

Ethanol From Potato Wastes

Executive Summary

The Grand Forks, North Dakota, potato processing plants generate over 1.7 million pounds of waste per day. This potato waste can be converted into 8.7 million gallons of fuel-grade ethanol per year. A preliminary economic analysis has indicated that the production of fuel-grade ethanol could potentially yield an annual gross profit of approximately \$11 million. A study was performed to further investigate the economic and technical feasibility of producing fuel ethanol from potato waste.

Upon the completion of the economic feasibility study, the proposed ethanol plant was found to be a marginal investment. The ethanol plant would require a total capital investment of \$17 million with a payback period of 6 years. The investment appears to be attractive, yielding an internal rate of return (IRR) of 18%. However, a sensitivity analysis considering variability in fuel ethanol prices shows that the IRR could be as low as 11% for low-end ethanol prices. In addition, future prices may decline because of the reduction of a federal fuel ethanol subsidy. The current subsidy bill has only been extended through the year 2007. The plant would be an attractive investment if fuel ethanol prices were consistently over \$1.20 per gallon.

The proposed ethanol plant was found to be technically feasible. The plant would utilize existing processing technologies, which are widely used throughout the ethanol industry. The process involves two major reactions, hydrolysis and fermentation, as well as two separations, distillation and dehydration. Should economic factors improve, the technical feasibility study may still prove to be useful in the preliminary development of the fuel ethanol plant.