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Economic Analysis of Tube Well Driven Sprinkler Irrigation and Furrow Irrigation for Agriculture in Haryana, India

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Abstract

India is facing water scarcity and micro irrigation techniques are considered to mitigate the water scarcity through water saving, reduction in irrigation costs and increase in the irrigated area. Haryana and Punjab are the most progressive states in agriculture and considered as innovators and early adopters of any kind of technology. For instance these states had made a great contribution towards green revolution for achieving food security. The sprinkler irrigation system is one such technology introduced in Haryana in late seventies and considered as suitable for region because of mainly water scarcity problem and favourable soil type. The study mainly focuses on the looking at the economic feasibility of the tube well driven sprinkler irrigation and furrow irrigation using discounted and undiscounted cash flow techniques such as Net Present Value (NPV), Benefit-Cost ratio (BC), Internal Rate of Return (IRR) and Pay Back period. The data was collected from 90 farmers using sprinkler irrigation from the multistage sampling technique and simple random techniques. Results indicate that, there is incremental increase in irrigated area to about three folds and decline in labour use per hectare by 78%. The average net returns per hectare from sprinkler irrigation was found to be 19.5% higher than tube well irrigation. The economic feasibility criterion showed that the investment on sprinkler was economically viable. The NPV of sprinkler irrigation was found to be Rupies 7970, BC ratio was 1.97, IRR was found as high as 17% and the pay back period was 7 years. Considering the benefits of sprinkler irrigation, Indian government should facilitate use of micro irrigation techniques through subsidies and incentive schemes.

Keywords: Agriculture, furrow irrigation, India, sprinkler irrigation