

# Curriculum vitae – Hans-Peter Piepho

Name	Hans-Peter Piepho
Sex	Male
Place and date of birth	Hannover, 2 April 1963
Citizenship	German
Degree	Dr. sc. agr.
Permanent address	Neidlinger Strasse 29/1, 73760 Ostfildern, Germany
Phone	+49-711-459-22386
Fax	+49-711-459-24345
E-mail	piepho@uni-hohenheim.de



## Education and scientific career

1983 - 1989	Studies in Agricultural Sciences, University of Giessen, Germany (Degree: Dipl. Ing. agr.)
1990	Graduate Studies, Centre for Advanced Training in Agricultural Development (CATAD), Technical University, Berlin, Germany
1991 - 1992	Doctorate (Dr. sc. agr.), Plant Breeding (yield stability), University of Kiel, Germany
1993 - 1999	Assistant Professor (C1) for Biometrics, University of Kassel, Germany
11/1998	Habilitation in Biometrics, University of Kassel, Germany
3/1999 – 9/2000	Biometrist, University of Kassel (Heisenberg grant, German Research Foundation - DFG)
6/1999 – 8/1999	Visiting Scientist at Cornell University, Ithaca, New York, USA (Prof. Charles McCulloch, Department of Biometrics)
10/2000 – 10/2001	Lecturer (C2) of Biometrics, University of Kassel, Germany
11/2001	Professor (C3) of Bioinformatics, University of Hohenheim, Germany (end 2014: denomination changed to Biostatistics)

## Awards

1993	Faculty Award for Ph.D. thesis, Faculty of Agriculture, University of Kiel, Germany
1997	Erna-Weber Award 1997 of the Germany Region of the International Biometric Society
2013, 2016, 2017	Editor's Citation of Excellence, <i>Crop Science</i>
2016	Susanne-Dahms-Medal for outstanding services to the German Region of the International Biometric Society

## Memberships

International Biometric Society  
Gesellschaft für Informatik in der Landwirtschaft (GIL; Informatics in Agriculture)  
European Association for Research on Plant Breeding (EUCARPIA)  
Gesellschaft für Pflanzenzüchtung (Plant Breeding, Germany)  
Gesellschaft für Pflanzenbauwissenschaften (Agronomy, Germany)

## Editorial Boards

2/1998 – 2/2001	Editorial Board <i>Euphytica</i> (Kluwer Academic Publishers)
3/2001 – 9/2004	Associate Editor <i>Euphytica</i> (Kluwer Academic Publishers)
1/2004 - present	Associate Editor <i>Biometrical Journal</i> (Wiley)
1/2008 - present	Associate Editor <i>Plant Breeding</i> (Blackwell)
1/2008 - present	Associate Editor <i>Czech Journal of Genetics and Plant Breeding</i> (Institute of Agricultural and Food Information)
10/2008 - present	Statistical Consultant <i>Weed Research</i> (Blackwell)
1/2012 - present	Associate Editor <i>Field Crops Research</i> (Elsevier)
6/2014 - 12/2016	Member of Advisory Editorial Board <i>Communications in Biometry and Crop Science</i>

8/2014 - present	Associate Editor <i>Journal of Agricultural Sciences</i> (Cambridge University Press)
1/2016 - present	Associate Editor <i>Journal of Agricultural Biological and Environmental Statistics</i> (Wiley)
4/2019 - present starting 7/2021	Associate Editor <i>Crop Science</i> (CSSA) Associate Editor <i>Biometrics</i> (Wiley)

### **Positions held in scientific organizations**

3/1998 - 7/2012	Treasurer, German Region (DR) of the International Biometric Society
9/2001 - present	Chair WG Versuchswesen der Gesellschaft für Pflanzenbauwissenschaften
1/2004 - present	Chair WG Biometrie und Bioinformatik der Gesellschaft für Pflanzenzüchtung
3/2005 - 3/2009	Member of Board (Beirat), German Region, International Biometric Society
7/2008 - 12/2015	Member Conference Advisory Committee, International Biometric Society
10/2009 - 9/2017	Member of Council, International Biometric Society
1/2010 - present	Board Member, Günther und Anna Wricke-Stiftung
1/2016 - 12/2017	Member of Editorial Advisory Committee, International Biometric Society
1/2018 - present	Chair of Editorial Advisory Committee, International Biometric Society

### **Membership in peer review committees**

2007, 2015, 2019	Member of Peer Review Committee for Leibniz Institute for Farm Animal Biology (FBN), Dummerstorf, Germany
2009	Member of Peer Review Committee for Graduate School "Production Ecology & Resource Conservation" (PE&RC), Wageningen University and Research Centre (WUR), The Netherlands
10/2012 - 9/2020	Member of Review Board 207, Agriculture Forest and Veterinary Medicine, German Research Foundation (DFG)
2017	Member of Peer Review Committee for Leibniz Institute of Agricultural Engineering & Bioeconomy (ATB), Bornim, Germany
2019	Member of Peer Review Committee for Leibniz Institute of Vegetable and Ornamental Crops (IGZ), Großbeeren, Germany

### **Membership in committees at University of Hohenheim**

2007 - present	Examination Board (Prüfungsausschuss), Agricultural Sciences, Bachelor (Chair)
2007 - present	Board of Studies (Studienkomission), Agricultural Sciences
2010 - present	Senat, University of Hohenheim

## Most important publications

1. Piepho, H.P. and Alkämper, J. (1991): Effects of integrated rice-cum-fish-culture and water regime on weed growth and development in irrigated lowland rice fields of Northeast Thailand. *Journal of Agronomy and Crop Science* **166**, 289-299.
2. Piepho, H.P. (1994): Best linear unbiased prediction (BLUP) for regional yield trials: A comparison to additive main effects multiplicative interaction (AMMI) analysis. *Theoretical and Applied Genetics* **89**, 647-654.
3. Piepho, H.P. (1995): Robustness of statistical tests for multiplicative terms in the additive main effects and multiplicative interaction model for cultivar trials. *Theoretical and Applied Genetics* **90**, 438-443.
4. Piepho, H.P. (1997): Analyzing genotype-environment data by mixed models with multiplicative effects. *Biometrics* **53**, 761-766.
5. Denis, J.-B., Piepho, H.P., van Eeuwijk, F.A. (1997): Modelling expectation and variance for genotype by environment data. *Heredity* **79**, 162-171.
6. Piepho, H.P. (1998): Methods for comparing the yield stability of cropping systems - A review. *Journal of Agronomy and Crop Science* **180**, 193-213.
7. Piepho, H.P. (1998): Empirical best linear unbiased prediction in cultivar trials using factor analytic variance-covariance structures. *Theoretical and Applied Genetics* **97**, 195-201.
8. Piepho, H.P. (1999): Stability analysis using the SAS system. *Agronomy Journal* **91**, 154-160.
9. Piepho, H.P. (2000): A mixed model approach to mapping quantitative trait loci in barley on the basis of multiple environment data. *Genetics* **156**, 253-260.
10. Piepho, H.P. (2001): A quick method to compute approximate LOD thresholds for QTL detection. *Genetics* **157**, 425-432.
11. Piepho, H.P., Gauch, H.G. Jr. (2001): Marker pair selection for QTL detection. *Genetics* **157**, 433-444.
12. Burkert, A., Bationo, A., Piepho, H.P. (2001): Efficient phosphorus application strategies for increased crop production in sub-Saharan West Africa. *Field Crops Research* **72**, 1-15.
13. Piepho, H.P., Büchse, A., Emrich, K. (2003): A hitchhiker's guide to the mixed model analysis of randomized experiments. *Journal of Agronomy and Crop Science* **189**, 310-322.
14. Piepho, H.P. (2004): An algorithm for a letter-based representation of all-pairwise comparisons. *Journal of Computational and Graphical Statistics* **13**, 456-466.
15. Piepho, H.P., Büchse, A., Richter, C. (2004): A mixed modelling approach to randomized experiments with repeated measures. *Journal of Agronomy and Crop Science* **190**, 230-247.
16. Diebold, G., Mosenthin, R., Piepho, H.P., Sauer, W.C. (2004): Effect of supplementation of xylanase and phospholipase to a wheat-based diet for weaner pigs on nutrient digestibility and concentrations of metabolites in ileal digesta and feces. *Journal of Animal Science* **82**, 2647-2656.
17. Piepho, H.P., Möhring, J. (2005): Best linear unbiased prediction for subdivided target regions. *Crop Science* **45**, 1151-1159.
18. Piepho, H.P., Möhring, J. (2006): Selection in cultivar trials – is it ignorable? *Crop Science* **46**, 192-201.
19. Piepho, H.P., Williams, E.R., Fleck, M. (2006): A note on the analysis of designed experiments with complex treatment structure. *HortScience* **41**, 446-452.
20. Piepho, H.P., Ongutu, J.O. (2007): Simple state-space models in a mixed model framework. *The American Statistician* **61**, 224-232.
21. Piepho, H.P., Möhring, J. (2007): Computing heritability and selection response from unbalanced plant breeding trials. *Genetics* **177**, 1881-1888.
22. Stich, B., Möhring, J., Piepho, H.P., Heckenberger, M., Buckler, E. S., Melchinger, A. E. (2008): Comparison of mixed-model approaches for association mapping. *Genetics* **178**, 1745-1754.
23. Piepho, H.P., Richter, C., Williams, E.R. (2008): Nearest neighbour adjustment and linear variance models in plant breeding trials. *Biometrical Journal* **50**, 164-189.
24. Piepho, H.P., Möhring, J., Melchinger, A.E., Büchse, A. (2008): BLUP for phenotypic selection in plant breeding and variety testing. *Euphytica* **161**, 209-228.
25. Gauch, H.G., Piepho, H.P., Annicchiarico, P. (2008): Statistical analysis of yield trials by AMMI and GGE: Further considerations. *Crop Science* **48**, 866-889.
26. Przystalski, M., Thiemt, E., Rolland, B., Ericson, L., Osman, A., Ostergard, H., Levy, L., Wolfe, M., Büchse, A., Piepho, H.P., Krajewski, P. (2008): Comparing the performance of cereal varieties in organic and non-organic cropping systems in different European countries. *Euphytica* **163**, 417-433.
27. Ongutu, J.O., Piepho, H.P., Dublin, H.T., Bhola, N., Reid, R.S. (2009): Dynamics of Mara-Serengeti ungulates in relation to land use change. *Journal of Zoology* **278**, 1-14.

28. Piepho, H.P. (2009): Ridge regression and extensions for genome-wide selection in maize. *Crop Science* **49**, 1165-1176.
29. Möhring, J., Piepho, H.P. (2009): Comparison of weighting in two-stage analyses of plant breeding trials. *Crop Science* **49**, 1977-1988.
30. Piepho, H.P., Williams, E.R. (2010): Linear variance models for plant breeding trials. *Plant Breeding* **129**, 1-8.
31. Ong, J.O., Piepho, H.P., Reid, R.S., Rainy, M.E., Kruska, R., Worden, J.S., Nyabenge, M., Hobbs, N.T. (2010): Large herbivore responses to water and settlements. *Ecological Monographs* **80**, 241-266.
32. Sun, G., Zhu, C., Kramer, M.H., Yang, S.S., Song, W., Piepho, H.P., Yu, J. (2010): Comparing different  $R^2$  statistics for mixed model association mapping. *Heredity* **105**, 333-340.
33. Williams, E.R., Piepho, H.P., Whitaker, D. (2011): Augmented p-rep designs. *Biometrical Journal* **53**, 19-27.
34. Möhring, J., Melchinger, A.E., Piepho, H.P. (2011): REML-based diallel analysis. *Crop Science* **51**, 470-478.
35. Ong, J.O., Piepho, H.P., Schulz-Streeck, T. (2011): A comparison of random forests, boosting and support vector machines for genomic selection with SNP markers. *BMC Proceedings* **5** (Suppl. 3): S11.
36. Ong, J.O., Owen-Smith, N., Piepho, H.P., Said, M.Y. (2011): Continuing wildlife population declines and range contraction in the Mara Region of Kenya during 1977-2009. *Journal of Zoology* **285**, 99-109.
37. Liseck, J., Römisich-Margl, L., Nikoloski, Z., Piepho, H.P., Giavalisco, P., Selbig, J., Gierl, A., Willmitzer, L. (2011): Corn hybrids display lower metabolite variability and complex metabolite inheritance patterns. *The Plant Journal* **68**, 326-336.
38. Piepho, H.P., Richter, C., Spilke, J., Hartung, K., Kunick, A., Thöle, H. (2011): Statistical aspects of on-farm experimentation. *Crop and Pasture Science* **62**, 721-735.
39. Laso Bayas, J.C., Marohn, C., Dercon, G., Dewi, S., Piepho, H.P., Joshi, L., van Noordwijk, M., Cadisch, G. (2011): Tsunami impact mitigation by coastal vegetation in West Aceh. *Proceedings of the National Academy of Sciences* **108**, 18612-18617.
40. Schützenmeister, A., Jensen, U., Piepho, H.P. (2012): Checking normality and homoscedasticity in the general linear model. *Communications in Statistics – Simulation and Computation* **41**, 141-154.
41. Simko, I., Piepho, H.P. (2012): The area under the disease progress stairs (AUDPS): calculation, advantages, and application. *Phytopathology* **102**, 381-389.
42. Belz, R.G., Piepho, H.P. (2012): Modelling effective dosages in hormetic dose-response studies. *PLoS ONE* **7**, e33432.
43. Ong, J.O., Schulz-Streeck, T., Piepho, H.P. (2012): Genomic selection using regularized linear regression models: ridge regression, lasso, elastic net and their extensions. *BMC Proceedings* **6** (Suppl. 2):S10.
44. Piepho, H.P., Möhring, J., Schulz-Streeck, T., Ong, J.O. (2012): A stage-wise approach for analysis of multi-environment trials. *Biometrical Journal* **54**, 844-860.
45. Piepho, H.P., Williams, E.R., Madden, L.V. (2012): The use of two-way mixed models in multi-treatment meta-analysis. *Biometrics* **68**, 1269-1277.
46. Mühlhausen, J., Reif, J., Maurer, H.P., Möhring, J., Piepho, H.P. (2013): Visual scorings of drought stress intensity as covariates for improved variety trial analysis. *Journal of Agronomy and Crop Science* **199**, 321-330.
47. Estaghvirou, B., Ong, J.O., Schulz-Streeck, T., Knaak, C., Ouzanova, M., Gordillo, A., Piepho, H.P. (2013): Evaluation of approaches for estimating prediction accuracy in genomic selection in plant and animal breeding. *BMC Genomics* **14**, 860.
48. Bennewitz, J., Böglein, S., Stratz, P., Rodehutscord, M., Piepho, H.P., Kjaer, W., Bessei, W. (2014): Genetic parameters for feather pecking and aggressive behaviour in a large F2-cross of laying hens using generalized linear mixed models. *Poultry Science* **93**, 810-817.
49. Slaets, J.I.F., Schmitter, P., Hilger, T., Lamers, M., Piepho, H.P., Vien, T.D., Cadisch, G. (2014): A turbidity-based method to continuously monitor sediment, carbon and nitrogen flows in small mountainous watersheds. *Journal of Hydrology* **513**, 45-57.
50. Piepho, H.P., Laidig, F., Drobek, T., Meyer, U. (2014): Dissecting genetic and non-genetic sources of long-term yield trend in German official variety trials. *Theoretical and Applied Genetics* **127**, 1009-1018 (Erratum: 127: 1679).
51. Josse, J., van Eeuwijk, F.A., Piepho, H.P., Denis, J.B. (2014): Another look at Bayesian analysis of AMMI models for genotype-environment data. *Journal of Agricultural, Biological, and Environmental Statistics* **19**, 240-257.
52. Piepho, H.P. (2014): Network-meta analysis made easy: Detection of inconsistency using factorial analysis-of-variance models. *BMC Medical Research Methodology* **14**, 61.

53. Forkman, J., Piepho, H.P. (2014): A parametric bootstrap procedure for selecting the number of multiplicative terms in GGE and AMMI models. *Biometrics* **70**, 639-647.
54. Ogutu, J.O., Piepho, H.P. (2014): Regularized group regression methods for genomic selection: Bridge, MCP, SCAD, group bridge, group lasso, sparse group lasso, group MCP and group SCAD. *BMC Proceedings* **8** (Suppl. 5): S7.
55. Laidig, F., Piepho, H.P., Drobek, T., Meyer, U. (2014): Genetic and non-genetic long-term trends of 12 different crops in German official variety performance trials and on-farm yield trends. *Theoretical and Applied Genetics* **127**, 2599-2617.
56. Piepho, H.P., Möhring, J., Pflugfelder, M., Hermann, W., Williams, E.R. (2015): Problems in the parameter estimation for power and AR(1) models of spatial correlation in designed field experiments. *Communications in Biometry and Crop Science* **10**, 3-16.
57. Piepho, H.P. (2015): Generating efficient designs for comparative experiments using the SAS procedure OPTEX. *Communications in Biometry and Crop Science* **10**, 96-114.
58. Ladha, J.K., Rao, A.N., Raman, A., Padre, A.T., Dobermann, A., Sharawat, Y., Gathala, M., Alam, M.M., Liak, R., Rajendran, R., Kumar, V., Reddy, C.K., Sharma, S., Sharma, P.C., Singh, S.S., Saha, A., Noor, S., Piepho, H.P., Parsad, R. (2016): Agronomic improvements can make future cereal systems in South Asia far more productive and have a lower environmental footprint. *Global Change Biology* **22**, 1054-1074.
59. Piepho, H.P., Williams, E.R., Michel, V. (2016): Nonresolvable row-column designs with an even distribution of treatment replications. *Journal of Agricultural, Biological and Environmental Statistics* **21**, 227-242.
60. Onofri, A., Seddaiu, G., Piepho, H.P. (2016): Long-term experiments: case studies on data analysis. *European Journal of Agronomy* **77**, 223-235.
61. Madden, L.V., Piepho, H.P., Paul, P.A. (2016): Models and methods for network meta-analysis. *Phytopathology* **106**, 792-806.
62. Laidig, F., Piepho, H.P., Rentel, D., Drobek, T., Meyer, U., Huesken, A. (2017): Evaluation of breeding progress, genetic and environmental variation and correlation of winter wheat quality traits in German official variety trials and on-farm during 1983 to 2014. *Theoretical and Applied Genetics* **130**, 223-245.
63. Belz, R., Piepho, H.P. (2017): Hormesis in binary mixtures of pelargonic acid and glyphosate – a modelling approach. *Chemosphere* **178**, 88-98.
64. Damesa, T., Worku, M., Möhring, J., Piepho, H.P. (2017): One step at a time: Stage-wise analysis of a series of experiments. *Agronomy Journal* **109**, 845-857.
65. Bernal-Vasquez, A.M., Gordillo, A., Schmidt, M., Piepho, H.P. (2017): Genomic prediction in early selection stages using multi-year data in a hybrid rye breeding program. *BMC Genetics* **18**, 51.
66. Piepho, H.P., Herndl, M., Pötsch, E., Bahn, M. (2017): Designing an experiment with quantitative treatment factors to study the effects of climate change. *Journal of Agronomy and Crop Science* **203**, 584-592.
67. Kozak, M., Piepho, H.P. (2018): What's normal anyway? Residual plots are more telling than significance tests when checking ANOVA assumptions. *Journal of Agronomy and Crop Science* **204**, 86-98.
68. Baldauf, J.A., Marcon, C., Lithio, A., Vedder, L., Altrogge, L., Piepho, H.P., Schoof, H., Nettleton, D., Hochholdinger, F. (2018): Single parent expression is a general mechanism that drives extensive complementation of non-syntenic genes in maize (*Zea mays* L.) hybrids. *Current Biology* **28**, 431-434.
69. Piepho, H.P., Kruse, M., Deplewski, P. (2018): Expected variance variance between seed germination test replicate results. *Seed Science and Technology* **46**, 197-209.
70. Piepho, H.P., Madden, L.V., Roger, J., Payne, R., Williams, E.R. (2018): Estimating the variance for heterogeneity in arm-based network meta-analysis. *Pharmaceutical Statistics* **17**, 264-277.
71. Hadasch, S., Forkman, J., Malik, W.A., Piepho, H.P. (2018): Weighted estimation of AMMI and GGE models. *Journal of Agricultural, Biological and Environmental Statistics* **23**, 255-275.
72. Piepho, H.P., Edmondson, R.N. (2018): A tutorial on the statistical analysis of factorial experiments with qualitative and quantitative treatment factor levels. *Journal of Agronomy and Crop Science* **204**, 429-455.
73. Piepho, H.P., Michel, V., Williams, E.R. (2018): Neighbour balance and evenness of distribution of treatment replications in row-column designs. *Biometrical Journal* **60**, 1172-1189.
74. Macholdt, J., Piepho, H.P., Honermeier, B. (2019): Long-term impact of sub-optimal and optimal nutrient supply on grain yield and yield stability of winter wheat. *European Journal of Agronomy* **102**, 14-22.
75. Forkman, J., Josse, J., Piepho, H.P. (2019): Hypothesis tests for principal component analysis when datasets are small and columns are standardized. *Journal of Agricultural Biological and Environmental Statistics* **24**, 289-308.

76. Mukhopadhyay, S., Ogutu, J.O., Bartzke, G., Dublin, H.T., Piepho, H.P. (2019): Modelling spatio-temporal variation in sparse rainfall data using a hierarchical Bayesian regression model. *Journal of Agricultural Biological and Environmental Statistics* **24**, 369-393.
77. Piepho, H.P. (2019): Recent claim of declining climate resilience in European wheat is not supported by the statistics used. *Proceedings of the National Academy of Science* **116**, 10625-10626.
78. Piepho, H.P. (2019): A coefficient of determination ( $R^2$ ) for generalized linear mixed models. *Biometrical Journal* **61**, 860-872.
79. Schmidt, P., Hartung, J., Bennewitz, J., Piepho, H.P. (2019): Heritability in plant breeding on a genotype-difference basis. *Genetics* **212**, 991-1008.
80. Schreck, N., Piepho, H.P., Schlather, M. (2019): Best prediction of the additive genomic variance in random-effects models. *Genetics* **213**, 379-394.
81. Hadasch, S., Laidig, F., Macholdt, J., Bönecke, E., Piepho, H.P. (2020): Trends in the mean performance and stability of winter wheat and winter barley yields using a long-term series of variety trials. *Field Crops Research* **251**, 107792.
82. Macholdt, J., Styczen, E.M., Macdonald, A., Piepho, H.P., Honermeier, B. (2020): Long-term analysis from a cropping system perspective: Yield stability, environmental adaptability, and production risk of winter barley. *European Journal of Agronomy* **117**, 126056.
83. Bönecke, E., Breitsameter, L., Brüggemann, N., Chen, T.W., Feike, T., Kage, H., Kersebaum, K.C., Piepho, H.P., Stützel, H. (2020): Winter wheat yield response to climatic and agronomic changes in Germany between 1958 and 2006. *Global Change Biology* **26**, 3601-3626.
84. Wiksten, A., Hawkins, N., Piepho, H.P., Gsteiger, V. (2020): Non-proportional hazards in network meta-analysis: efficient strategies for model building and analysis. *Value in Health* **23**, 918-927.
85. Simon, E., Canarini, A., Martin, V., Séneca, J., Böckle, T., Reinthaler, D., Pötsch, E.M., Piepho, H.P., Bahn, M., Wanek, W., Richter, A. (2020): Seasonal responses of microbial growth and carbon use efficiency to multiple climate change drivers. *Communications Biology* **3**, 584.
86. Piepho, H.P., Vo-Thanh, N., Tobias, R. (2020): Generating experimental designs for estimation of genetically related treatment effects. *Agronomy Journal* **112**, 3929-3940.
87. Slaets, J., Boeddinghaus, R., Piepho, H.P. (2021): Linear mixed models and geostatistics for designed experiments in soil science - two entirely different methods or two sides of the same coin? *European Journal of Soil Science* **72**, 47-68.
88. Resende, R.T., Piepho, H.P., Rosa, G.J.M., Silva-Junior, O.B., Fonseco e Silva, F., de Resende, M.V.D., Grattapaglia, D. (2021): Enviromics: Applications and perspectives on envirotypic assisted breeding. *Theoretical and Applied Genetics* **134**, 95-112.
89. Buntaran, H., Forkman, J., Piepho, H.P. (2021): Projecting results of zoned multi-environment trials to new sites using environmental covariates with random coefficient models. *Theoretical and Applied Genetics* **134**, 1513-1530.
90. Piepho, H.P., Boer, M., Williams, E.R. (2022): Two-dimensional P-spline smoothing for spatial analysis of field trials. *Biometrical Journal* **64**, 835-857.
91. Buntaran, H., Bernal-Vasquez, A.M., Gordillo, A., Wimmer, V., Sahr, M., Piepho, H.P. (2022): Assessing the response to genomic selection by simulation. *Theoretical and Applied Genetics* **135**, 2891-2905.
92. Piepho, H.P., Madden, L.V. (2022): How to observe the principle of concurrent control in an arm-based meta-analysis using SAS procedures GLIMMIX and BGLIMM. *Research Synthesis Methods* **13**, 821-828.
93. Vo-Thanh, N., Piepho, H.P. (2023): Bayesian optimal two-phase designs with a single blocking factor in each phase. *Statistics and Computing* **33**, 10.