

Air pollution results from sugarcane ethanol production

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(PhysOrg.com) -- The burning of sugarcane fields prior to harvest for ethanol production can create air pollution that detracts from the biofuel's overall sustainability, according to research published recently by a team of researchers led by scientists at the University of California, Merced.

UC Merced graduate student Chi-Chung Tsao was the lead author on the paper and was aided in the study by UC Merced professors Elliott Campbell and Yihsu Chen. The study — published online this week in the *Nature Climate Change* journal — focused on Brazil, the world's top producer of [sugarcane](#) ethanol and a possible source for U.S. imports of the alternative fuel.

"There is a big strategic decision our country and others are making, in whether to develop a domestic biofuels industry or import relatively inexpensive biofuels from developing countries," Campbell said. "Our study shows that importing biofuels could result in human health and environmental problems in the regions where they are cultivated."

[Download a PDF of the study.](#)

Ethanol is seen as an alternative to fossil fuels, which emit greenhouse gasses when used and are a major contributor to air pollution and climate change. But despite some governments encouraging farmers to reduce field burning — which is done in part to protect farmworkers by removing sharp leaves and harmful animals — more than half of sugarcane croplands in Brazil continue to be burned.

That leads to a reduction in air quality that can offset the benefits of ethanol over petroleum fuels that emit more greenhouse gases during their use, something Campbell said the U.S. should consider when determining whether to import inexpensive [ethanol](#) from Brazil or continuing to invest in domestic corn [ethanol production](#).

"Unlike petroleum production, the potential to produce biofuels is relatively evenly distributed across many countries, and this is a big plus from an energy security perspective," Campbell said. "However, agriculture practices in some regions result in biofuels that lead to even more intense air pollution than petroleum."

Satellites are currently used to measure [air pollution](#) in Brazil, but the study shows actual pollution caused by sugarcane field burning could be four times greater than satellite estimates. The researchers believe this is due to the relatively small scale of individual fires.

Provided by University of California

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