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A Nonmarket Valuation of an Ultrafiltration System for Recycling Poultry Processing Chiller Water

The poultry industry is the single largest agribusiness industry in Georgia, and is facing multiple water usage problems stemming from rising water and sewer charges plus an increase in pollution regulations. One way to reduce water usage and volume of wastewater is through recycling the chiller water used in poultry processing. Food scientists and agricultural economists at the University of Georgia collaborated on research to evaluate the operational and economic effectiveness of ultrafiltration membrane technologies at a pilot Georgia poultry processing plant.

Preliminary economic feasibility was highly positive, which was consistent with results from other non-poultry facilities, such as produce, where similar ultrafiltration systems have been employed. The partial budget analysis showed encouraging results, with a positive annual change in income exceeding $160,000 and a simple accounting rate of return of 108 percent. This feasibility comes mainly from averted costs the firm should experience by reducing pollutant wastewater discharges to the environment. The pollutants which filtration reduces the greatest are the biochemical oxygen demand and the oil and grease. The sensitivity analysis indicates that even in the worst case situations proposed, the net change in income due to the filtration system incorporation was positive.

This polymeric technology addresses the water quantity and water quality issues that the poultry processing industry faces by reducing primary water use by approximately 36.5 million gallons and electrical energy use to chill water by nearly 1.03 gigawatt-hours annually in the pilot processing plant. Given that poultry processing plants can have high local impacts (employment, income, taxes, value-added, as well as utility usage), the averted water and sewage treatment savings are significant to municipalities and stressed watersheds.

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