Modeling the spatiotemporal pattern of farmland change in rural regions of Ahvaz County by remote sensing and landscape metrics

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ABSTRACT:
Land-use and land cover change (LUCC) has engrossed much attention due to its effects on global and regional environmental change. The spatial pattern of LUCC can reflect underlying human activities, involving urbanization processes and policies for social and economic development at local to region scales. Landscape pattern metrics are important for evaluating ecological processes and effects of LUCC. This study quantitatively analyzed spatiotemporal changes in land use and landscape pattern in a Ahvaz region of southwest Iran by comparing classified satellite images from 1986, 1998, and 2014, using a GIS, remote sensing, and landscape pattern metrics. The results showed an increase in farm lands during 1986–2014. Over the study period, 308% of newly-expanded farm lands were from bare lands and range lands. This process has brought about noticeable land use changes and farming growth at an unprecedented scale and rate, and consequently given rise to substantial impacts on the landscape pattern. The results also disclosed that bare lands and range lands were the major resources that were converted for farming development. Establishment of sugarcane agro-industry companies and policies of decision makers will increase positive significant impacts on agro ecosystem and environment. To sum up, Trend analysis of landscape pattern metrics demonstrates integration of the farming landscape, with landscape pattern structure becoming more homogeneous over the last three decades in the Ahvaz County.

Keywords:
Land use Changes, Landscape Pattern, Decision Tree, Spatial Metrics, Rural Areas of Ahvaz county.