

An Automated Approach for Partitioning of Inherited Land: a Case from India

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SUMMARY

Agricultural land is a valuable resource for reasons like food security, rural economy and development, and resulting prosperity. It is also a symbol of status in rural communities. Consequently, the agricultural land is essentially divided amongst prospective owners in each generation according to the inheritance laws. The division ensures security to next generation, independence, social and legal rights, and individual identity to the owners. Generally, it is observed that the partitioning in case of inherited land is done on the basis of area. This ignores many additional facilities and factors like soil fertility, irrigation sources, storage sources, access to roads and market places etc. In such cases, partitioning may sometimes be reason for dissatisfaction and leads to conflicts. In the view of this, this paper presents a new approach that considers all relevant factors, namely – soil fertility, fixed structures, proximity to marketplace, access to road, and irrigation facility. The approach considers location of these factors and model their effects to create value maps of land for each factor. Furthermore, the approach aims to perform value based automated partitioning to create parcels of specific values. To implement the proposed approach, relevant features are first vectorised on a map of a study area. Value maps for each feature is derived by spatial interpolation functions on raster map. Combining all value maps derives total value map and calculates total value of the land. Based on the total value, the approach partitions given land into required number of parcels having equal values by the automated algorithm. Results ensure that the adopted approach can create new parcels of equal values with straight inter-boundaries and rectangular shapes. Area allocation by partitioning algorithm is directional, which is influenced by locations and spatial variations of facilities. Multiple factors at one side of land dominates over individual feature. Moreover, linear features varying in one direction influences partitioning more than point features varying in two directions. In future, authors envision to derive weighted value of a land for partitioning to encompass possibilities of large variations in values of each factor. Moreover, it would be interesting to implement the approach on an irregular shaped agricultural land and parcels.