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The Thesis Submitted for the Degree of Ph.D (in the field of Agricultural  
Economics)

**Spatial analysis of the effect of environmental sustainability  
on household food security in Golestan province**

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Winter 2022

## **Abstract**

Many of the environmental damage is due to the use of irregular agricultural technologies. On the other hand, the issue of poverty and food security is one of the most important global concerns and one of the main axes of policy-making on a national and global scale. According to this, in present research, the effect of environmental sustainability and food security indicators in Golestan province has been investigated. For this purpose, the required environmental data were collected in two sections related to environmental experts and related organizations. Food security data were collected through a questionnaire in 2020. The number of environmental indicators was analyzed by Expert Choice software using Analytic Hierarchy Process (AHP). The amount of household food security in Golestan province was calculated through the coping strategy index and then the effect of environmental indicators on food security was analyzed by Eviews software. The relative poverty index of households in Golestan province was also calculated. The results showed that conservation tillage indices, crop diversity and rainfall showed the 16%, 15.3% and 15.2% significance, respectively, which had the highest weights are the most important environmental indicators in determining the sustainability of Golestan province. And the criterion of cultivated area with a degree of importance of 11.9% has the lowest weight in determining the stability of Golestan province. Finally, the cities of Golestan province were classified into stable, relatively stable and unstable. The results of the food security questionnaire showed that the highest number of households from the food coping strategy consumed less preferred food and the non-food coping strategy overtime in non-agricultural activities and the lowest number of households from the food coping strategy. The children have used food and drop out of school. The results of regression analysis of the impact of environmental sustainability and food security indicators showed the variables of chemical fertilizer use, conservation tillage, access to off-farm job opportunities, head of household education, spouse age and household head addiction at 5% error level and consumption variables Chemical toxins, nitrate concentrations in groundwater, crop diversity, employment of the head of the household, insurance of the head of the household, having relatives, living in a stable area and living in a relatively unstable area have been significant at the 1% error level. The results of the poverty index of households in Golestan province showed that the poverty index is 765,000 Tomans, according to which 48% of households are below the poverty line and 51% of them are above the poverty line. Therefore, it is suggested that advanced scientific research be conducted on new developments in food production and food safety, as well as environmental protection, and growing job opportunities should be created for poor and food insecure households.

**Keywords:** Food Security, Environmental Indicators, Poverty, Spatial Model, Golestan Province