

## Land evaluation for maize based on fuzzy set and interpolation.

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The objective of this article is to apply fuzzy set and interpolation techniques for land suitability evaluation for maize in Northern Ghana. Land suitability indices were computed at point observations using the Semantic Import (SI) model, whereas spatial interpolation was carried out by block kriging. Interpolated land suitability shows a high correlation ( $R^2 = 0.87$ ) with observed maize yield at the village level. This indicates that land suitability is closely related to maize yield in the study area. Membership functions were further used to assess the degree of limitation of land characteristics to maize. Sixty percent of the data has membership functions ranging from 0.23 for ECEC to 1.00 for drainage. ECEC, organic C, and clay are the major constraints to maize yield. The use of the fuzzy technique is helpful for land suitability evaluation, especially in applications in which subtle differences in soil quality are of a major interest. Furthermore, the use of kriging that exploits spatial variability of data is useful in producing continuous land suitability maps and in estimating uncertainties associated with predicted land suitability indices.

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