LSP
Myth
Buster #13

Myth: *Industrial agriculture is efficient.*

Fact:

Measured by the amount of energy it takes to produce each calorie of food, industrial farming systems are extremely inefficient. In 1940, the average U.S. farm produced 2.3 calories of food energy for every calorie of fossil fuel energy it used. By 1974, that ratio was 1:1, according to Richard Manning, writing in his book *Against the Grain*.

These days, the calories-to-calories ratio is more like 3:1, according to David Pimentel, a Cornell University entomologist who has studied the environmental impact of various agriculture systems. That's right: it takes some three calories of energy to produce just one calorie of food, according to Pimentel's estimates.

And that doesn't even include the energy expended to process and transport the food to our supper tables. When both production and distribution are taken into account, it takes 10 to 15 calories of energy for every calorie of food energy produced, according to the Center for Integrated Agricultural Systems at the University of Wisconsin. The more processing done to food, the more energy it burns before it even gets to your mouth. It takes around 500 to 600 calories to process a kilogram of flour or canned fruits and vegetables. A kilogram of breakfast cereal gobbles up more than 15,000 calories when it's processed, and instant coffee slurps nearly 19,000 calories.

Blame it on oil: during the past half century agriculture has become increasingly dependent upon petrochemicals to do everything from run cropping equipment to manage stockpiles of liquid manure. It takes diesel fuel to operate tractors and other equipment, and natural gas to produce fertilizer (the U.S.

Department of Energy says natural gas accounts for 70 to 90 percent of the cost of producing anhydrous ammonia, a key source of nitrogen fertilizer). Farmers use energy to dry corn, irrigate fields and transport their product to market. It takes fossil fuels to produce chemicals that control insect and weed pests, as well as to heat and cool large livestock confinement buildings.

This fall, a Virginia Tech professor told a group of Midwestern dairy farmers that $8 out of every $10 spent on their farms can be traced back to oil. The agribusiness magazine *Feedstuffs* recently ran an article on poultry production with the headline, "Energy projected to soon replace feed as biggest factor in production costs." For U.S. crop farmers, energy related expenses range from 10 percent to 30 percent of operating costs, depending on the region of the country and type of enterprise, according to the Department of Energy.

Such dependence can be tolerated as long as energy prices remain relatively cheap. But agriculture's energy addiction became painful in 2005, when prices skyrocketed. One southwest Minnesota crop farmer estimated his energy costs spiked $12,000 compared to 2004.

Systems exist for cutting agriculture's energy jones significantly. Farmers who use minimum or no-till cropping systems to reduce the number of times they drive equipment over a field have long realized major fuel savings. Deep straw pork production slashes the need for artificial heating, while grass-based livestock production cuts a farm's reliance on producing feed using energy-intensive row crop systems. Even resource conserving
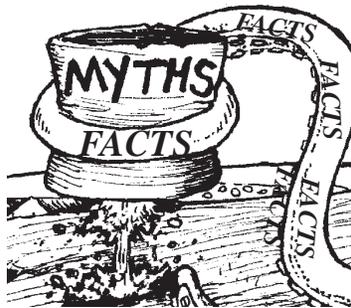
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crop rotations that use legumes such as alfalfa can slash the need for petrochemical-based fertilizers because they provide their own nitrogen fertility naturally. A study comparing organic and conventional farming systems in the United Kingdom found that organic systems can cut energy use by 42 percent.

But if all that organic or even sustainably produced food is shipped hundreds and thousands of miles to get to consumers, much of their energy benefits can be canceled out. Another team of British researchers recently examined the "externalized" costs, such as damage to the environment, traffic congestion and human health hazards caused by vehicle emissions, etc., that are a part of a market basket of food in England. The researchers, who reported their findings in a recent issue of the journal *Food Policy*, estimated that the total external costs were $4.3 billion annually in U.S. dollars. Of the 12 commodities assessed, livestock products were the most costly on a per kilogram basis.

These external costs could be cut by 90 percent with a shift to a local food system, where, for example, food is consumed within 12 miles of where it is produced, concluded the researchers. Such a dramatic shift in our food system is not likely anytime soon, but any movement in that direction would help our food and farming system start counting its calories.

More information

◆ An excerpt of Richard Manning's book, *Against the Grain*, is at www.harpers.org/TheOilWeEat.html.

◆ The Department of Energy report, *Striking Home: The Impacts of High Energy Prices on Families, Communities, and Businesses*, is at www.energy. gov/engine/doe/files/dynamic/ 195200312449_chapter2.pdf.

◆ The paper, "Why Our Food is So Dependent on Oil" is at www.energybulletin.net/print.php?id=5045.

◆ A study on how making food systems more local in the United Kingdom would cut "external costs" is at www.sciencedirect.com (look for the *Food Policy* journal; the study is in volume 30, on pages 1-19).
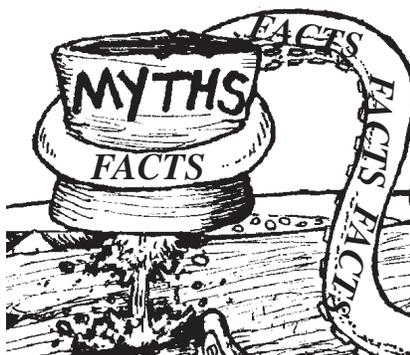
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