

Sugarcane bioethanol: Environmental implications

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An article in the current issue of Global Change Biology Bioenergy assessed the net greenhouse gas savings of bioethanol from sugarcane as compared to the use of fossil fuels.

Researchers have long promoted biofuels produced from crop biomass as an environmentally sustainable source of renewable energy. A recent study questions whether the potential climate benefit of sugarcane ethanol is diminished when emissions from land use management are considered.

Scientists examined the sugarcane [ethanol production](#) systems to identify sources of greenhouse gas emissions. They found that land use change, fertilization, residue burning, and tillage had the largest impact on [greenhouse gas emissions](#).

According to Dr. Klaus Butterbach-Bahl, head of the Department of Atmosphere/Biosphere Interaction and Global Change at the Karlsruhe Institute of Technology, "It is also very likely that N₂O emissions from sugarcane production systems have been seriously underestimated so far when using standard IPCC methodology. The diversity of sugarcane production systems and the remaining uncertainties with regard to the GHG balance of bioethanol from sugarcane clearly show that more measurements are needed for a full environmental assessment."

In order to maximize greenhouse gas savings, Dr. Cardoso Lisboa and coauthors suggest changes at all stages of the sugarcane production. For

example, simultaneous provision of irrigation water and fertilizer would allow the reduction of [fertilizer](#) rates in sugarcane production systems. Furthermore, the conversion from pre-harvest burning to no- or minimum-tillage systems with mechanized harvest may better maintain or even increase soil C and N stocks.

More information: www.gcbbioenergy.org/

Provided by Wiley

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