



LSP *Myth Buster* #39

An ongoing Land Stewardship Project series on ag myths and ways of deflating them.

Updated: Nov. 2013

→ **Myth:** By 2050 We Will Need to Nearly Double Crop Production to Feed 9 Billion People

→ **Fact:**

By 2050, the world's population is expected to grow from 7 billion to 9 billion, which is roughly a 28 percent increase.

A common narrative is that in coming years a greater proportion of the world's growing population will be wealthy enough to eat richer diets, which translates into more animal-based products, among other things. That has prompted promoters of high-input industrialized agriculture to put out estimates that in fact we will need to produce *twice* as much food on the land as we do today to fill all those stomachs.

And if you are a company like Monsanto or Cargill, that's good news, because it means more of the same: intensive production systems that demand high inputs of chemicals, GMO technology and energy.

However, research released in August by the Institute on the Environment at the University of Minnesota actually paints a different food supply and demand picture. The research, which was published in *Environmental Research Letters*, analyzed the productivity of 41 major crops, and found that worldwide, only 55 percent of crop calories directly nourish people. In the U.S., that figure is an astounding 34 percent.

What happens to the rest of it? The majority of it is fed to livestock, which in turn are used as human food. However, feeding beef cattle a high-energy corn-based diet in a feedlot, for example, is an inefficient way of utilizing plants. The U of M researchers say that 36 percent of the calories produced by the world's crops are being used for animal feed, and only 12 percent of those feed calories eventually nourish people. In addition, between 2000 and 2010, the use of edible crops for biofuels such as ethanol increased fourfold. The facts are irrefutable: making grain into gas means less human (and animal) food in the world.

The good news is that if agriculture was to focus less on how many *bushels* of crops were raised per acre, and more on how many *people* could be fed off that same acre, we could actually be more productive than we are today in terms of calories generated. Theoretically, the typical Midwestern farm could triple the number of calories per acre that go directly to people, according to the U of M's paper. (Anyone familiar with a Community Supported Agriculture

produce operation would not be surprised by this figure.) That would mean a shift away from the corn-bean-feedlot machine that has a seemingly insatiable demand for more bushels per acre.

The U of M researchers conclude that U.S. agriculture alone could feed an additional 1 billion people by shifting crop calories to direct human consumption. However, such a shift would require pretty much removing livestock from the farming picture—that means a revolutionary shift in diet for most Americans, and the loss of a key tool in developing sustainable nutrient cycles on diverse farms.

However, even relatively minor shifts away from factory farm meat production would make agriculture much more efficient at feeding actual people. Although the U of M study did not examine the contribution of grass-based livestock production to feeding people, one of the authors, Jonathan Foley, noted in a separate commentary published this fall that shifting toward pasture-based systems and moving biofuel production away from utilizing food crops could go a long way toward feeding more people with the same amount of crop production. Making each crop calorie more nutritious would also help, something that's often overlooked in the drive to just produce more of the same. In addition, cutting food waste could have a major impact as well—that alone eats up 30 percent to 40 percent of the world's calories today.

As Foley writes: "...people often confuse growing more crops with making more food available to the world. They're not the same thing.... And there is another way to deliver more food to the world besides simply growing more crops: Better use of the crops we already grow, making sure they create as much nutritious food as possible."

→ **More Information**

- A summary of the paper, "Redefining agricultural yields: from tonnes to people nourished per hectare" is available on the *Environmental Research Letters* website at <http://bit.ly/1cxdtWG>.

- Jonathan Foley's commentary, "Changing the Global Food Narrative" is at <http://bit.ly/1iR8fdC>.