

Impact of Sprinkler Irrigation on the Productivity of Red Onion in Jaffna District

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Onion (*Allium cepa* L.) is one of the most important cash crops in Jaffna district, and Jaffna red onion is a well-known commodity throughout the island. Ground water is the major source of water for all activities, including agriculture in Jaffna district. Irrigation cost of onion production is one of the major components of cost of production. Due to inefficient irrigation methods, many places of Jaffna district face a shortage of groundwater for irrigation in dry season. The major objective of this study is to determine the impact of sprinkler irrigation on onion production. Two hundred farmers who cultivate red onion in Valikamam, Thenmaradchi and Vadamaradchi areas of Jaffna district were randomly selected for this study. A structured questionnaire was used to collect the data from the sample. An explicit Cobb-Douglas stochastic frontier production function was estimated to analyse the impact of sprinkler irrigation method on onion production. The results show that the coefficients of extent of cultivation, organic fertilizer, sprinkler irrigation method, and soil type were significant at 5 % level. One percent increase in extent of cultivation and the amount of organic fertilizer increase the onion production by 0.7 % and 0.13 % respectively while other things are equal. The coefficient of inorganic fertilizer is insignificant in this model. All the farmers in the sample apply inorganic fertilizer more than the required level. This may be the reason inorganic fertilizer to be significant in this model. The coefficient of sprinkler irrigation method indicates that onion cultivation with sprinkler irrigation method averagely produce 23 % higher yield compared to onion cultivation with basin irrigation method. The average onion production efficiency in the sample is around 78 % with minimum efficiency of 30 % and a maximum of 92 %. Therefore, there is a high potential to increase the efficiency of onion production through the sprinkler irrigation method as well as save the water.

Keywords: Red onion, Productivity, Groundwater, Sprinkler irrigation