



EARN **80,000** BONUS POINTS  
FOR YOUR BUSINESS.

[LEARN MORE](#)

CHASE for BUSINESS™  
SO YOU CAN™

[Back to Article](#)[Click to Print](#)

# TIME

Tuesday, May. 22, 2012

## Feeding the Planet Without Destroying It

By Bryan Walsh

Climate change is the environmental problem that obsesses us, the one that's the focus of high-flying international summits and hardcore national politics. But it's not the only environmental problem — and it's not even the biggest one. That happens to be the crisis in agriculture and land use, the subject of what Jon Foley — the head of the University of Minnesota's Institute on the Environment — calls the "other inconvenient truth." Put simply, the act of feeding 7 billion plus human beings already puts more stress on the planet than any other single activity — and with both population and global wealth continuing to grow, we're going to need to figure out a way to produce more food without further damaging the environment. Otherwise we may end up running out of both food and the planet.

Of course, exactly how we should address these problems is the subject of fierce debate in the U.S. and beyond. Is the solution to go organic as much as possible, or should we focus on trying to extend the fertilizer and irrigation of the Green Revolution to underperforming agricultural areas in Africa and Asia? Do we need to change our diet and reduce meat consumption, or is it simply unrealistic to expect more of us to become semi-vegetarians — especially among the rising global middle class just getting a chance to eat like Americans? How much value do intact forests and wildlife habitat have as we struggle to feed the 1 billion people who go to bed hungry each night? And is it really food production we need to improve, or distribution?

[\(TIME Special Report: The World at 7 Billion\)](#)

I've had a chance to hear Foley ponder his inconvenient truth a couple of times recently — first at a panel I moderated at the New York Academy of Sciences, and then at the Cooking for Solutions conference at the Monterey Aquarium in California. I like Foley because he can distill the big questions facing the human race in a handful of striking facts or images, but also because he approaches those same questions with a resolute pragmatism you don't always find in the environmental field — especially when it comes to food.

"Can we feed the world and sustain the planet?" asks Foley. "Yes it's possible. But not with business as usual."

It's important to understand just how massive global agriculture's footprint really is. First there's simply the matter of land: 6.2 million sq. mi (16 million sq. km) are currently used to grow crops — an amount of land about equal to the size of South America — while 11.6 million sq. mi (30 million sq. km) has been set aside for pastureland, an area equal to the entire African continent. Altogether that's more than 40% of the dry land on the planet. We use 60 times more land to grow and raise food than we do to live on. Farming takes half the world's available freshwater, much of which is used for irrigation. And all that activity — plus the deforestation and degradation that tends to go hand in hand with farming — helps make agriculture the single biggest source of manmade greenhouse gases, more than industry or transportation or electricity generation. "We are running out of everything," says Foley. "We are running out of planet."

That's worrying enough today, given the fact that so many human beings remain hungry even in this moment of unprecedented abundance. But depending on population growth and global diets, we may need to produce twice as much food by mid-century as we do now. The simplest way to grow more food is to farm on more land, but that would come with major environmental consequences. The arable territory that we haven't transformed into cropland or pastureland tends to be forest, including the great rainforests of South America and Asia. Cutting those forests down — as we're already doing now — might help produce more food, but it would come with a major environmental cost. We'd be wiping out the most important wildlife habitats left on this crowded planet, even as we add more carbon to the atmosphere through deforestation. "We need to freeze the footprint of agriculture," says Foley. "We need to farm the land we do farm better."

### [PHOTOS: Securing Food in Chicagoland](#)

One way to do that is to focus on the parts of the planet where agricultural yield is lagging. Some of those areas are familiar, like sub-Saharan Africa, where poverty and lack of fertilizer and infrastructure means that the average farmer produces far less corn or grain per acre than the land could produce under ideal conditions. But some other under-performing regions are surprising: Eastern Europe, thanks to the utter mess that was Soviet agricultural policy, lags far behind where it should. "We need to focus agriculture improvement in places with a "yield gap," says Foley. "Then we'll be able to grow more on the same amount of land."

Just how we go about doing that is where matters get sticky. Farmers in regions like the American Midwest can now produce an amazing amount of food per acre — each American farmer produces enough food to feed over 150 people. That's productivity is due largely to what's known as the Green Revolution, the use of irrigation and chemical fertilizers to supercharge farming. But that productivity comes along with serious side effects, from the aquatic dead zones created by fertilizer runoff in coastal farms to the health problems

and ecological damage associated with chemical pesticides. Even if we wanted to export the Green Revolution in total to those struggling farming regions, we might not have the water or the cheap energy to do it — not unless we want farming to come at the expense of the environment.

[\(MORE: Whole Food Blues: Why Organic Agriculture May Not Be So Sustainable\)](#)

But simply going organic won't solve the problem either. Perhaps 1% of the world's cropland is farmed organically, and as Foley put it in one talk, that food mostly goes to "white people in rich countries with middle class or higher incomes." Foley co-authored a recent paper in *Nature* that compared agricultural yield for conventional farming to organic practices for a number of different crops, and found that the conventional agriculture produce considerably more food per acre, especially for major grains like rice and wheat. But at the same time Foley notes that genetically modified crops — so often cited as saviors by those in conventional agriculture — have yet to make a real difference in feeding the planet, since nearly all GM crops are currently used to feed animals or for clothing and fiber.

So what do we do then? Foley calls for something he terms "terraculture" — essentially farming done with the planet in mind. That means taking the best of both conventional and organic agriculture, using water far more efficiently for irrigation than we do now and even altering our diets. The last bit isn't about farming, but it could be critical. Much of the grain grown in developed nations goes to feed not human beings but domesticated animals, and inefficiently too — one filet mignon requires 32 lbs. of corn, and converts that grain into calories at just 3% efficiency. Globally we'll likely need to eat less meat — if only to give parts of the growing developing world space to eat a little meat — and, at least in much of the unhealthily overfed West, eat fewer calories overall. That might help reduce global food waste — one out of every three calories produced globally are never eaten, which isn't just a waste of food but of water, land and energy.

Answering the other inconvenient truth is going to require a lot of changes, from the individual consumers up to the massive global companies that produce and sell much of the food we eat. That won't be simple, but as Foley says: "There is no silver bullet solution. But there is silver buckshot." And we'll need it all.

*Bryan Walsh is a senior editor at TIME. Find him on Twitter at [@bryanrwalsh](#). You can also continue the discussion on TIME's [Facebook page](#) and on Twitter at [@TIME](#)*

[MORE: Climate Change and Farming: How Not to Go Hungry in a Warmer World](#)

[PHOTOS: A Global Food Crisis](#)

 [Click to Print](#)

**Find this article at:**

<http://content.time.com/time/health/article/0,8599,2115423,00.html>

---

Copyright © 2014 Time Inc. All rights reserved. Reproduction in whole or in part without permission is prohibited.

[Privacy Policy](#) | [Add TIME Headlines to your Site](#) | [Contact Us](#) | [Customer Service](#)