

Global crop production shows some signs of stagnating (study)

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After decades of rapidly growing global agricultural output, production of four of the world's most important crops could be stagnating or even slowing in some regions, according to a new study published in *Nature*, a top scientific journal. The study, by the University of Minnesota's Deepak Ray and four others, examined millions of census reports from the last half century to gather their data.

The authors are careful to point out that crop production is still increasing in parts of the world; it is by no means a categorical decline. The report's abstract reads summarizing, "Although yields continue to increase in many areas, we find that across 24-39% of maize-, rice-, wheat- and soybean-growing areas, yields either never improve, stagnate or collapse." That's about a quarter to a third of global production of four of our most important crops.

This is potentially a very big deal. World populations are still growing. So is the global middle class, members of which tend to consume more meat and dairy per person, which means more crops per person. That's been happening for a while, and it's been fine as long as food production has kept pace. But the pace of crop production growth appears to be slowing in some really important regions, particularly in parts of India and China and, yes, the U.S.

How did this happen? Study co-author Jonathan Foley, talking to *Science Daily*, suggests one possible explanation. "This finding is particularly troubling because it suggests that we have preferentially focused our crop improvement efforts on feeding animals and cars, as we have largely ignored investments in wheat and rice, crops that feed people and are the basis of food security in much of the world," he said. Yikes.

What do the data show us? The authors kindly shared some charts and maps illustrating their data. As Ray told *Science Daily*, it "both sounds the alert for where we must shift our course if we are to feed a growing population in the decades to come, and points to positive examples to emulate."

Here, first, is what the data look like for changes in wheat production. The green indicates rising production (and, again, keep in mind that some growth is necessary to keep pace with population increases), orange for stagnating production, and red for a decrease. You'll notice lots of orange (as well as some green splotches) in Asia.

Here are similar maps for rice and soybeans. The map for maize (corn) appears at the top of the page. Again, look closely at quick-growing Asia, where you'll see both good and bad news, although ideally they would be all green:

And here are some sample findings from the study's data, showing what it looks when a crop stagnates growth, collapses, never improved, or is still growing. Take a look at the sample locations places like Argentina and Morocco are in there, but so are Arkansas, Texas, and Minnesota and you'll remember that sustainable crop production really is a global problem.

America's population might not be growing as quickly as India's or China's, but it is growing, and its consumption habits tend to require more crops per person. That's because we need crops not just to feed ourselves but to fuel our cars and to support our enormous demand for meat and dairy, which require substantial crop outputs. As Asian societies become not just larger but increasingly wealthy, the stress on the world's food supply is expected to increase. If crops are to keep pace, we'll need more of the world following the examples of places like Big Stone County, Minnesota, which has seen consistent growth in wheat production.

People have been predicting a Malthusian crisis, in which population growth outstrips the world's ability to feed and house everyone, for centuries. The predictions have all been wrong. Let's hope it stays that way.

Source *Washington Post*