Abstract

Water depletion, sheets, rills, inter-rills and big gullies have an impact on water and land productivity in a catchment area, endangering thus substantial wealth creation in agriculture. An assessment of 66 farms selected randomly at Muooni dam site reveals that they are no longer viable due to soil erosion problems and water over-abstraction by natural ecosystems, eucalyptus particularly. Though farmers are striving to consolidate soil protection using terracing, contouring and runoff cut-outs, soil degradation and water stress are still major challenges they have to face to. Results show that farmers' poor education and economic poverty, adverse effects of deforestation and off-site effects of external agents such as El Niño floods and droughts, wind pressure are hampering the rate of soil erosion, mass movements and water stress in the catchment. These processes are likely to enhance sediment loads into the dam reservoir as its water storage capacity decreases by 6.22% each year. They may have increased farming water shortage costs and the cost of fertile soil excess loss, threatening chances of high yields and income in farming. Consequently, they undermine the economic viability of smallholder farms and Muooni dam. To improve their livelihood, farmers need to apply appropriate methods of crops selection and specialization, water saving and farming technologies. The ongoing implementation of climate change adaptation and mitigation programmes is to be reinforced in Muooni catchment through policy instruments and direct investments.