

Hunger & Food Security: Do we really need industrial agriculture to feed the world?

You can view the full video and find a companion reading guide with more discussion at www.foodmyths.org.

The world's population keeps growing. By 2050, we'll have to double our food production. For that we'll need genetic engineering, advanced pesticides, and fertilizer - lots of fertilizer. That's why at Agra Con we're working every day, hand-in-hand with farmers and their families. And don't you want to feed the world?

Messages like this one seem to be popping up everywhere. But who's really behind them? Turns out it's the corporations profiting from this way of farming - like those selling the pesticides, fertilizers, and chemicals.¹ They're spending billions to warn us that their way is the only way, with industry groups like the Alliance to Feed the Future, whose members include the Association for Dressings and Sauces and The National Frozen Pizza Institute.²

But ask farmers who really know how to feed us and you'll get a very different story-a heartbreaking and hopeful story that I've heard talking to hundreds of families like this one.

Fifty years of this myth - and lobbying dollars to support it - have tilted the playing field to favor corporate-controlled, chemical agriculture, giving farmers little or no support for any other path.³ So it's easy to understand a lot of farmers feel it's either "get on board or get out."

"Getting on board," means farmers stop practices that keep soil healthy and go for single crops.⁴ Livestock that used to be raised on the farm get crammed into polluting factories.⁵

To keep this unnatural system going, these farmers now buy expensive inputs, all from ever-fewer corporations demanding ever-rising prices.⁶ It's a quick addiction: pests become resistant so you've got to use more chemicals;⁷ livestock become sicker so you've got to use more drugs;⁸ soil loses its natural fertility so you've got to use more chemical fertilizer.⁹

Then, on the other side, when farmers try to sell their crops, they face only a few big buyers offering unpredictable prices. The economics don't work for long. Over the last fifty years, millions of desperate farmers have had to sign contracts with corporations that dictate their every move or have lost their farms altogether.¹⁰ More and more, farm income is concentrating at the top so now only one in ten U.S. farms can support a family.¹¹

In many other countries, a similar thing is happening. Small farmers who buy into the promise that corporate agriculture is the solution often get trapped by debt and dependency.¹²

So yes, corporate agriculture is good for some folks - including some of the largest growers - but not the typical farm family.¹³ And that's strike one for this myth.

But we have to feed the world, right? If not this way, what choice do we have?

A great one. We just don't see ads for it and it certainly isn't getting the subsidies going to corporate ag.¹⁴ State-of-the-art sustainable farming ends this unnatural chemical addiction. It uses better practices, not ever-more expensive purchases.

Sustainable farmers build healthy soil by planting a variety of crops and rotating them. They raise their animals on the farm, not in cramped factories. They fertilize using compost and livestock or planting soil-nourishing crops. Healthier plants with good crop rotation also help keep pests in check without hurting the bugs we need – like those all-important pollinators.

And how does this choice impact everyone else? Massively. Industrial farms degrade and erode precious topsoil – 64 tons per acre are being lost every year in some spots in our heartland.¹⁵ They suck up huge amounts of water – a lot of it from deep underground – essentially irreplaceable. And they use millions of pounds of antibiotics – a practice that leads to dangerous new bacteria.¹⁶ They also produce toxic run-off that pollutes our rivers, our oceans, and us!¹⁷ The average American already has at least 13 pesticides in our bodies.¹⁸ And thanks to chemicals in the field, farmers and farm-workers have higher rates of many cancers.¹⁹

So the sustainable farm is better for farmers and the environment but can it really feed the world? Study after study is saying yes! Sustainable farms produce as well... and in drought years even better.²⁰ This is important news for small farmers who already grow 70 percent of the world's food – to increase production they don't have to follow the chemical path.²¹

And the future we're all talking about feeding? The industrial farm requires more fossil fuels,²² water,²³ and mined minerals²⁴ – all stuff that will only get more expensive as it runs out. So down the line, the chemical path not only can't work for farmers; it won't be a choice at all.

Corporate agriculture doesn't reliably grow more food in the future – or even today. And that's strike two for this myth.

But we still haven't looked at the biggest hole of all. They say we need to double food production or we'll go hungry. Really?

We already have almost 3,000 calories a day available for every human being on Earth – more than enough.²⁵ And that's after wasting a third of all food grown,²⁶ and a lot of what is grown isn't food we eat directly. A third of the world's grain is going to livestock.²⁷

In the U.S. our biggest crop is corn, but less than one percent of all corn planted is what we eat.²⁸ Most goes to fuel or feed. Staying on this track, we could increase production and still have more hunger.²⁹ To end it, everybody has to have the power to buy or grow the food they need. And that's what sustainable farming is all about. Strike three for this dangerous myth.

So the next time someone who makes frozen pizza – or toxic pesticides – tells you there's only one way to feed the future, tell them their story is full of holes. The evidence is clear: sustainable farmers prove we all can enjoy healthy food – and we each have power to make this happen. We can redirect our own food dollars and the billions in public money now going into the pockets of Big Ag. We can stand up and speak out for sustainable farmers here and around the world.

Visit FoodMyths.org to learn more, connect with the hundreds of groups at the frontlines of this struggle, and get involved.

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1. And profiting, they are. Ellen Kullman, CEO of DuPont, the largest chemical maker in the U.S., expects profits to rise as much as 12 percent in 2012 to \$42 billion due to growth in insecticides, genetically modified seeds, food ingredients, and biofuels. Jack Kaskey, "DuPont 2012 Profit May Rise 12% On Agriculture, Chemicals," *Bloomberg Businessweek*, December 13, 2011.
 2. The corporations profiting from industrial agriculture run the gamut from Big Oil to commodity traders, pharmaceutical makers, pesticide manufacturers, feed processors, meat packers, and more. Every year, these companies collectively spend billions in marketing, advertising, and lobbying. Consider that the agricultural biotech giant, Monsanto, spent \$1.1 billion in 2011 alone on its marketing budget, according to reporting in its 10-K. These companies also pool resources for collective marketing goals, forming front groups and trade associations like the Alliance to Feed the Future. For a list of member organizations, see <http://www.alliancetofeedthefuture.org/ajax/sharer/AbouttheAlliance/Partners.aspx>. Another marketing group is the U.S. Farmers and Ranchers Alliance, with an estimated annual budget of \$30 million or more and with paying corporate partners including John Deere, Monsanto, and Dupont. For a list of members, see: www.fooddialogues.com/about/alliance-affiliates.
 3. See for instance Ross Choma, "Pharma, Utilities and Big Ag Lead Lobbying in 2012." www.OpenSecrets.org, April 27, 2012. For a history of the influence of agribusiness interests on policy making, see Wenonah Hauter's *Foodopoly: The Battle Over the Future of Food and Farming in America*. New York, NY: The New Press, 2012.
 4. For research on the impact of one-crop plantings, or monocultures, on soil fertility see the work of the Pennsylvania-based Rodale Institute at www.rodaleinstitute.org. See also Deborah Koons Garcia's documentary, *Symphony of the Soil* at www.symphonyofthesoil.com.
 5. To learn about the consolidation of the livestock industry and the growth of factory farming, see: James M. MacDonald and William D. McBride, "The Transformation of U.S. Livestock Agriculture: Scale, Efficiency, and Risks," U.S. Department of Agriculture, Economic Research Service, January 2009. For more on livestock factory farms, or CAFOs (concentrated animal feeding operations), and their impact on our health, the environment, animal welfare, as well as labor, politics, and economics, see: Dan Imhoff, ed., *The CAFO Reader: The Tragedy of Industrial Farmed Factories*. Healdsburg, CA: Watershed Media, 2010.
 6. On the consolidation in ownership in the food system, see the work of Dr. Heffernan and Dr. Hendrickson at the University of Missouri, viewable at the Food Circles Networking Project at <http://www.foodcircles.missouri.edu/consol.htm>. See also, Phil Howard, "Consolidation in Food and Agriculture: Implications for Farmers & Consumers," *The Natural Farmer*, Spring 2006.
 7. Resistance to pesticides is a widely known problem in chemical agriculture. See, for example, Cornell University Professor David Pimentel's study on pesticide residence, including: "Environmental and Economic Impact of Reducing U.S. Agricultural Pesticide Use," *Handbook of Pest Management in Agriculture*, Vol. I. Boca Raton, FL: CRC Press, 1991: 679-718. According to Dr. Pimentel, more crops are lost to pests today than in the 1940's, even though we use 33 times more chemicals with at least ten times higher potency. Crops genetically engineered to be resistant to the herbicide glyphosate have also led to worrisome weed resistance. Today, over 12 million acres are choked with "superweeds," as some call them. See, for example, Marion Nestle, "Superweeds: A Long Predicted Problem For GM Crops Has Arrived," *The Atlantic*, May 15, 2012.
 8. National Academies Press, *The Use of Drugs in Food Animals: Benefits and Risks*, Washington D.C.: NAP, 1999: 12-13. "The use of drugs in food animals is fundamental to animal health and well-being and to the economics of the industry." There are five major types of pharmaceuticals used in factory farming including: antiseptics, bactericides, and fungicides for skin and hoof cuts and infections; ionophores to facilitate digestion for ruminants like cattle and to protect against parasites; steroid anabolic growth promoters; antiparasite drugs; and antibiotics at a subtherapeutic level to promote growth or at higher level to address disease. Those are just the main drugs. Poultry growers, for instance, also use drugs with arsenic, like Roxarsone.
 9. According to data captured by the USDA, synthetic fertilizer (nitrogen, phosphate, and potash) use in the United States has gone up 279 percent from 1960-2010; prices have far outpaced the rise in usage with increases of at least 500 percent. Phosphate and potassium chloride have seen prices rise twelve to seventeen times since 1960. See: Economic Research Service U.S. Department of Agriculture, "Data Set: Fertilizer Use and Price," 2010.
 10. Contract farming accounts for nearly two-fifths of U.S. agricultural production today. The poultry sector has the highest rate of contracts, with 85 percent of growers under contract. At least half of the production of peanuts, tobacco, sugarbeets, dairy products, and hogs are now grown and raised under contract. Data from: Robert A. Hoppe and David E. Banker, "Structure and Finances of U.S. Farms Family Farm Report, 2010 Edition," U.S. Department of Agriculture, Economic Research Service, July 2010. To learn more about the effect of contract farming on farmer economic security, read Susan E. Stokes, "The Dilemma of Contracting: Risk Management or Risky Business," 2006. To learn more about how much farmland and farms we're losing, read the American Farmland Trust's "Farming On The Edge," Center for Agriculture in the Environment, 2007. Viewable at <http://www.farmland.org/resources/fote/default.asp>. According to the Trust, we lose more than an acre of farmland every minute in the United States.
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11. Only the largest 10 percent of farms support a household from farm income alone. In 2009, earnings from farming made up an estimated 9 percent of the average income from farm operator households. Economic Research Service U.S. Department of Agriculture, "Farm Household Economics and Well-Being: Farm Household Income," 2011. To learn more about the impact of farming loss on rural communities and the impact of companies like Walmart on the rural economy, read: Nelson Lichtenstein, *The Retail Revolution: How Wal-Mart Created a Brave New World of Business*. New York, NY: Picador, 2010.
 12. This debt and dependency is a primary factor in many social crises in the global South, especially the epidemic of farmer suicides in rural India. See, for instance, George Lerner, "Farmer Suicides in India Linked to Debt, Globalization," CNN World, January 5, 2010. To learn more about this dynamic, see: Frances Moore Lappé and Anna Lappé, *Hope's Edge*. New York, NY: Penguin, 2003, Chapter: Seeking Annapurna. See also this powerful video about sustainable farmers in Andhra Pradesh, India: <http://www.youtube.com/watch?v=ve4QdJjxuPo&feature=youtu.be>
 13. To learn more about the role of farm subsidies—and who really benefits—see for instance: Timothy Wise, "Understanding the Farm Problem: Six Common Errors in Presenting Farm Statistics," Global Development and Environment Institute, Tufts University, March 2005.
 14. The biggest players in the industrial food chain receive benefits in a multitude of ways, through regulatory loopholes that put the environmental cleanup burden of toxic farms on taxpayer shoulders, through commodity subsidies that enable grain traders to pay artificially low prices to growers, and more. To learn more about some of the benefits accrued to the biggest players, see: Environmental Working Group, "Government Records Show Crop Insurance Subsidies Are A Boon To Big Farm Interests," May 31, 2012.
 15. See: Craig Cox, Andrew Hug, and Nils Bruzelius, "Losing Ground," Environmental Working Group, 2011. As much as 90 percent of U.S. cropland is losing soil above the sustainable rate, according to Dr. Pimentel. "In the last 200 years of U.S. farming, approximately 30% of farmland has been abandoned because of erosion, salinization, and waterlogging." See: David Pimentel and Nadia Kounang. "Ecology of Soil Erosion in Ecosystems." *Ecosystems*: 1998, page 418. See also: David Pimentel et al, "Environmental and Economic Costs of Soil Erosion and Conservation Benefits," *Science*, New Series, Vol. 267, No. 5201, February 24, 1995: 1117.
 16. According to the FDA, 28.8 million pounds of antibiotics were sold and distributed for food use in animals in 2009. U.S. Food and Drug Administration, "2009 Summary Report on Antimicrobials Sold or Distributed for Use in Food-Producing Animals," Table 1. To put this figure in perspective, this is about 80 percent of all antibiotics used in the United States. Ralph Loglisci, "New FDA Numbers Reveal Food Animals Consume Lion's Share of Antibiotics." Center for a Livable Future blog, December 23, 2010.
 17. In the 2000 National Water Quality Inventory conducted by the EPA, agricultural activity was identified as a source of pollution for 48 percent of stream and river water, and for 41 percent of lake water. U.S. Environmental Protection Agency, "2000 National Water Quality Inventory," (Chapter 2, 3). According to a study by Environmental Working Group, agricultural runoff plays a critical role in the doubling of drinking water violations in the U.S. because of nitrate contamination between 1998-2008. This same runoff of nitrogen and phosphorus is carried into the ocean, creating aquatic "dead zones." In 2010, the dead zone in the Gulf of Mexico grew to the size of the state of New Jersey. Craig Cox, Andrew Hug, and Nils Bruzelius, "Losing Ground," Environmental Working Group, 2011.
 18. Kristin S. Schafer et al., "Chemical Trespass: Pesticides in Our Bodies and Corporate Accountability," Pesticide Action Network North America, May 2004. Data is based on the January 2003 CDC National Report on Human Exposure to Environmental Chemicals.
 19. Farming communities have higher rates of leukemia, non-Hodgkin lymphoma, multiple myeloma, and soft tissue sarcoma, as well as cancers of the skin, lip, stomach, brain, and prostate. National Cancer Institute, "Agricultural Health Study," National Institutes of Health, 2011.
 20. There are lots of great studies on the resiliency of sustainable farms, especially during weather extremes like droughts. The Pennsylvania-based Rodale Institute found that during a ten-year period comparing organic and non-organic corn growing systems, the organic corn fields yielded on average 30 percent higher during dry years. Rodale Institute, "The Farming Systems Trial: Celebrating 30 Years." Kutztown, PA: 2011. For an example of a study from sub-Saharan Africa, see Amede Tilahun, "Yield Gain and Risk Minimization in Maize (Zea Mays) through Cultivar Mixtures in Semi-arid Zones of the Rift Valley in Ethiopia," *Experimental Agriculture* 31, no. 02 (1995). Researchers found that fields in this drought-prone region of Ethiopia planted with biodiverse fields yielded about 30 percent more than monocultures during normal rainfall years, and yielded 60 percent more during dry years.
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21. See for instance, ETC Group: Action Group on Erosion, Technology, and Concentration, "Who Will Feed Us? Questions for the Food and Climate Crises." November 2009: 1. Jules Pretty and Rachel Hine, "Reducing Food Poverty with Sustainable Agriculture," Center for Environment and Society, University of Essex, UK, February 2001 and Badgley, C. et al., "Organic Agriculture and the Global Food Supply," *Renewable Agriculture and Food Systems* 22 (2007): 86-108.
22. The Farming Systems Trial out of the Rodale Institute has shown that diversified organic agriculture with cover crops can reduce fossil fuel energy by 33 percent to 50 percent compared with conventional agriculture systems. The Institute's organic no-till system also reduces fossil fuel use by 75 percent over conventional tillage farming. See, for example, David Pimentel, "Impact of Organic Farming on the Efficiency of Energy Use in Agriculture." 2006:40. See also, David Pimentel et al, "Environmental, Energetic, and Economic Comparisons of Organic and Conventional Farming Systems," *Bioscience* 55 (7):573-582.
23. The Ogallala Aquifer that supports a quarter of U.S. farmland is being drained so fast it could be dry in a few decades. The Aquifer is essentially "fossil water—irreplaceable. Committee on Twenty-First Century Systems Agriculture and National Research Council, *Toward Sustainable Agricultural Systems in the 21st Century*. The National Academies Press, 2010. See also: Kumar et al., "Ecologically Sound, Economically Viable: Community Managed Sustainable Agriculture in Andhra Pradesh, India." Chris Reij, "Food Security and Water in Africa's Drylands," in *African Re-greening Initiatives* March 8, 2012.
24. According to the Global Phosphorus Research Initiative, worldwide phosphorus supplies won't be able to match agricultural demand within fifty years. James Elser and Stuart White, "Peak Phosphorus," *Foreign Policy*, April 20, 2010.
25. For 2009, the most recent year available, the UN Food and Agriculture Organization estimates a food supply of 2,831 calories per capita per day. FAOSTAT, food balance sheets, searchable at: <http://faostat.fao.org/site/368/DesktopDefault.aspx?PageID=368#ancor>
26. The results of a UN study on food waste suggest that about one-third of food produced globally is wasted, amounting to about 1.3 billion tons per year. Jenny Gustavsson, Christel Cederberg, and Ulf Sonesson, "Global Food Losses and Food Waste: Extent, Causes and Prevention," UN Food and Agriculture Organization, 2011. For more on food waste, see: Jonathan Bloom, *American Wasteland: How America Throws Away Nearly Half of Its Food (And What You Can Do About It)*. Boston, MA: Da Capo Press, 2010.
27. Roughly one-third (35 percent) of the world's grain becomes feed. United Nations Food and Agriculture Organization, FAOSTAT "Crop Prospects and Food Situation" (2007).
28. Based on data from USDA National Agricultural Statistics Service, "Vegetable Summary," 2011: page 22-23, 77 and from USDA, Economic Research Service, Feed Grains Database: 0.65% of all corn planted is sweet corn; other corn that makes it into our food supply in the form of high fructose corn syrup, for example, is not eaten directly.
29. 925 million people were hungry in 2010, according to the FAO. United Nations Food and Agriculture Organization, "Global Hunger Declining, But Still Unacceptably High: International Hunger Targets Difficult To Reach," September 2010.

To learn more about the Food MythBusters project, visit www.foodmyths.org