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# TIME

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A major new study reveals an uncomfortable truth—  
it can work (if it's done right)

BY AMANDA RIPLEY



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GOING GREEN

# Sustainably Squeezed? A fertilizer initiative at Tropicana seeks to shrink agriculture's (massive) carbon footprint

BY BRYAN WALSH

HOW GREEN IS YOUR ORANGE juice? More than a year ago, PepsiCo enlisted Columbia University's Earth Institute and the environmental-auditing firm Carbon Trust to help assess the carbon footprint of each half gallon of its Tropicana orange juice. The sustainability initiative found that on average the process, from growing the oranges to getting a 64-oz. carton of healthy goodness into your fridge, involved emitting 3.75 lb. of greenhouse gases. And the single biggest contributor to Tropicana's carbon footprint wasn't the gas-guzzling trucks that deliver the cartons to stores or the machinery used to run a modern citrus facility. It was the fertilizer for the orange trees, which accounted for a whopping 35% of the OJ's overall emissions. That came as a surprise even to the people doing the accounting. "We thought it might be transport or packaging," says Tim Carey, PepsiCo's sustainability director. "But the agricultural aspects of the operation are more important than we expected."

So to make a greener OJ, PepsiCo knew it needed to start looking for a greener fertilizer. Inorganic nitrogen fertilizer—the sort used by most farms in the U.S.—is very carbon-intensive because of all the natural gas used in the production process. (Agriculture eats up as much as 5% of natural-gas consumption worldwide, and the cost of fertilizer is closely

linked to that of natural gas, leaving farmers vulnerable to huge price swings.) Given how much nitrogen fertilizer is used on U.S. farms—more than 13 million tons in 2007 alone—developing a greener way to help plants grow could put a serious dent in the country's carbon emissions.

That's why PepsiCo is testing two low-carbon fertilizers at a citrus farm in Bradenton, Fla. Yara International, the world's largest fertilizer producer, is supplying PepsiCo with an experimental calcium-nitrate-based fertilizer that emits much less nitrous oxide—which, pound for pound, has a far more powerful greenhouse effect than carbon dioxide—than conventional fertilizer does. The change in ingredients, plus a push to improve the energy efficiency at its production plants, could cut Yara's fertilizer's emissions by up to 90%.

The other fertilizer PepsiCo is testing is an organic product made by Outlook Resources, a Toronto-based sustainable-agriculture company that uses biofuels, food waste and other renewable materials. Outlook is eschewing natural gas, a fossil fuel that often has to be transported long distances, and instead the firm is actively seeking out locally sourced ingredients that help cut its carbon footprint even further. And since Outlook's fertilizer is also more efficient than conventional fertilizer, less of it has to be used on crops, which helps prevent the water pollu-

tion linked to fertilizer runoff.

Backyard gardeners who want to cut their carbon footprint can emulate Outlook's organic approach: skip the bag of fertilizer and make some biochar by smashing used charcoal briquettes and sprinkling the dust on flower beds and vegetable patches. As for PepsiCo, the company will try out Yara and Outlook's alterna-fertilizers for five years to see if they can cut Tropicana's carbon footprint without diminishing overall crop yield, which would likely raise operating costs.

"Sustainability is ultimately about being a better company," says Carey. If the pilot study works, the greener fertilizers could shrink the carbon footprint of PepsiCo's citrus growers by as much as 50% and reduce the total carbon footprint of a glass of its orange juice by up to 20%. Now that's something we can all drink to.

## From Grove To Glass

Producing a 64-oz. carton of Tropicana orange juice emits 3.75 lb. of greenhouse gases, a big portion of which comes from the fossil fuels used to make fertilizer

