

WHAT THE SCIENTISTS ARE SAYING: DEBUNKING THE LARK STUDY



In February 2022, Tyler Lark and others published an article in the Proceedings of the National Academy of Sciences containing poor modeling and speculative claims about the environmental impact of biofuels, in particular with respect to land use change, and thus incorrectly stating its relationship to lifecycle greenhouse gas emissions.

Environmental scientists and experts from across the country – including analysis from scientists at the U.S. Department of Energy's own Argonne Laboratory – have found countless inaccuracies, flaws, and false conclusions in the Lark article.

Take a look at what the scientists are saying:

"TOO LIMITED" AND "OUTDATED AND INNACURATE PROJECTIONS"

Comments on "Environmental Outcomes of the US Renewable Fuel Standard"

- Steffen Mueller, University of Illinois-Chicago
 - Micheal Wang and Hoyoung Kwon, Argonne National Laboratory
 - Farzad Taheripour, Perdue University
 - Madhu Khanna, University of Illinois at Urbana-Champaign
 - Isaac Emery, Informed Sustainability Consulting, LLC
 - Ken Copenhagen, CropGrower LLC.
- "The Lark et al. modeling approach . . . missed the long-run pattern of changes in the mix of crops and the combined effect across all crops produced in the U.S. This short-term analysis generated a higher demand for active cropland and overestimated land conversion from CRP [Conservation Reserve Program] to crop production than what is consistent with observed trends in data."
 - "The Lark et al. modeling approach is too limited to effectively consider the drivers of ethanol industry and its interaction with other industries including the cropping and livestock industries."
 - "To estimate probability of land transformation, Lark et al. used outdated and inaccurate projections for future crop prices and several other variables. In addition, in an ad hoc manner, they assumed costs of crop production remain constant over the 10-year projection period for the stream of expected returns on cropland. These made their land transformation projection questionable."
 - "[A]reas identified by the authors as expansion to cropland may often be short-term fallow/idle lands (less than 10 years). In fact, many parcels identified by Lark et al in their "Cropland Expansion Layer" appear to be prime examples of land on the margin that is toggling between agriculture and fallow/idle state based on crop price signals. This would likely result in a systemic overestimation of SOC emissions for these parcels. Without such observation data to support their estimates, Lark et al. should have considered their results with high uncertainty."

"DOUBLE COUNTED" AND INCORRECT EMISSIONS RESULTS

- Steffen Mueller, University of Illinois-Chicago
 - Michael Wang of Argonne National Laboratory, et al.:
- "The authors missed the fact that corn ethanol LCA studies capture the N₂O emissions from any change in nitrogen applied to corn in farming GHG emissions. As a result, they may have double-counted N₂O emissions in their LUC emissions. They also failed to take into account emissions savings due to avoided consumption and improvements in livestock industry induced by using biofuel by products."

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"MAGNIFICENT CHANGES" IN LAND USE ARE "OVERESTIMATED"

- Steffen Mueller, University of Illinois-Chicago
- Michael Wang of Argonne National Laboratory, et al.:

- "Lark et al. projected that in many counties area of cropland would increase largely (up to 2000 hectares for 1 hectare of changes in corn area). What justifies these magnificent changes? These large changes suggest that Lark et al. overestimated the land transformation elasticities."
- "Lark et al. projected that the area of corn increases in 1,353 counties and decreases in 349 counties. In addition, their results showed changes in cropland in 126 counties with zero change in corn area. These odd results strongly suggest that the Lark et al. modeling approach may have considered reshuffles of crops among geographic locations of crop production with significant LUC emission implications."

Comments on the 2022 Workshop on Biofuel Greenhouse Gas Modeling

- David Macintosh,
Environmental Health &
Engineering, et al.

- "Ultimately, Lark 2022 concludes that dLUC [domestic land use] impacts arising from RFS2 of at least 50 grams of carbon dioxide equivalent emissions per megajoule (gCO₂e per MJ) of ethanol with additional unquantified impacts from iLUC.¹⁵ This finding is 5-fold to more than 10-fold higher than results for comparable scenarios produced from generally accepted analyses published in the peer-reviewed scientific literature and detailed in publicly available reports and whose results are incorporated into state, national, and international policy."
- "[T]he sensitivity of the [Lark study's] intermediate analyses, key results, and conclusion cannot be independently tested because the authors have not made their models publicly available."

ENVIRONMENTAL OUTCOMES OF THE US RENEWABLE FUEL STANDARD

- Pieter Booth, Principal
Scientist at Net Gain
Ecological Services

- "The [Lark] study . . . neglects to evaluate the relationship between oil prices and corn prices."
- "[I]t is not possible to evaluate some of the data sets themselves as they are non-public, thus limiting third party reviewers' abilities to evaluate the validity of the conclusions the authors draw."
- "The authors characterize as fact numerous modeled results, giving the reader a misleading impression of false confidence in the conclusions which are drawn from highly uncertain models embedded with extensive assumptions that may or may not reflect the real-world."
- "It is also misleading and irresponsible of the authors to suggest that there is a link between the RFS and potential impacts to threatened and endangered species when they present no information to support these claims."