

We Already Grow Enough Food For 10 Billion People -- and Still Can't End Hunger

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A new study from McGill University and the University of Minnesota published in the journal *Nature* compared organic and conventional yields from 66 studies and over 300 trials. Researchers found that on average, conventional systems out-yielded organic farms by 25 percent -- mostly for grains, and depending on conditions.

Embracing the current conventional wisdom, the authors argue for a combination of conventional and organic farming to meet "the twin challenge of feeding a growing population, with rising demand for meat and high-calorie diets, while simultaneously minimizing its global environmental impacts."

Unfortunately, neither the study nor the conventional wisdom addresses the real cause of hunger.

Hunger is caused by poverty and inequality, not scarcity. For the past two decades, the rate of global food production has increased faster than the rate of global population growth. The world already produces more than 1 ½ times enough food to feed everyone on the planet. That's enough to feed 10 billion people, the population peak we expect by 2050. But the people making less than \$2 a day -- most of whom are resource-poor farmers cultivating unviably small plots of land -- can't afford to buy this food.

In reality, the bulk of industrially-produced grain crops goes to biofuels and confined animal feedlots rather than food for the 1 billion hungry. The call to double food production by 2050 only applies if we continue to prioritize the growing population of livestock and automobiles over hungry people.

But what about the contentious "yield gap" between conventional and organic farming?

Actually, what this new study does tell us is how much smaller the yield gap is between organic and conventional farming than what critics of organic agriculture have assumed. In fact, for many crops and in many instances, it is minimal. With new advances in seed breeding for organic systems, and with the transition of commercial organic farms to diversified farming systems that have been shown to "overyield," this yield gap will close even further.

Rodale, the longest-running side-by-side study comparing conventional chemical agriculture with organic methods (now 47 years), found organic yields match conventional in good years and outperform them under drought conditions and environmental distress -- a critical property as climate change increasingly serves up extreme weather conditions. Moreover, agroecological practices (basically, farming like a diversified ecosystem) render a higher resistance to extreme climate events which translate into lower vulnerability and higher long-term farm sustainability.

The Nature article examined yields in terms of tons per acre and did not address efficiency (i.e. yields per units of water or energy) nor environmental externalities (i.e. the environmental costs of production in terms of greenhouse gas emissions, soil erosion, biodiversity loss, etc) and fails to mention that conventional agricultural research enjoyed 60 years of massive private and public sector support for crop genetic improvement, dwarfing funding for organic agriculture by 99 to 1.

The higher performance of conventional over organic methods may hold between what are essentially both mono-cultural commodity farms. This misleading comparison sets organic agriculture as a straw man to be knocked down by its conventional counterpart. While it is rarely acknowledged, half the food in the world is produced by 1.5 billion farmers working small plots for which monocultures of any kind are unsustainable. Non-commercial poly-cultures are better for balancing diets and reducing risk, and can thrive without agrochemicals. Agroecological methods that emphasize rich crop diversity in time and space conserve soils and water and have proven to produce the most rapid, recognizable and sustainable results. In areas in which soils have already been degraded by conventional agriculture's chemical "packages", agroecological methods can increase productivity by 100-300 percent.

This is why the U.N. Special Rapporteur on the Right to Food released a report advocating for structural reforms and a shift to agroecology. It is why the 400 experts commissioned for the four-year International Assessment on Agriculture, Science and Knowledge for Development (IAASTD 2008) also concluded that agroecology and locally-based food economies (rather than the global market) were the best strategies for combating poverty and hunger.

Raising productivity for resource-poor farmers is one piece of ending hunger, but how this is done -- and whether these farmers can gain access to more land -- will make a big difference in combating poverty and ensuring sustainable livelihoods. The conventional methods already employed for decades by poor farmers have a poor track record in this regard.

Can conventional agriculture provide the yields we need to feed 10 billion people by 2050? Given climate change, the answer is an unsustainable "maybe." The question is, at what social and environmental cost? To end hunger we must end poverty and inequality. For this challenge, agroecological approaches and structural reforms that ensure that resource-poor farmers have the land and resources they need for sustainable livelihoods are the best way forward.