Experimental designs for field experiments

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Abstract

Experimental designs for field experiments are useful in planning agricultural experiments, environmental studies and etc. Optimal designs often depend on spatial correlation structures of field plots. For specified correlation structures optimal designs can be constructed according to optimal design criteria. Without knowing correlation structures exactly which is common in practice, we can study robust optimal designs. Various neighborhoods of a covariance matrix will be introduced and discussed. Robust design criterion is proposed, and some results are presented. Examples are given to compare robust designs with optimal designs.