Land suitability evaluation for greenhouse cultivation of cucumber in comparison with alternative plantations in Mobarakeh- Zarrinshahr district using AHP

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Abstract

Land suitability evaluation is the fitness of a given tract of land based on its production potential for a defined use. This study was conducted to evaluate the land suitability of Mobarakeh-Zarrinshahr district located in west of Isfahan province using Analytical Hierarchy Process (AHP) technique. To do the evaluation, firstly the hierarchy structure was established, which consisted of objectives, criteria, sub-criteria and alternatives. The objective was determination of landuse priority in each land unit; the criteria comprised of soil suitability, climate suitability, gross income, market accessibility, water resources availability, physical environmental-impacts and chemical environmental-impacts; two alternative landuse types were chosen to be cultivation of rice and establishment of greenhouse. The questionnaires were filled out by experts and then the overall weight for each element at each level was calculated by multiplying its local weight, obtained from Expert Choice 2000 software. The results showed that climate suitability and market accessibility had the highest and least weights, respectively, for selection of the proper land use, and the inconsistency ratio was 9%. In all the land units, the greenhouse establishment had higher priority. Climate suitability and gross income were identified the major factors affecting the suitability for greenhouse establishment. In general, cultivation of rice is not recommended in the studied area, because of negative environmental impacts including soil physical-destruction, low water use efficiency, raising the groundwater levels and increasing soil salinity.

Keywords: Land evaluation, Landuse, Inconsistency ratio.

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