



# U.S. Food System

# factsheets

## Patterns of Use

Americans enjoy a diverse abundance of cheap food – spending a mere 9.9% of our disposable income on food.<sup>1</sup> However, store prices do not reveal the external costs – economic, social, and environmental – that impact the sustainability of the food system. Considering the full life cycle of the U.S. food system (graphic right) illuminates the connection between consumption behaviors and production practices.

The Food System Life Cycle



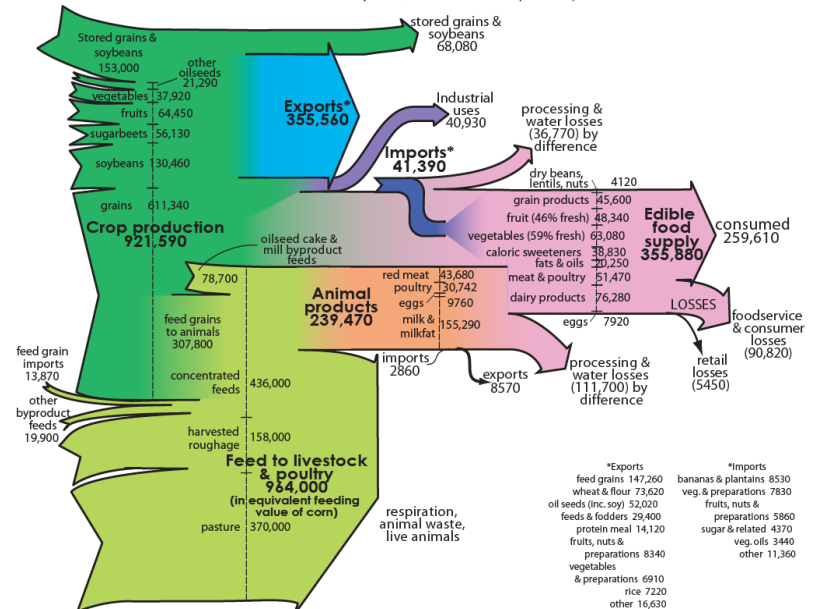
## Agricultural Production

- Farmers account for less than 1% of our population, and the average age of farmers is rapidly increasing.<sup>2</sup>
- 8% of all farms account for about 68% of agricultural production.<sup>1</sup>
- A mere 19¢ of every dollar spent on food in 2000 went back to the farm – in 1975 it was 40¢.<sup>1,3</sup>
- Three out of every four farm households earned the majority of their income from off-farm sources.<sup>2</sup>
- In 2001-2002, 53% of the hired crop labor force lacked authorization to work in the United States.<sup>4</sup>
- From 1997 to 2002, total cropland acres decreased from 445 million acres to 434 million acres.<sup>2</sup>
- The rate of groundwater withdrawal exceeds recharge rates in major agricultural regions.<sup>5</sup>
- Nutrient runoff in the agricultural upper regions of the Mississippi River creates a hypoxic “dead zone” in the Gulf of Mexico. The average size of the region was over 5,300 sq mi from 2000 to 2005.<sup>6</sup>
- Less than 20% of corn, soy, and cotton plants were genetically engineered in 1996; by 2007 between 40%-90% were (varies by type).<sup>7</sup>
- In 2003, 1.8 billion tons of topsoil were lost to erosion – or 200,000 tons each hour.<sup>8</sup>
- Despite a tenfold increase in insecticide use since 1945, crop losses due to insect damage have nearly doubled.<sup>9</sup>
- Agricultural activities were responsible for 7% of total U.S. greenhouse gas emissions in 2005. Livestock are major contributors.<sup>10</sup>

## Consumption Patterns

- In 2000, the U.S. food supply provided 3,800 calories per person per day. Accounting for waste, the average American consumed 2,700 calories per day – an increase of 24.5% from 1970.<sup>1</sup>
- In 2005, Americans ate 200 pounds of meat per person, which is up 22 pounds from 1970.<sup>11</sup> Over half of grains grown are fed to animals. See “feed grains to animals”, right.<sup>12</sup>
- The average American eats 32 teaspoons of caloric sweeteners – mostly sucrose and corn sweeteners – per day.<sup>1</sup>
- In 2004, 66% of U.S. adults were either overweight or obese, defined as having a body mass index of 25 or more.<sup>13</sup>
- Poor nutrition and physical inactivity accounted for 400,000 premature deaths in 2000.<sup>14</sup> Diet contributes to heart disease, certain cancers, and stroke – the three major causes of U.S. deaths.<sup>13</sup>
- In 2003, the cost of obesity-attributed medical expenditures in the U.S. was \$75 billion. Taxpayers financed half of these.<sup>15</sup>
- 26% of the edible food available is wasted at the consumer level. See “losses”, right.<sup>12</sup>

Material Flow in the U.S. Food System<sup>12</sup>  
(1995, flows in million pounds)

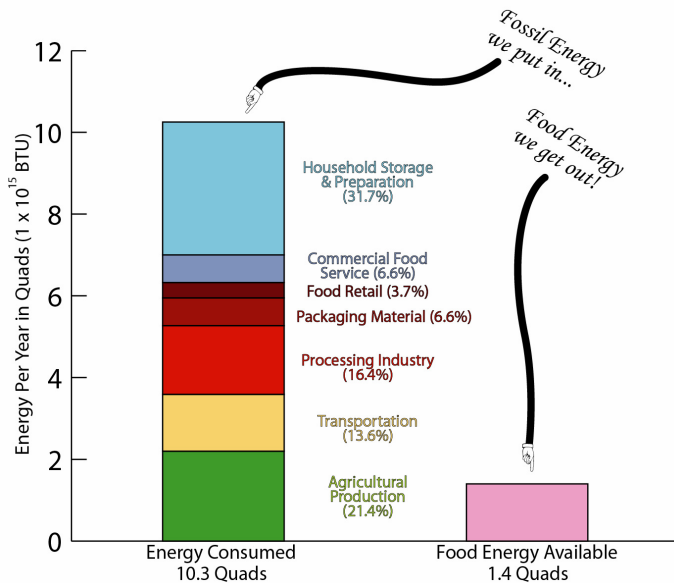


<sup>1</sup> U.S. Department of Agriculture (USDA)(2003) *Agriculture Fact Book 2001-2002*. Office of Communications.  
<sup>2</sup> USDA (2004) *2002 Census of Agriculture*. United States Summary and State Data. Volume 1, Geographic Area Series, Part 51. AC-02-A-51.  
<sup>3</sup> Elitzak, H. (1999) *Food Cost Review, 1950-97*. U.S. Department of Agriculture, Agricultural Economic Report 780.  
<sup>4</sup> U.S. Department of Labor (2005) *Findings from the National Agricultural Worker Survey 2001- 2002*. Office of the Assistant Secretary for Policy. Office of Programmatic Policy.  
<sup>5</sup> Opie, J. *Ogallala: Water for a dry land*. University of Nebraska Press, Lincoln: 1993.  
<sup>6</sup> Louisiana University Marine Consortium (2007) "Hypoxia in the Northern Gulf of Mexico, Mapping the Dead Zone 2007"  
<sup>7</sup> ERS/USDA (2007) *Adoption of Genetically Engineered Crops Data Set*. <<http://www.ers.usda.gov/Data/biotechcrops/>>

## Life Cycle Impacts

The energy consumed in a system is often a useful indicator of its sustainability. Modern agriculture and the food system as a whole have developed a strong dependence on fossil energy. The figure below estimates the energy required throughout the current food system. 7.3 units of (primarily) fossil energy are consumed for every unit of food energy produced.<sup>12</sup>

Energy Flow in the U.S. Food System



- On-farm production amounts to approximately 20% of the total system energy. 40% of agriculture production energy goes into making chemical fertilizers and pesticides.<sup>12</sup>
- Large amounts of energy go into processing, transporting, storing and serving food.<sup>12</sup>
- Reliance on large fossil fuel inputs makes the food system increasingly vulnerable.<sup>12</sup>
- Consolidation of farms, animal production facilities, meat packing plants, food processing operation, and distribution warehouses often places further distance between food sources and consumers.<sup>12</sup>

Consolidation in the food system is also concentrating management decisions into fewer hands, raising questions of growing market control by a few corporations. For example:

- Over 80% of the beef packing market is controlled by 4 firms; 4 firms control 80% of soybean processing.<sup>12</sup>
- The top five food retailers sell 42% of America's food (in 1997 it was only 27%).<sup>12</sup>

## Solutions and Sustainable Alternatives

Simply being conscious of the economic, social, and environmental impacts of our food system is the first step towards sustainability. Ask yourself: Where did this food come from? How was it grown? How did it get to my plate in its present form?

### Eat Locally

Fresh produce eaten in the Midwest travels an average of more than 1,500 miles. A recent study by the Leopold Center showed that increasing Iowa's consumption of regionally grown fresh produce by only 10% would save over 300,000 gallons in transportation fuel a year.<sup>16</sup> The environmental and social consequences of food production get more attention when it is in "our own back yard." Community Supported Agriculture (CSAs) and Farmers Markets are both great ways to support a local food system.

### Eat Less Meat

A meat based diet (28% calories from animal products) uses twice as much energy to produce as a vegetarian diet.<sup>10</sup> Meat production as it is widely practiced today also has significant environmental impacts on land use, water use and water pollution, and air emissions. According to the Union of Concerned Scientists – considering land use, and water use and pollution – eating less meat is one of the most effective environmental consumer choices.<sup>17</sup>

### Eat Organic

Chemical fertilizers and pesticides require large amounts of energy to produce, pollute our soil and water, and present real human health impacts. Growth in retail sales of organic food products has equaled 20% or more per year since 1990.<sup>18</sup>

### Use Less Refrigeration

Home refrigeration accounts for 13% of all energy consumed by our food system. Today's convenience foods rely heavily on refrigeration for preservation. Consider a smaller, more efficient refrigerator and buying smaller quantities of fresh produce more frequently. Refrigerator efficiency more than doubled from 1977 to 1997, but increases in size have largely offset this potential savings.

<sup>8</sup> USDA (2007) *National Resources Inventory 2003 Annual National Resources Inventory*. National Resources Conservation Service.

<sup>9</sup> Pimentel, D. et. al (1991) "Environmental and economic impacts of reducing U.S. agricultural pesticide use" *Handbook on Pest Management in Agriculture* CRC Press, Boca Raton, FL, pp. 679-718.

<sup>10</sup> U.S. EPA (2007) *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 - 2005*. Washington, DC 20460.

<sup>11</sup> USDA (2007) "Food Consumption" Briefing Room Economic Research Service.

<sup>12</sup> Heller, M.C. and G.A. Keoleian (2000) *Life Cycle-Based Sustainability Indicators for Assessment of the U.S. Food System* (CSS00-04).

<sup>13</sup> U.S. Department of Health and Human Services (2007) *National Health and Nutrition Examination Survey 2003-2004*. Centers for Disease Control and Prevention.

<sup>14</sup> U.S. Department of Health and Human Services (2004) "Physical Inactivity and Poor Nutrition Catching up to Tobacco as Actual Cause of Death." Centers for Disease Control and Prevention.

<sup>15</sup> Finkelstein, E., I. C. Fiebelkorn, and G. Wang (2004) "State-Level Estimates of Annual Medical Expenditures Attributable to Obesity." *Obesity Research* Vol. 12 No.1.

<sup>16</sup> Leopold Center for Sustainable Agriculture (2001) "Food, Fuel, and Freeways: An Iowa perspective on how far food travels, fuel usage, and greenhouse gas emissions." Leopold Center for Sustainable Agriculture.

<sup>17</sup> Brower, M., and W. Leon (1999) *The Consumer's Guide to Effective Environmental Choices*. Three Rivers Press, New York.

<sup>18</sup> ERS (2000) "Marketing Organic Foods." *Agricultural Outlook* (272).

