Benefits of Using Mixed Model Statistical Analysis Techniques Compared to Traditional ANOVA. (Z09-mullinix080704-Oral)

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Abstract:

Traditional ANOVA is equivalent to R. L. Henderson's Model I where all effects are fixed, means are estimable. However, R. A. Fisher wrote that only random effects can be used to test significance of fixed effects (e.g., differences among means). Mixed model analysis addresses this concern of Fisher. From a practical standpoint, replications are random, while treatments are generally fixed since those are the only levels the researcher is interested in examining. Split-plot designs have two random error terms, one for each plot size. Once the researcher has the ANOVA in hand, Steel and Torrie's textbook must be consulted to determine how to perform the main plot test correctly. This applies to the construction of the standard error of the difference of two means. In Mixed model ANOVA, this test is performed correctly by the computer program. The correct standard error is computed by the computer program. The correct standard error is Proc MIXED from SAS (Statistical Analysis System, SAS Institute, Inc., Cary, NC)

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