

## **Kolloquium „Statistische Methoden in der empirischen Forschung“**

Wann: 19. November 2013, 17:00 – 18:30 Uhr

Wo: Landwirtschaftlich-Gärtnerische Fakultät der HU, Hörsaal 2, 2. Etage,  
Invalidenstr. 42, 10115 Berlin

**Prof. Dr. Hans-Peter Piepho (Universität Hohenheim)**

### **The use of two-way mixed models in multi-treatment meta-analysis**

Meta-analysis summarizes the results of a series of trials. When more than two treatments are included in the trials and when the set of treatments tested differs between trials, the combination of results across trials requires some care. Several methods have been proposed for this purpose, which feature under different labels, such as network meta-analysis or mixed treatment comparisons. Two types of linear mixed model can be used for meta-analysis. The one expresses the expected outcome of treatments as contrast to a baseline treatment. The other uses a classical two-way linear predictor with main effects for treatment and trial. In this paper we compare both types of model and explore under which conditions they give equivalent results. We illustrate practical advantages of the two-way model using two published datasets. In particular, it is shown that between-trial heterogeneity as well as inconsistency between different types of trial is straightforward to account for. The methods are illustrated using two examples from medical studies. Relations with crop variety and plant breeding trials are also discussed.