

Evaluation of financial performance of Center pivot versus furrow irrigation systems in sugarcane production at green fuel estate in Chipinge, Zimbabwe

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Abstract

The study was conducted at Green Fuel Chisumbanje Estate in Chipinge, Zimbabwe. The study evaluated financial performance of Center pivot versus Furrow irrigation systems in sugarcane production. Secondary data were obtained from the Estate, Zimbabwe Electricity Transmission and Distribution Company, Agricultural Bank of Zimbabwe, Commercial Bank of Zimbabwe, First Capital bank, Zimbabwe National Water Authority and FAOSTAT. Cost Benefit Analysis (CBA) was used to assess financial performance. Furthermore, a sensitivity analysis was done to measure the responsiveness of financial performance to changes in market interest rate. CBA results showed that the Center pivot system is more financially viable [Net Present Value (NPV) =USD36 472; Internal Rate of Return (IRR) =50% and Benefit Cost Ratio (BCR) =1.26] than Furrow the system (NPV=USD24 414; IRR=49% and BCR=1.06). Furrow system was found to be less desirable (BCR falling from 1.06 to 0.99) than Center pivot system (BCR falling from 1.26 to 1.17) in case the discount rate increases from 15% (lowest market rate by commercial banks during study period) to 18% (highest market rate charged by commercial banks). The study concluded that the Center pivot system is more financially viable for sugarcane production despite having higher investment costs than the Furrow system. The study recommends Green Fuel Estate to invest more on the Center pivot system than Furrow system in the long-run.

Keywords: Sugarcane, Cost Benefit Analysis, Irrigation, Financial performance, Center pivot, Furrow, Zimbabwe.