

# Assessment of Purple Passion Fruit Orchard Management and Farmers' Technical Efficiency in Embu, Meru and Uasin-gishu Counties, Kenya

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## Abstract

Horticulture industry sustains millions of livelihoods in Kenya. Over the last decade, passion fruit has emerged as an important high market value horticultural crop following the establishment of new and expansion of existing large scale beverage producers that use local fruits for juice extraction. There has also been growing export markets and increasing numbers of health conscious consumers. Currently, the productivity levels are low, at 8 ton ha<sup>-1</sup> compared to potential of 24 ton ha<sup>-1</sup>. Purple passion fruit production is mainly done by small scale farmers (with land holding as low as 0.04 ha). The primary objective of this study was to assess purple passion fruit orchard management and technical efficiency of small-scale farmers in Embu, Meru and Uasin-Gishu Counties. Cross-sectional data from 123 randomly selected farmers was collected using a personally administered semi-structured questionnaire. In the analysis, descriptive statistics, stochastic frontier and multiple regression models were used. The results showed that the purple passion fruit production input elasticity was 0.95 which represented decreasing returns to scale. Orchard age, credit amount used, non-passion fruit income and County variables significantly and positively influenced TE at 5% level. The level of education, extension advice use frequency and market access positively and significantly influenced technical efficiency at 10% level. The overall mean technical efficiency was 59%. This indicated production costs saving estimate of 32% for the average farmer in attaining the TE of the most technically efficient purple passion fruit farmer (86%). The gamma parameter ( $\gamma$ ) was 0.86 which indicates that 86% of the total variation in purple passion fruit output was due to technical inefficiencies. Farmers in Meru had the highest technical efficiency (65%) followed by Uasin Gishu (57%) while Embu had the lowest (47%). Mean management scores for the five practices (training of vines and pruning, weeding, watering, manure/fertilizer and pest/disease management) evaluated also followed the above trend across the Counties. Based on the results, increased emphasis on farmer update on farming trends through participatory methods (lead farmer approach, training, farm visits and demonstrations) is recommended. There is need for up-scaling orchard management practices among farmers to reduce the orchard age effect and prolong their lifespan. Credit access and use could be enhanced through increased formation and operations of services provision oriented farmers' associations. Farm and non-farm income activities diversification should be encouraged to a level that farmers can adequately manage so as to promote enterprises monetary inter-dependence. The study further recommends promotion of County cross-border farmer linkages in tapping the economic potential from passion fruit. This is expected to offer a platform for sharing ideas and success experiences thus increasing farmers' production efficiency and improving livelihoods.