Piper, Red Ruby, Viking Purple, Nooksack, Red Cloud, Gold Nugget, Cowhorn, French Fingerling, Epicure, All Red, Morning Gold, Huckleberry.

The clear picture that emerges is that the American diet does not provide variety or freshness. For the most part people eat a small number of not-too-healthy foods that travel long distances and spend much time in storage. This can best be described as tragic. Foods that are healthy are basically secondary while the fattening foods are at the top of the consumption list – potatoes, meat, fats and sugars. In terms of the fruits, the same degradation exists because most are turned into manufactured sweetened juice. The responsibility for America’s unhealthy diet can be laid at the feet of the food corporations and the United States Department of Agriculture.

## The Corporate Food Supply

Food manufacturers generate a wide variety of brands from a narrow range of chosen from 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.<sup>8</sup>

### **Beverages, Desserts and Cereals**

**Beverages:** Capri Sun, Country Time, Crystal Light, Kool-Aid, Tang

**Coffee:** Gevalia, Maxim, Maxwell House, Sanka, Starbucks, Yuban

**Desserts:** Baker's, Balance Bar, Calumet, Certo, Cool Whip, Dream Whip, Ever-Fresh, Handi-Snacks, Jell-O, Knox, Minute, Sure-Jell

**Cereals:** Alpha-Bits, Banana Nut Crunch, Blueberry Morning, Cranberry Almond Crunch, Cream of Wheat, Cream of Rice, Fruit & Fibre, Golden Crisp, Grape-Nuts, Great Grains, Honey Bunches of Oats, Honeycomb, Oreo O's, Pebbles, Raisin Bran Shredded, Wheat Toasties, Waffle Crisp

### **Biscuits, Snacks and Confectionery**

**Cookies & Crackers:** Better Cheddars, Cheese Nips, Chips Ahoy!, Handi-Snacks, Honey Maid, Newtons, Nilla, Nutter Butter, Oreo, Premium, Ritz, SnackWell's, Stella D'oro, Teddy Grahams, Triscuit, Wheat Thins

**Snacks:** Cornnuts, Planters

**Pet Snacks:** Milk-Bone

**Confectionery:** Altoids, Callard & Bowser, Creme Savers, Farley's, Gummi Savers, Jet-Puffed, LifeSavers, Milka L'il Scoops, Now and Later, Sather's, Terry's, Tobler, Toblerone, Trolli

### **Cheese, Meals and Enhancers**

**Cheese:** Athenos, Cheez Whiz, Churny, Cracker Barrel, Deli Deluxe, Di Giorno, Easy Cheese, Hoffman's, Kraft, Philadelphia, Polly-O, Velveeta,

**Dairy Products:** Breakstone's sour cream, cottage cheese, Breyers yogurt, Knudsen sour cream, cottage cheese, Kraft dips, Light n'Lively lowfat cottage cheese, yogurt

**Meals:** Kraft macaroni & cheese and other dinners, Minute, Stove Top, Taco Bell, Velveeta shells & cheese,

**Enhancers:** A.1, Bull's-Eye, Good Seasons, Grey Poupon, Kraft barbecue sauce, mayonnaise, salad dressings, Miracle Whip, Oven Fry, Sauceworks, Seven Seas, Shake'N Bake

### **Meats and Pizza**

**Meats:** Louis Rich, Louis Rich Carving Board, Lunchables, Oscar Mayer

**Meat Alternatives:** Boca

**Pickles and Sauerkraut:** Claussen

**Pizza:** California Pizza Kitchen, Di Giorno, Jack's, Tombstone

### **Selected International Brands**

**Coffee:** Blendy, Carte Noire, Gevalia, Grand'Mère, Kaffee HAG, Jacobs Krönung, Jacobs Milea, Jacobs Monarch, Jacques Vabre, Kenco, Maxwell, Maxim, Nabob, Onko, Saimaza, Splendid

**Powdered Soft Drinks:** Clight, Fresh, Frisco, Kool-Aid, Mañanita, Q-Refresko, Ki-Suco, Royal, Tang, Verao

**Cheese:** Dairylea, Eden, El Caserío, Invernizzi, Kraft Cracker Barrel, Kraft Lindenberger, Kraft Singles, Kraft Sottilette, Mama Luise, Philadelphia, P'tit Québec

**Snacks and Confectionery:** Aladdin, Artic, Cerealitas, Chips Ahoy!, Club Social, Côte d'Or, Daim, Diamante Negro, Estrella, Express, Figaro, Freia, Guayabita, Korona, Lacta, Laka, Lucky, Maarud, Marbu, Marabout, Merries, Milan, Milka, Oreo, Ouro Branco, Pacific Soda, Peanøtt, Planters, Poiana, Prince Polo, Rhodesia, Ritz, Royal, Shot, Sonho de Valsa, Suchard, Sugus, Tapita, Terrabusi, Terry's, Trakinas, Toblerone, Tita

**Convenient Meals and Grocery:** Dairylea Lunchables, Fleischmann's, Kraft Delissio pizza, Kraft Lunchables, Kraft ketchup, Kraft peanut butter, Kraft pourables, Magic Moments, Miracle Whip, Mirácoli, Simmenthal, Vegemite

**Beer:** Miller Lite, Miller Genuine Draft, Miller Genuine, Draft Light, Miller High Life, Miller High Life Light, Milwaukee's Best, Milwaukee's, Best Light, Icehouse, Foster's, Red Dog, Southpaw Light,

Leinenkugel's, Henry Weinhard's, Henry's Hard, Lemonade, Hamm's, Mickey's, Olde English 800, Magnum, Presidente, Sharp's non-alcohol brew

Phillip Morris (Altria) is only one of the many giant food corporations that determine what Americans eat and how healthy it is. It is the largest cigarette company as well as a giant food company. Such corporations must continually "add value" to basic food stuffs, interspersing themselves between the farmer and the consumer to control markets. 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. Grocery manufacturers argue that the American food system provides cheap food. But the result is actually an increase in costs and suffering to consumers, farm animals, and small farmers.

## **The Government Role – Manufacturing Ignorance**

It is no overstatement to say that Americans are confused about food. Labeling is a mystery and the language used creates confusion rather than clarity. Probably the ultimate example of a confusing idea is the Food Pyramid, a construct developed and maintained by the USDA with support from the Department of Health and Human Services (HSS). Its stated purpose is to give Americans a simple, usable, accurate, universally applicable menu planning tool.

There are many reasons why the Food Pyramid fails to meet its designed purpose. The geometric form (a pyramid) used to denote proportions is graphically misrepresentative. For example, areas of the triangle do not correspond to the "serving numbers" suggested. The definition of "servings" is ambiguous, contradictory and misleading. It is doubtful that one American out of a hundred could clearly explain the concept and use of "servings."

The 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, gender or state of health. No consideration

is given to foods that are fresh versus frozen versus canned versus 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. Finally, the Food Pyramid does not communicate the known dangers of eating fatty meats.

The Economic Research Service (ERS) of the USDA does provide some useful statistics which compare actual consumption to that recommended by the Food Pyramid,<sup>9</sup> but for the most part, let the consumer beware.

Figure 1 gives a graphical sense of the

...all food information for the consumers must be approved by food manufacturers before it can be released to the public.

degree to which the diet of Americans is seriously out of balance. One of the most important reasons for this is the degree to which the USDA colludes with grocery manufacturers.

A book could be written on the failures of the USDA to protect the health of Americans. That organization's priority is to protect the sales and profits of the 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, is well known.<sup>10</sup> In practice, all food information for the consumers must be approved by food manufacturers 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."<sup>11</sup> 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.

Natural food has to a great extent been replaced or supplemented by food-like manufactured products, often provided in packages covered with health claims (with additives in very small print on the back). Pollen's food advice is threefold – first, eat food, not manufactured "food-like" products; second, don't eat too much; and third, 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. His advice is far more helpful than all the graphics and language definitions of the USDA.

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."<sup>12</sup>

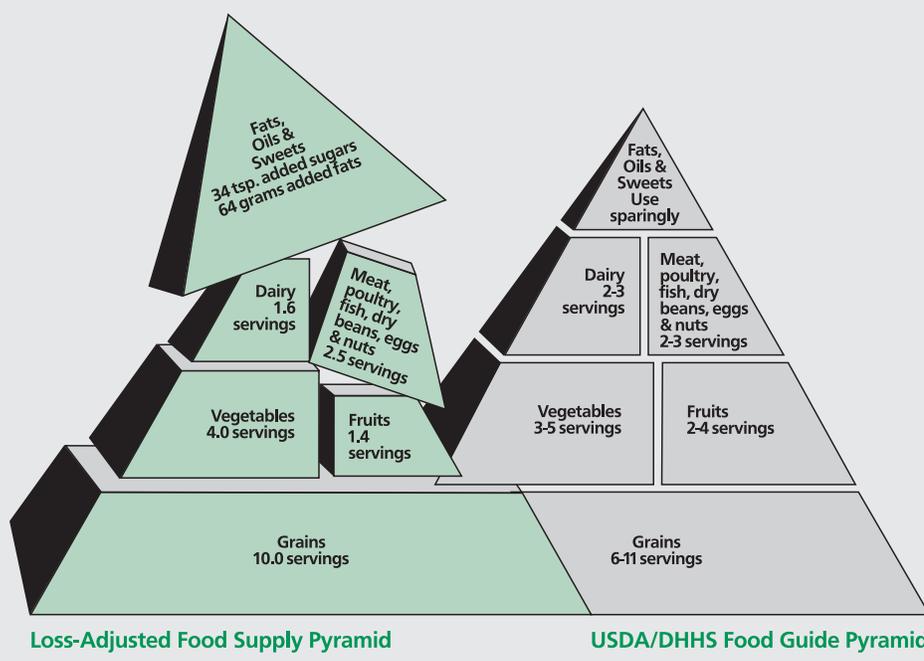
In the broadest sense junk food is the popular term for manufactured food, often those with extravagant health claims on the label. Eating natural foods with minimal processing and food that is as fresh as possible is the secret to good health. Unfortunately the "cheap food" provided by food corporations does not fit this category.

## The Government Role – Subsidizing Manufactured Food

Michael Pollen noted that Adam Drewnowski, an obesity researcher at the University of Washington, wondered why the most reliable predictor of obesity in America today is a person's wealth, that is, why the people who spend the least on food are most likely to be overweight.<sup>13</sup> Drewnowski 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 than fresh foods, particularly since they include added fats (soybeans) and sweeteners (corn). Calories from these kinds of products may be cheap but they are the

Figure 1: The Unbalanced American Diet



least healthful foods. Thus people with the smallest budgets must consume the poorer quality, fattening foods.

This unhealthy situation is supported by the USDA policies. Every few years a new “Farm Bill” is passed that determines the priorities of the food to be grown. Processed foods are based on three of the five commodity crops – corn, soybeans and wheat. The government subsidy to support these

...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.

three plus two other commodity crops – rice and cotton – is approximately \$25 billion a year. For the last several decades U.S. agricultural policy has been designed in such a way as to promote the overproduction of these five commodity crops, especially corn and soy, to the detriment of the nation’s diet.

Farm bills once supported prices and limited production but now they support volume production. The result of the policy is that while the price of fruits and vegetables increased by approximately 40 percent between 1985 and 2000, 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.

Pollen further notes that the Farm Bill also helps determine the kind of food in school lunch programs, using children to dispose of the unhealthful Calories that American farmers are over-producing. The U.S. government also supports shipping of these commodities to other countries, undercutting local agriculture in those countries.

In addition, the bill affects the landscape and environment of the country, setting the priorities for land preservation and recovery or setting them for maximum production with maximum use of fossil fuel chemicals. Thus, the Farm Bill affects the health of soil, the purity of water, and biodiversity and has a negative effect on public health and environmental considerations.

Some recognize the real cost of artificially

cheap food as measured in poor health, degraded land, tormented animals, and the loss of the family farm. 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 rather than processed surplus commodities from monoculture farms located thousands of miles away.

People need to understand their dependence on farmers and lobby for fair prices to farmers while at the same time lobbying against policies that destroy the livelihoods of farmers in other countries. The current government policies destroy land and the livelihood of small farmers. 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 the food system is one by David Pimentel<sup>14</sup> 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 also points out 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 one third, which would improve health. As previously noted, two thirds of the population is overweight or obese.<sup>4</sup> Making foods artificially cheap has encouraged gluttony in the country.

The kind of factory farming dominant in this country has decimated small farmers both here and around the world, replacing sustainable hand labor and land practices with unsustainable use of fossil fuels for a variety of tasks. This change has not been easy on farmers as can be attested to by the

falling American rural population. 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 in the unwillingness to pay livable wages to those who work the fields. Farmers must do complex tasks – waiters, waitresses, janitors and truck drivers do not require the same level of skill. It is vital to change America’s national belief about farm work so that exploitation of third world workers will no longer be permitted. Americans must stop assuming food growers are inferior humans and that food growing is beneath their dignity.

Finally, mechanized agriculture is rapidly destroying the soil. It 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 top soil 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 survive in a time of subsidized industrial agriculture.<sup>15</sup>

## The Bottom Line – Changing Diets

As people search for options to combat oil depletion and global warming, it will be necessary to look carefully at all the patterns of living that consume fuel and generate CO<sub>2</sub>. Many patterns of living can be changed with some discomfort. Without a car, a person can walk or ride a bike. He or she can use a down sleeping bag in the home and, if the situation is desperate, go without heat. But people cannot live without food. Americans must reduce consumption of energy by living differently and, of utmost importance, eating differently.

As fossil fuel resources decline and as the climate changes, food shortages will occur. There are too many people in the world and in the U.S. they are eating far too much food. Americans are also eating too much of the wrong kinds of food. The result is poor health and higher medical bills. The food industry has created cheap food which is not healthy, requires too much fossil fuel,

and leads to very expensive medical costs.

Change is required and the wise will begin this change by modifying their own eating habits. Lobbying for government policy change is useful and community food development can be important. Community Supported Agriculture (CSA) is a very positive step. But such practices will do little as long as Americans consume food in their habitual way. The most important step is for each person to begin making changes in their diets. No other option offers a way to dramatically cut energy consumption, end exploitation of farm workers and protect the soil. Personal change is mandatory to make national change.

## 14 Steps You Can Take to Change Your Lifestyle

You can become part of the movement to a sustainable, healthy lifestyle when you begin to change your food purchasing, cooking and eating habits. Following are some key considerations to evaluate when determining a change strategy. As usual there is theory and practice – study and action.

The first big step is to allocate time to 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, processing food and eating – typically in a shared manner.

### 1. Garden

The first step for the serious student is to replace some part of his or her lawn with a food garden. It is important to learn how to garden without using petrochemicals. This means using what nature naturally provides. One can start small, developing a single bed and begin composting kitchen scraps.

Gardening stores and nurseries are major businesses in this country, showing a natural affinity for the soil and plants. The objective is not so much to save money on food, but to reestablish the natural connection to the land that exists in most people. The actual experience of providing some food is essential. This kind of involvement will provide the perspective of richness and complexity in plant food.

### 2. Learn about Food Production

The information contained here and in

The most important step is for each person to begin making changes in their diets. No other option offers a way to dramatically cut energy consumption, end exploitation of farm workers and protect the soil.

*New Solutions #13* provides a unique summary of the food system. Without understanding it, including the role of government, corporations, media and the medical industry (including dieticians) 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. The country has been “dumbed down” by advertising and public relations efforts of big growers, distributors, supermarkets and the USDA.

Americans have been “target” markets for the manufactured food industry and the physical health of people today has been severely compromised, just as if they had been wounded by a weapon. 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 will be next to impossible.

### 3. Study Nutrition

It is vital 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 dietician industry is committed to the existing food system and can be obstructive to this understanding. This form of knowledge was ubiquitous in an earlier time when people took responsibility for their own health.

### 4. Develop and Use Food Energy Return on Fuel Energy Invested (FEROFED) Knowledge

The concept of Peak Oil introduced a concept called Energy Return on Energy Invested (ERORI) which measured the net efficiency from fossil fuels. A similar idea would be useful in determining the amount of fossil fuel energy that goes into each kind

of food to estimate the amount of food Calories that come from an investment of fuel Calories – Food Energy Return on Fuel Energy Invested (FEROFEI).

A complete analysis is beyond the scope of this publication, but an example was given in the discussion on meat in *New Solutions #13*. For example, a person could determine the fossil fuel energy input to produce a pound of meat that would provide a certain amount of Calories, proteins, fats and carbohydrates and compare it to the energy input to produce some weight of non-meat products that would provide the same Calories and nutrients. Such skills do not exist today but will be common in the future.

### 5. Eat Less

The most straightforward way to reduce climate change and save energy is to eat less. Overeating is basically a destructive act. The message “overeating causes health problems” has been repeated countless times. Furthermore, there are psychological problems with being overweight, that is, heavy people are not as happy. Partly this is because they are physically limited in a variety of ways.

### 6. Eat Differently

Eating differently is important. Cubans learned to eat less and at the same time made fundamental changes to their diet.<sup>16</sup> Today they are poorer, but healthier, than we are. Healthy low-energy foods typically imply more fresh vegetables and fruits while giving up high fat and sweet manufactured foods.

### 7. Eat Seasonably

A person should know what foods are available in what season and purchase and eat them accordingly.

### 8. Don't Eat Grain-fed Animals

Factory meat is the most fossil-fuel-intensive food per unit for energy and nutrients. Meat, as it is raised today, is unhealthy for the consumer and a travesty against farm animals. Excessive consumption of industrial meats leads to heart disease, cancer and other illnesses. Meat requires grains which could be used to feed more people if eaten directly. The eating of fish contributes to the dangerous decline of ocean fish populations.

Containment feeding operations are inhumane and contribute to global warming.

### 9. Don't Eat Manufactured Groceries

Giving up manufactured groceries means giving up corn sweeteners, salt, and hydrogenated soy bean oil as well as white flour and sugar. Manufactured foods are very expensive when health effects are included. Manufactured foods are also more destructive to the environment because of their packaging. Fresh natural foods 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 a garden or local farmer will help. People can remain healthy by changing their current dysfunctional diet.

### 10. Don't Imbibe "Refreshments"

An important step is to avoid eating or drinking refrigerated beverages such as soda pops and any thing else with sugar added. Canned and bottled drink factories need enormous amounts of land and water for their products. Sodas also require constant energy for cooling in retail stores and homes. They are sugar-intensive and harmful to health and use corn sweeteners, which require natural-gas-based fertilizers.

They also consume energy in making cans and bottles. A 12-ounce can of diet soda requires a total of 2200 kCal to produce (over 70% of which goes toward the aluminum can) and may provide only 1 kCal in food energy.<sup>17</sup>

### 11. Prepare Your Own Food

Avoid "convenience food," that is, pre-packaged and highly processed food – both solid and liquid. Frozen food, snacks, fast food, and precooked meals fit in this description. Preparing food from natural fresh ingredients is a way of simplifying one's life by eating closer to the food source. It is also a way to avoid the additives, fats, and sugars in most "prepared foods."

### 12. 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 process and can large amounts of food available from local sources during the farming season.

### 13. Eat Locally Grown Food

Food should be produced as close as possible to the consumer. Local production reduces energy consumption, and eating local foods normally means eating fresher foods which are more nutritious. Local production also optimizes potential recycling capacity. This 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 that require less energy for transportation.

### 14. Use Pressure Cookers

Much of the energy (more than 50%) used in cooking food can be saved by using pressure cookers.

## Summary

Global warming and the foreseeable shortages of fossil fuels call for revolutionary changes in all areas of living, including food. This will require new knowledge and new practices. Americans are proud of the fact that they have become "freed from the drudgery of growing food." However, this "freedom" is at the expense of the environment, the future lives of their children, and the exploitation of third world immigrants.

Soon everyone must 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 here are as much projections as prescriptions. The issues of manufactured food, industrial agriculture, exploitation, etc., are not new. What is new is the realization that these issues can no longer be avoided. Either shortages or global climate degradation will be the driving force for making change. Each person can choose to change how and what they eat.

– Pat Murphy

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### On the Web

Outlook for Fuel Reserves, Dr. M. King Hubbert, McGraw-Hill Encyclopedia of Energy ca. 1976; [http://www.mkinghubbert.com/files/hubbert\\_1974.pdf](http://www.mkinghubbert.com/files/hubbert_1974.pdf)

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*The Challenge of Affluence: Self-control and Well-being in the USA and Britain since 1950*, Avner Offer, Oxford, 2006

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*Big Coal: The Dirty Secret Behind America's Energy Future*, Jeff Goodell, Houghton Mifflin, 2006

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