ABSTRACT

Advanced farming that involves modern technology, especially in large scale, can aid in attaining food security for any given country. In this study, the prospects of automation, mechatronics and the developments for modern farming are explored for sustainable agriculture in Kenya. For the purpose of technological diversification, the use of mechatronics and automation in various smart farming technological systems is presented. It is possible to step up development in realizing food security in Kenya with the use of these modern farming techniques among other similar technologies. The use Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IOT), Global System for Mobile (GSM) Communications, photovoltaic thermal solar systems, cloud data storage and radio frequency identification (RFID) technologies that are utilized in autonomous tractors, drone farming, livestock monitoring, smart poultry, dairy, irrigation, greenhouse, and farm warehouse systems are discussed. These advances can result in significant increase in production, efficiency, profits, as well as better monitoring, surveillance and tracking in the farm. Finally, the impact of these technologies on agriculture in relation to sustainable food security is explored, where it is demonstrated that mechatronic farm automation integrated with the mobile applications can offer better farm monitoring, increase yields as well as contribute towards better land utilization.