

Abstract

Yatta District farmers depend on rain fed agriculture and over the years frequent droughts, crop failures and water shortages have become common. Food relief has become a recurrent feature in the district. Climate scientists predict increasingly dry conditions in much of sub-Saharan Africa due to climate change. Farmers' efforts to cope have shown both adverse and positive effects and hence the need to be examined. This study looked at the effects of climate variability and change in agriculture and the adaptation strategies by the dry-land farming communities in Yatta District. The study also appraised the environmental effects of such adaptation strategies and the existing climate change policy options. Study participants included 510 small-scale farmers randomly sampled in all the 17 Locations and the district departmental heads from the Ministries of Water, Agriculture, and Environment. Systematic quadrat sampling method was applied to study the effects of climate variability and change on plant species of social importance in the study site. Questionnaires, interviews, stakeholder analyses, field observations and desk research techniques and tools were used to generate relevant data. Four single sex focus group discussions (FGDs) were conducted in the study area. Data from the FGDs complemented the survey results. Qualitative and quantitative data analysis techniques were used while the results were presented in tables, figures and charts. Findings of the study indicate that climate variability has negatively affected food availability, food access and food adequacy in Yatta District. Pearson correlation coefficients for annual precipitation coefficient of variation (CV) against crop yield for the period 2004 to 2010 revealed negative correlations for maize ($r = -0.614$), beans ($r = -0.579$), sorghum ($r = -0.328$), cow peas ($r = -0.568$), and pigeon peas ($r = -0.221$). For the period 1964-2010, the mean annual rainfall decreased by 34.27mm whereas the rainfall coefficient of variation increased by 0.0874. The results further showed that climate variability and change has negatively affected plant species of social importance in Yatta District especially in agro-ecological zone LM5. Most farmers engage in autonomous adaptation strategies through changing their livelihoods in response to changing precipitation patterns. These adaptation strategies were found to have both adverse and positive environmental effects. The major limitations to climate change adaptation are financial constraints (93.4%), lack of relevant skills (74.5%), lack of scientific and technical knowledge (71.6%), lack of information (67.9%) and lack of infrastructure and inputs (61.7%). Furthermore, the study revealed that farmers in the area had also low knowledge about climate variability and change. The study concludes that climate variability and change has affected crop production and hence food security negatively in Yatta District. The study recommends that farmers be sensitized about climate change to improve their understanding thus impacting positively on the farmers' adaptation to climate change. The Ministry of agriculture should also formulate policies specifically focused on small-scale farmers' adaptation to climate change. Farmers need to compliment rain-fed agriculture with water harvesting techniques and development of small-scale irrigation schemes to improve food security in Yatta District.