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The Bioethanol Industry in Sub-Saharan Africa: History, Challenges, and Prospects

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Abstract

Recently, interest in using bioethanol as an alternative to petroleum fuel has been escalating due to decrease in the availability of crude oil. The application of bioethanol in the motor-fuel industry can contribute to reduction in the use of fossil fuels and in turn to decreased carbon emissions and stress of the rapid decline in crude oil availability. Bioethanol production methods are numerous and vary with the types of feedstock used. Feedstocks can be cereal grains (first generation feedstock), lignocellulose (second generation feedstock), or algae (third generation feedstock) feedstocks. To date, USA and Brazil are the leading contributors to global bioethanol production. In sub-Saharan Africa, bioethanol production is stagnant. During the 1980s, bioethanol production has been successful in several countries including Zimbabwe, Malawi, and Kenya. However, because of numerous challenges such as food security, land availability, and government policies, achieving sustainability was a major hurdle. This paper examines the history and challenges of bioethanol production in sub-Saharan Africa (SSA) and demonstrates the bioethanol production potential in SSA with a focus on using bitter sorghum and cashew apple juice as unconventional feedstocks for bioethanol production.

Keywords: bioethanol production, sub-Saharan Africa, biofuel sustainability, food security, land availability,

Full text

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