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Graduate School

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The Thesis Submitted for the Degree of M.Sc

**Sustainability assessment of agriculture landuse in  
Sistan plain in relation to water resources**

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June 2023

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### **Abstract**

Quantifying the amount of destruction in agricultural use as the most important economic resource of the people in the Sistan plain is of special importance for planning to support the people and reduce the negative effects on the natural ecosystem. Areas that are less degraded during conditions with limited water resources can provide more economic benefits to people in a period of time and can also be used as habitats for some species of wildlife in the region. The purpose of this study is to quantify the degradation in agricultural use in the Sistan plain. To carry out this research, the time series images of the Landsat satellite during the last 30 years for 1371, 1379, 1399, 1400 and 1401 were used. became. Classification of satellite images was used in a combined method to prepare the required maps. First, in order to check the water situation in the region, a map of the entire Sistan region, including the Sistan wetland and plains, was prepared. The boundary of agricultural land for 2013 was prepared manually in ARC GIS software. Then the border of agricultural lands was applied to all the images. According to the changes that have occurred in the agricultural lands of the region, the land use map and land cover in the area designated as agricultural use in 1371 for other images in the ArcMap software environment in four layers of agricultural lands, pasture land, water and salt marsh. It was classified. Then the area of each class was calculated and to evaluate the relative stability, the changes in the level of agricultural land and barren land in the studied years were compared to the base year i.e. 2011. The results of the survey of the land use area of the entire region show that the water resources in 2011 were equal to 282030 hectares. During the study period in 1399 and after 1371, it was equal to 108,207 hectares. In these years, the agricultural lands were 105,948 hectares and 104,944 hectares, respectively. The lowest amount of agricultural land coverage is related to the years 1400 and 1401. With the lack of vegetation from agricultural products, the level of barren land has increased, so that in the years 1400 and 1401, it covered 72 and 82 percent of the area. The results of this study are important for land use management in the region in drought conditions.

**Keywords:** drought, dry areas, Hamon wetland, remote sensing