Abstract

Contract Farming is considered to play a crucial role in sustainable and improved food security and community livelihoods. There are multiple challenges in Arid and Semi-Arid Lands (ASALs) of Kenya such as land degradation, water scarcity, and these are exacerbated by adverse effects of climate change. Despite the positive effects of Contract Farming (CF) on socio-economic growth, participation remains low in in rural ASALs of Kenya. Numerous studies have investigated the role and benefits of CF in improving livelihoods in these areas, but there is still scanty information specifically on opportunities, contract farming technologies, and challenges in Kenya's ASALs. To address this gap, this study explored CF technologies, opportunities, and challenges prospects with a view to helping in policy formulation for improved livelihoods in ASALs of Kenya was conducted. The key drivers of CF adoption in ASALs include improved technology, low production cost, market access, access to credits, and reduced faming risk. The review identifies System for Mobile (GSM) technology, smart-phone application, automation of irrigation systems, Artificial Intelligence (AI), Agricultural Robotics, Unmanned Aerial Vehicles (UAVs), Smart sensors and Internet of Things (IoT) as the prioritized Contract Farming Technologies (CFT) for enhanced success These improved technologies address critical barriers to CF adoption and related activities should be promoted and integrated by all stakeholders including the Policy makers for sustainability in enhanced