

Scaling up of micro-catchment water harvesting techniques for fruit trees production by small scale farmers in Yatta District, Kenya

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Abstract:

The main source of livelihoods for the majority of households living in the semi-arid areas of Eastern Kenya is Agriculture. Kenya has over 80% of the arable land located in water scarce areas with recurrent dry spells. The semi-arid areas support approximately 25% of Kenya's population. The micro-catchments water harvesting technologies to address rainfall variability have been developed and promoted by public research and development institutions for the last two decades in these areas. Water harvesting technologies at farm level cannot be viewed in isolation. Its introduction has to be integrated with other production techniques in this case fruit trees production improvement. Fruits production under rain-fed farming is a major source of food and income for many household in Yatta District. The main objective of this study was to identify and describe the key variables that affect effective scaling up micro-catchment water harvesting technologies and fruit production improvement at farm level. The study was also meant to capture farmer's perceptions as an input to understand the current farming system, constraints and opportunities. A partnered demonstration site on microcatchment water harvesting techniques in fruit production was used for interactive learning to compliment effective household data collection during the study. Mango and pawpaw were planted under water harvesting techniques at the site to enhance farmers' participation during the study. Mango was mainly used as a fruit of reference to fruit production during the study, since it is widely grown in the area and similar water harvesting techniques are applied to other fruits grown. PRA tools like scoring and ranking, focus group discussion were initially used to collect data at the interactive site. Comprehensive semi-structured interviews were then conducted for 120 respondent farmers practicing fruit production to obtain data on socioeconomic profile. The statistical package for social sciences (SPSS) tools were used to analyse relationships between the socio-economics attributes such as farming experience, age, education level and water harvesting in fruit production. The analysis results showed significant correlation between fertilizer use, fruit planting purpose, watering period, number of mangoes planted, total farm produce use, awareness period and the semi-circular bund water harvesting technique. Descriptive analysis results indicated that about 43 % of the respondents used micro-catchment water harvesting techniques in fruit trees production. Semi-circular bunds and closed bunds were the main types of micro-catchment water harvesting techniques in fruit trees production in the study area Over 55% of the respondents indicated dry spell and drought as the main constraint in fruit trees production improvement. The farmers, perceptions on micro-catchment water harvesting and fruit trees production improvement were based on their rational decisions towards appropriateness of the technologies after participation in interactive learning/demo site. This study recommended that the micro-catchment water harvesting technology and fruit trees production improvement should be presented/promoted as a combined extension package to fanners in the dry areas but not isolated from each other. The Ministry of Agriculture should take lead to improve the existing information dissemination channels/pathways mainly to facilitate small scale farmers' participation in scaling up water harvesting in fruit trees improvement.