Determination and Comparison of Soil Index by Different Interpolation Methods in Land Consolidation Studies: A Case Study

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SUMMARY

Land consolidation (LC) is a planned readjustment and rearrangement of agricultural areas for the promotion of sustainable agriculture. Land reallocation stage is the most important step of LC. The purpose of this step is to ensure equivalent that the new parcels will be given to the landowners after LC with their previous parcels. In order to achieve the reallocation process, determining the correct of soil index (SI) for each of the agricultural parcels is very important. Since these values are necessary for the landowners to be able to give the equivalent of land as before.

The purpose of this study was to evaluate and compare the performance of three interpolation methods for the SI values maps on LC projects based on data from 142 SI observation points. Three spatial interpolation methods Ordinary Kriging (OK), Inverse Distance Weighted (IDW) and Local Polynomial Interpolation (LPI) were utilized for determining the SI values. In this study, all methods provided high prediction accuracy, although the best performed interpolation method was the OK. Spatial structure of SI values was better explained using exponential models. Results of OK, IDW and LPI for SI values were underestimated by 39%, 42% and 40% respectively.