

## QUANTITATIVE LAND SUITABILITY EVALUATION FUZZY LOGIC COMPARED WITH PARAMETRIC METHOD FOR RICE IN ZARRINSHAHR OF ISFAHAN PROVINCE

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### ABSTRACT

Land evaluation is carried out to estimate the suitability of lands for a specific plant on the basis of biophysical parameters and/or socio-economic conditions of an area (FAO,1976). One of the newest methods for land suitability evaluation is fuzzy logic. Zadeh (1965) defined a fuzzy set as “a class of objects with a continuum of grades of memberships”; being the membership a function that assigns to each object a grade ranging between zero and one. In fuzzy set theory, membership is not two-valued. Membership function, states the degree of effectiveness of each characters and qualities on production via the weights of different members. In this research parametric method was compared with fuzzy method through comparison of: a) regression coefficient of land index with observed yield. b) the predicted yield with observed yield for rice in Zarrinshahr region of Isfahan. Artificial Neural Network was used for weighting different characteristics for land suitability classification. Application of the fuzzy set theory to determine the impact of land qualities on irrigated rice production comprises several steps:

- Determination of membership functions
- Determination of membership values
- Determination of reference weight and reference suitability matrices
- Determination of weight values for different land qualities

The results showed that for rice, predicted yield by fuzzy method showed higher regression between land index and yield. The results also showed that correlation coefficient between the predicted yield with observed yield in fuzzy method and parametric method were 0.86 and 0.57, respectively. In fuzzy set theory the terminaitin off specific order is difficult and belonging of various elements to various concepts and issuer relative.

**KeyWords:** Fuzzy set theory, land suitability evaluation, parametric method, rice.

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