A REVISIT TO THE DETERMINATION OF OPTIMUM PLOT SIZE IN FIELD EXPERIMENTS

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Determination of best plot size with respect to a particular crop in field experiments has long been considered as a very important problem, the solution of which has been obtained in the well known works of Fair Field Smith, though only addressed partially. Since then this important area of research has not received attention by researchers, excepting a few. The concept of spatial analysis can be introduced to obtain the optimum plot size by employing min-max criterion on the radius of curvature corresponding to different variogram models. An algorithm has been developed to obtain the expression of simulated variogram using different combinations of plot sizes under the model using decaying correlation structure. The results obtained in the paper are more general and can be used irrespective of the kind of spatial heterogeneity existing in the field. The developed method is capable to address anisotropic situation also.

The theory enunciated in the paper has been applied on two real-life data-sets, one on jute crop and the other one on rice crop and the results obtained are as follows - 3x4 (exponential model) for Rice data and 4x4 (VB model) for Jute data.