EXPLOITABLE FOREGROUND

Economic Assessment of Biomass Sorghum to Alternative Products

Explanation and Purpose

The economic feasibility of alternative products from sorghum biomass is analysed for different scenarios, namely for biomass sorghum to biogas, 2nd generation ethanol, and FT (Fischer-Tropsch) diesel. For the assessment "low", "typical" and "high" cases are defined by varying the key production and processing parameters like feedstock yield, conversion efficiency and per unit processing cost.

Comparison of calculated total variable cost of biogas and biomethane generated from sorghum biomass shows that it has a competitive edge over conventional energy. A fifteen year cash flow analysis shows that for biomass sorghum to biogas the return on investment is positive with IRR (Internal Rate of Return) of 24%, 44% and 57% under the three cases "low", "typical" and "high", respectively.

Variable cost analysis indicates that 2nd generation ethanol is competitive at the lower end of the price of enzyme used for processing biomass to ethanol, but is not competitive at the higher end of enzyme price.

There is a need for considerable improvement in the production technology of FT diesel through Fischer-Tropsch synthesis of gas since presently the end product is not economical given the current global price of diesel.

Exploitation Strategy

Economic feasibility analysis of producing 2nd generation ethanol from sorghum biomass indicates that processing cost determines its profitability which in turn depends on the enzyme price. Bringing down enzyme price holds the key for the economic viability of 2nd generation ethanol.

Further Research

Further analysis will be carried out in future by varying the key parameters related to production, processing and capital cost based on developments in the field.

SWEETFUEL

Sweet Sorghum: an alternative energy crop

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