

Is vegetable farming technically efficient in Marilog, Davao city, Philippines? Parametric and non-parametric approaches

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Abstract

Vegetable production in the Philippines has increased to an average of 7.9 t/ha, well below the world average of 17.24 t/ha and the South East Asian average of 9.81 t/ha. In Davao City, productivity continues to average just 4.1 t/ha. Marilog district is both the largest producer of fresh vegetables and is home to the largest number of vegetable producers (1,366 farmers). Based on a sample of 118 farmers, the most popular crops cultivated were tomato, squash, eggplant, chayote and bitter melon. More than half (65%) of the farmers cultivated 0.01-0.5 ha of land to produce 945 kg (4.3 t/ha) of vegetables. This level of production can be readily increased by: (1) expanding the farm area; (2) adopting better technologies; and (3) encouraging the more efficient use of resources. This study focuses on the third approach. To assess the technical efficiency of smallholder vegetable farmers in Marilog, a non-parametric approach using data envelopment analysis with input and output-oriented assumptions, and a parametric approach using stochastic frontier analysis with Cobb-Douglas and translog production functions were employed. Results suggest that vegetable farming in the area has considerable potential to improve, since average technical efficiency ranges from 0.29 to 0.64. To improve efficiency, (1) extension programs should focus on the less experienced farmers; (2) other livelihood programs should be designed and introduced to the farmers to augment the capital required for vegetable farming; and (3) model farms should be established in villages such as Lower Marilog, Datu Salumay and Dalag-lumot.