

## ABSTRACT

Turkana County, located in the northwest of Kenya, is an arid county and the poorest in the country, with a poverty index of 79.3% vs. 34.4% for the country. Due to its aridity, crop production is severely constrained and the County is a net importer of foodstuffs, except beef, mutton and camel meats. Crop production in the operating irrigation schemes depends on water from retreat flooding in March-May and any that is let into and retained in canals when the seasonal rivers are flowing. This project aimed to assess the influence of COVID-19 and other undetermined factors on crop production in 10 irrigation schemes along the Tirkwell River, over the period 2018-2021. The study administered a semi-structured questionnaire to 104 randomly selected farmers, who owned farm plots in the irrigation schemes. One-on-one interviews were held, due to the high level of illiteracy of the respondents. Twelve elders and administrators were the key informants. The study established that sorghum was the dominant crop grown in 9 out of the schemes, except in Kooliyoro-Kaaiteese, where maize was the main crop. Other crops in declining order by production volume included cowpeas, green grams, black grams and in Keekoroe-ngole, some green vegetables. The weight of the dominant crop and other crops varied significantly ( $p \leq 0.05$ ) in the same irrigation scheme across the years of interest for this study, and also across the irrigation schemes over the production period. The results of the study showed that COVID-19 breakout did not affect crop production in the irrigation schemes studied. Farmer poverty level, lack of expert extension services, use of uncertified and reused seed, unreliable water supply, and regular droughts affected crop production. The most productive 3 schemes in descending order by crop production volumes were Nanyee, Napool and Keekoroe-ngole, while Naremit was the least productive. Crop production suffers from long-term sustainability in all the schemes for most of the above reasons. To improve crop production, the study recommends the provision of expert

extension services, a steady water supply, annual donation of certified seeds, improvement in crop-care services, streamlining crop marketing services and the upgrade of governance and management capability in the irrigation schemes.