TEMPORAL VARIATION OF LAND USE IN THE FACULTY OF AGRICULTURE PREMISES OF THE RAJARATA UNIVERSITY OF SRI LANKA

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Using remote sensing and Geographic Information System (GIS), this study investigated the temporal land use (LU) variations in the premises of the Faculty of Agriculture, Rajarata University of Sri Lanka during the period 2013 to 2022. Satellite images of the study site were obtained at four time points (2013, 2015, 2020 and 2022) from Google Earth. These images were used to classify the LU patterns using the supervised and ISO cluster unsupervised classification (ISOCUC) techniques. The accuracy of each selected map was estimated by calculating overall accuracy and the Kappa index based on 108 random points. Ten LUs were identified using supervised classification. Decreasing trends were observed in some selected LUs during the period 2013-2022 i.e., woodland (from 7.08% to 5.94%), grassland (from 18.53%to 6.09%), water bodies (from 2.84% to 2.78%), and paddy fields (from 16.23%to 3.5%). Increasing trends were observed in the rest of the LUs i.e., buildings (from 3.79% to 6.30%), roads (from 3.80% to 8.63%), croplands (from 42.14% to 52.78%), livestock area (from 2.70% to 6.05%), open area (from 1.02% to 6.05%), and playground (from 2.73% to 2.92%). Major four LUs, i.e., buildings and roads, vegetation, grassland, and other area were identified using the ISOCUC technique. Higher overall accuracy and Kappa index were observed in the prepared LU maps using supervised classification (>83% and >0.71, respectively) and ISOCUS (>87% and >0.79, respectively) techniques. It can be concluded that a considerable LU changes in the study area has occurred due to anthropogenic activities from 2013 to 2022.

Keywords: Geographic information system, Remote sensing, Supervised and unsupervised classification