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The Coming Food Crisis: Blame Ethanol?

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images.forbes.com/williampentland/files/2012/07/corn-worse-than-oil-california.jpg) A series of spikes in global food prices resulted in riots in 2008 and contributed to violent uprisings in North Africa and the Middle East in 2011. The culprit is a matter of considerable and frequently heated debate, but the most commonly cited candidates include market speculators, global warming and aggressive government renewable fuel mandates.


If you believe the folks at the [New England Complex Systems Institute](http://www.necsi.edu/) (<http://www.necsi.edu/>) in [Cambridge](http://www.forbes.com/places/ma/cambridge/) (<http://www.forbes.com/places/ma/cambridge/>), Mass., the global food supply system is stumbling into a drought-induced supply shortage that could

galvanize a global food crisis (<http://www.worldbank.org/foodcrisis/>) far more severe than those implicated in the widespread uprisings known as the Arab Spring (<http://arxiv.org/pdf/1108.2455v1>).

In an updated version of a paper (<http://necsi.edu/research/social/foodprices/updatejuly2012/>) first published in September, Marco Lagi, Yavni Bar-Yam and Yaneer Bar-Yam considered the possible consequences of the prolonged drought in the mid-western United States, the worst in half a century, on global food prices. The analysis, which relied on a quantitative model of historical food prices, concluded that the drought could amplify the impact of market speculation and corn-to-ethanol conversion policies on the impending global food crisis by an order of magnitude. To



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“ Recent droughts in the mid-western United States threaten to cause global catastrophe driven by a speculator amplified food price bubble. Here we show the effect of speculators on food prices using a validated quantitative model that accurately describes historical food prices. During the last six years, high and fluctuating food prices have led to widespread hunger and social unrest. While the spring of 2012 had a relative dip in the food prices, a massive drought in the American mid-west in June and July threatens to trigger another crisis . . .

An update to the original paper in February 2012 demonstrated that the model previously published . . . anticipated a new food crisis by the end of 2012 if adequate policy actions were not implemented. Here we provide a second update, evaluating the effects of the current drought on global food prices. We find that the drought may trigger the expected third food price bubble . . . to occur earlier than otherwise expected, beginning immediately . . . [and] rais[ing] prices well beyond an increase justified by the reduced supply caused by the droughts.

In other words, the sky may soon fall for those poor souls who are unable to stomach the marginal increase in food prices. At risk of reiterating the obvious, malnutrition (<http://data.worldbank.org/indicator/SH.STA.MALN.ZS/countries?display=map>) is a matter of life or death.

▶ ✕

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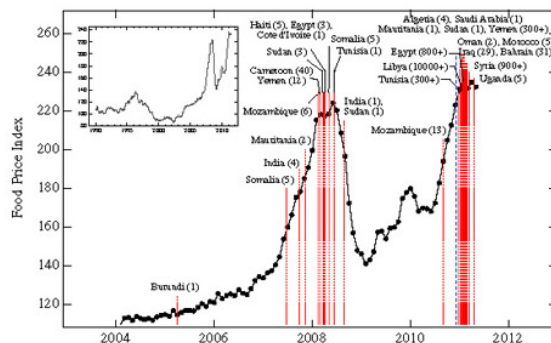


FIG. 1: Time dependence of FAO Food Price Index from January 2004 to May 2011. Red dashed vertical lines correspond to beginning dates of “food riots” and protests associated with the major recent unrest in North Africa and the Middle East. The overall death toll is reported in parentheses [26–55]. Blue vertical line indicates the date, December 13, 2010, on which we submitted a report to the U.S. government, warning of the link between food prices, social unrest and political instability [56]. Inset shows FAO Food Price Index from 1990 to 2011.

<http://blogs->

[images.forbes.com/williampentland/files/2012/07/food-riots-graphic1.jpg](http://blogs-forbes.com/williampentland/files/2012/07/food-riots-graphic1.jpg)

Everyone agrees that we should not support policies that result in food shortages. The trouble is that nobody agrees what policies are to blame. The NECSI analysis fingers biofuels first and speculators second: “The model showed that, of all the factors proposed to be responsible for the recent dramatic spikes and fluctuations in global food prices, rapid increases in the amount of [corn-to-ethanol](http://www.american.com/archive/2012/january/children-of-the-corn-the-renewable-fuels-disaster) conversion and speculation on futures markets were the only factors which could justifiably be held responsible.”

hmmm???

Comment from faithful Clean Beta

(<http://blogs.forbes.com/williampentland/>) reader, Fred Linn:

“ We are making ethanol from corn because we have corn to make ethanol from. We have corn to make ethanol from because the farmers that grow the corn can sell their corn for enough money to cover their expenses and have enough left over to be worth the effort to grow the corn. Up until now—we have been using up to about 35% of the corn crop to produce ethanol. Ethanol comprises about 10% of our gasoline supply in the form of E10.

If we do not make ethanol from corn—you will increase the availability of corn 35%. A basic assumption of this study is, that ethanol is raising the price of corn by reducing the supply of cheap corn available for use in foods. Therefore, if you do not use corn to make ethanol, food will become cheaper. But, if you reduce the market for corn by 35%—the probable result is that most corn farmers will not be able to cover their expenses. They will have to go out of business. [Next](http://www.forbes.com/companies/next/) year, you will have no corn, no ethanol and no food. You will also have 10% less gasoline available. The last time you had a spike in the price of petroleum, it nearly doubled in price. The price went down when the recession created a 3% decrease in demand. So, a 3% shift in demand = roughly 2X rise in the price of petroleum crude.

Do we want no ethanol, no food, no corn, \$35/gal gasoline, and a recession much worse than we are just now recovering from?

That is what the mathematical model presents to me.

Obviously, this seems to me to be a highly undesirable outcome.

So, what do we do? The answer seems to me to be ridiculously simple.

Since making less ethanol presents such a dire picture—let's try making MORE ethanol.

We are not limited to how much corn we can grow. We can plant more corn. But we are limited in the amount of land available that we can plant corn on. Especially, if the drought continues.

Fortunately, we are not limited to what we can make ethanol from. We do not have to use corn—we can use other things. Other things that grow well where corn does not. Things like sugarcane. We've been making ethanol for centuries from sugarcane—it is called rum. And where we can't grow sugarcane, we can grow sugar beets. Sugar beets produce exactly the same thing that sugarcane does. Sucrose. Beets have about the same productivity as sugarcane. We already know that Brazil powers their economy on ethanol produced from sugarcane. About 50% of their transportation fuel is ethanol grown on about 2-3% of their arable land. I've never heard of any credible study that says people will be starving worldwide because we planted 3% of available cropland as sugarcane or sugar beets. Oh, and by the way, sugar beets grow well in any area of the US with adequate soil and moisture—including Alaska. We can even make ethanol from native desert adapted plants—drought does not hurt plants adapted to live in desert conditions. The plant is agave (called cactus, but actually a succulent). We have LOTS of unused desert land available—even more if the drought continues. We've been making ethanol from agave for hundreds of years—it is called tequila. Agave produces as much or more sugar per acre as either sugarcane or sugar beets.

When you pay \$1 for groceries at the supermarket—out of that \$1 only about 12-14 cents goes to the farmers that produced the commodities that went into the foods that you buy. About 35 cents goes to pay for energy to make, transport, process, and preserve the products. If the price of oil goes up—so will the price of the food you buy—and about 3X faster than it will if the price of the base commodities increases. ALL foods—not just some.

We need to make more ethanol, not less ethanol.

We will have lower prices for food if we replace petroleum with ethanol.

What should we make ethanol from? All of the above. And other things as well. The more and differing sources we have in producing ethanol, the greater our flexibility can be in the event of changing conditions, like droughts, floods or anything else that changes market dynamics.

The New England Complex Systems Institute sounds to me like a rooty tooty heavy duty bunch of experts with more degrees than a thermometer.

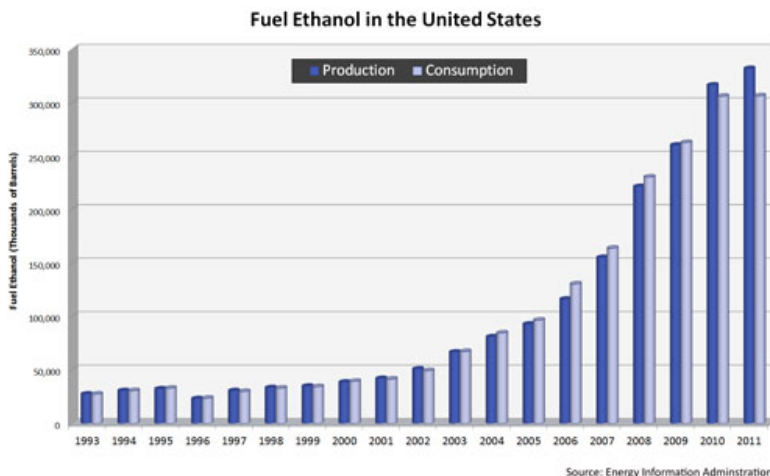
I wonder why they couldn't figure out something as simple as this?

Response to Fred Linn:

As you seem to suggest, the problem is really corn-to-ethanol conversion rather than the production of ethanol per se. To their credit, the authors of the NECSI analysis finger “corn-to-ethanol” policies as the problem rather than “ethanol.” The title of this post

is symptomatic of the flawed assumptions about ethanol and I accept responsibility for not clarifying that the blame is actually being attributed to conventional corn-based ethanol. I support biofuels and agree with you that the U.S. would be a mess without E10 policies, which have helped stabilize domestic gasoline prices and the national economy that depends on that stability.

On the other hand, it bears mentioning that the United States has very rapidly become a major ethanol exporter.



(http://blogs-

images.forbes.com/williampentland/files/2012/07/Fuel-Ethanol-Trends-in-USA.jpg)

Presuming the lion's share of these ethanol exports are derived from corn, one has to wonder if it would be better to export the product as food rather than fuel. Absent government intervention, would these exports be corn?

21 comments, 16 called-out

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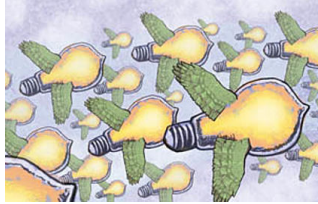
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