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Life Cycle Assessment of Bioethanol from Feedstocks in Thailand

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Abstract : An analysis of mass balance, energy performance, and environmental impact assessment were performed to evaluate bioethanol production in Thailand. Thailand is an agricultural country. Thai government plans to increase the use of alternative energy to 20 percent by 2022. One of the primary campaigns is to promote a bioethanol production from abundant biomass resources such as bitter cassava, molasses and sugarcane. The bioethanol production is composed of three stages: cultivation, pretreatment, and bioethanol conversion. All of mass, material, fuel, and energy were calculated to determine the environmental impact of three types of bioethanol production: bioethanol production from cassava (CBP), bioethanol production from molasses (MBP), and bioethanol production from rice straw (RBP). The results showed that bioethanol production from cassava has the best environmental performance. CBP contributes less impact when compared to the other processes.

Keywords : bioethanol production, biofuel, LCA, chemical engineering
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