

Abstract

Climate change and variability is a major threat to sustainable development across the globe. Paradoxically, smallholder farmers to a great extent contribute to the spread and also hold the key to effective management of climate change and variability. Despite their centrality in climate change and variability, not much is known about smallholder farmers and climate change adaptation. As a contribution towards addressing this need, the present study analysed the role played by gender in climate change adaptation among smallholder farmers in semi-arid and sub-humid agro-ecological zones in Kenya. The study was conducted in two agro-ecological zones (analogue sites) – one in the semi-arid region, and the other in the sub-humid region, each comprising a pair of cooler and warmer sites. Data for the study were collected at different intervals between June 2011 and June 2013, using multiple approaches including household interviews, focus group discussions (FGDs) and personal observations. Quantitative data were analysed using descriptive and inferential statistics. The results showed a high level of awareness on climate change and variability among smallholder farmers. The results also reveal that both male and female farmers perceive climate change and variability as a serious threat to their crop and livestock production. There were also demonstrable impacts of climate change and variability on smallholder agricultural practices, a number of which differed across the analogue sites. The adjustments in the agricultural practices were significantly different ($p \leq 0.001$) between the regions (analogue sites) for methods of land preparation, planting practices, crop management, weed control and pest and disease control. In the semi-arid region, farmers in the warmer areas significantly differed ($p \leq 0.001$) with those in cooler areas in the timing of land preparation, increased use of manure and fertiliser, crop management and increased use of pesticides. In the sub-humid region smallholder farmers in warmer sites significantly ($p \leq 0.001$) differed with their counterparts in cooler sites in use of manure and fertiliser use and crop management. There were comparatively low levels of adoption of appropriate technologies among women than men. Generally, female farmers preferred low cost measures when dealing with the impacts of climate change and variability such as planting tree crops, use of manure and mixed farming as well as use of soil and water conservation measures. Pest and disease control measures, use of improved crop varieties and crop diversification were the common adaptation measures used by the male farmers. Adaptation measures are likely to be insufficient in some cases, particularly for the smallholder farmers in semi-arid region given the high food insecurity. Smallholder farmers are central to climate change and variability management. The farmers in warmer sites offer an important knowledge base that can be of invaluable help to those in the cooler sites in both agroecological zones. This therefore means that the success of effective adaptation to climate change variability lies in building on the existing knowledge base and incorporating gender considerations in a participatory research process. The study provides data that can be considered for action agenda by the county governments.