

Optimal Design and Analysis of Split Plot Experiments
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Split plot designs arise in industrial experimentation because some factors are harder than others to change from one run to the next. Because of this, researchers often perform their experiments in groups of runs where the hard-to-change factors stay constant within each group (whole plot). One cannot safely ignore this grouping in the subsequent data analysis. But this inadvertent split-plotting followed by standard least-squares analysis often happens in practice.

Software can help here in three ways. First, the choice of grouping runs where the hard-to-change factors stay constant can be made explicit. Second, with this structure known in advance, it is possible to create optimal designs. Finally, once the data are collected, it is then possible to steer the analyst in the direction of an appropriate analysis.

This talk demonstrates these three steps using a case study approach using JMP software.