NEIGHBOUR METHODS FOR FIELD EXPERIMENTS UNDER SPATIAL DEPENDENCE

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The design of large scale field trials where the residuals are correlated has been of recent interest, due in large part to advances in statistical and computational methods of analysis. The construction of designs for correlated data has typically used Aoptimality and is computationally intensive. This involves calculating the inverse of the information matrix for treatments under the supervision of an optimisation strategy that explores the design space. We propose an approximation to Aoptimality using nearest neighbour balance that is less computationally demanding and can achieve at least 95% efficiency relative to A-optimality in many practical situations. Some ideas on how the method can be extended to multi-site experiments will be discussed also.