

Minimizing Profit Variability of a Integrated biorefinery with contracts and futures

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The profit of a biorefinery is highly affected by the supply of its raw materials and margin from the product. Taking responsive actions to the unstable supply of raw materials and the fluctuating prices are of major concern for the efficient management of biorefineries. In this study, a biorefinery complex is defined to tackle these issues by diversifying products as well as raw materials. Various raw materials are purchased based on the contracts and the spot prices of candidate raw materials while their total amount depends on product demands. The supply of required raw materials is accompanied by the futures contracts to curtail the risks involved in the procurement. In the downstream process, operational planning of fermentation and separation units is established according to the demand and margin of multiple products. The proposed model of integrated planning for a biorefinery would contribute to escalating its profitability and operational flexibility. ACKNOWLEDGEMENT : This work was supported by the Korean Systems Biology Research Program (M10309020000-03B5002-00000) of the Ministry of Education, Science and Technology (MEST).