

Second Generation Cane Ethanol: Potential and Realization

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Two thirds of the dry matter in sugar cane is lignocellulose. Fermentative conversion of this substantial resource into ethanol or other products has obvious appeal, however this has not yet been implemented commercially and several key issues are not clearly in focus. For example: By what multiple could lignocellulose conversion increase ethanol yield and gross revenues per hectare? Are there second generation ethanol technologies for which attractive economics may be anticipated? How might 2nd generation ethanol production be integrated into a cane ethanol mill? How do the economics of 2nd generation ethanol production compare to the economics of electricity cogeneration, and on what does this depend?

New analysis will be presented from a several person-year effort involving personnel from Mascoma Corporation and Dartmouth College in active consultation with Brazilian contacts. The overall objective is to meld the perspective of leading experts on cellulosic ethanol production with realities and opportunities associated with the Brazilian ethanol industry. The comprehensive Role of Biomass in America's Energy Future (RBAEF) analysis of mature technology for converting cellulosic biomass to fuels and electricity* will be used as a departure point. This analysis will be summarized, and an updated cellulosic ethanol scenario developed. Integration of the updated scenario into a cane ethanol mill will then be examined with attention to the issues listed above.

* Presented in 8 articles comprising a dedicated issue of Biofuels, Bioproducts, and Biorefining (April, 2009) with participants from 12 US institutions and sponsorship from the Department of Energy, National Commission on Energy Policy, and the Energy Foundation.

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