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Potential of Ethanol Production from Major Agricultural Residues in Southeast Asia

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Abstract

Much attention has been paid to fuel ethanol recently, for gasoline substitution and alleviation of global warming. However, the use of food resources for fuel ethanol is controversial and the use of non-food resources is anticipated. Ethanol production technology based on milling pretreatment and enzymatic hydrolysis was developed. We estimated ethanol production potential from three major agricultural residues, rice straw, sugarcane bagasse, and empty fruit bunches (EFB) from oil palm, for six Southeast Asian countries. Our estimation for maximum possible ethanol production potential based on experimental data showed that more than 40% of gasoline consumption can be substituted by ethanol produced from those residues, as the sum of six countries. Further increase of ethanol production can be expected with improvement of hydrolysis rate, xylose utilization, or use of other residues. Southeast Asian countries have large ethanol production potential without utilizing food resources.

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