## COMPARISON OF THE ABUNDANCE OF NON-TARGET SPECIES IN FIELD TRIALS FOR GENETICALLY MODIFIED VARIETIES - A CONFIDENCE INTERVAL APPROACH IN THE GENERALIZED LINEAR MODEL

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One objective of field trials comparing GM-varieties with isogenic conventional varieties is to show that abundances of non-target species are not relevantly changed. Abundance data are likely to be not gaussian distributed, therefore generalized linear models need to be applied (Perry et al., 2003). Beside the fixed effects of the varieties, random effects of year and location as well as covariates need to be considered in this case.

In practice non-significant p-values for an effect are often interpreted as proof of no effect. In this approach the risk of falsely concluding for safety of the new variety is the type-II-error, thus not controlled directly. Contrasting to this approach a proof of safety based on inclusion of  $(1-2\alpha)$ -confidence interval in equivalence margins is examined. In this approach the key problem is the choice of equivalence margins, which is less difficult if the ratio of treatment to control is considered instead of the difference, particularly for the consideration of many non-target species. Particularly in field trials, small sample sizes represent a limiting factor. The appropriateness of different tests and confidence intervals for the difference and ratio to control are examined in a simulation study. The application of this approach is illustrated by a real data set of a non-target species from a Bt-maize trial using freeware R programs.