

Report of the EU COST FA1103 Training School 2014: “Experimental Design and Statistical Data Analysis: Applications in R-software for endophyte-related data”

The University of Évora hosted a training school of COST Action FA1103 (Endophytes in Biotechnology and Agriculture) on Experimental Design and Statistical Data Analysis using the statistical software R-project, from 20th to 24th October 2014, organized by Manuela Oliveira, Isabel Natário, Birgit Arnholdt-Schmitt and Paula Simões - <http://www.cost-fa1103.uevora.pt/>.



Over 30 participants (20 financed by COST FA1103), recent PhDs or about to be, from nine different countries attend the training school (Table 1), showing the interest that this course had for the academic community. The school had two strong theoretical scientific components in Generalized Linear Models and Analysis of Variance and a strong practical component in implementing the theory and running several applications in R software. This is a freeware statistical software, largely used by the scientific and academic community, growing in importance in the area Experimental Design and Statistical Data Analysis with applications to Endophyte-related data.



The training school program revised and overviewed the basic statistical concepts, from statistical summary and graphical tools to explore data to concepts of point wise and interval estimation and hypothesis testing; then it described the linear regression model and the most common generalized linear models (for binary data, count data and continuous data, such as log-linear and gamma models), their assumptions, estimation and quality of fit; afterwards it reinforced the need for collecting meaningful data, detailing the basic requirements for the experimental process and design; afterwards it described the analysis of variance technique, detailing several possible models and inherent assumptions; lastly it described the most classical designs. All these concepts were promptly applied in the practical sessions in R, using different data sets. Beforehand a detailed introduction to R software was offered, in some cases revealing a gap between knowledge of the participants and aspiration of the training. The practical sessions were also directed to the participant's datasets and problems, so that they could practice on their own research problems. So, in the end, almost all participants have run some exploratory and modelling analysis in their own research problems.

Table 1: Participants of the EU COST FA1103 Training School 2014: “Experimental Design and Statistical Data Analysis” and their home county.

Participants		Country
Aragon Rodriguez	Sandra	Germany
Aslan	Emek	Turkey
Baldan	Enrico	ITALY
Bayram	Kansu	Turkey
Campos	Catarina	Portugal
Campos	Doroteia	Portugal
Cardoso	Hélia	Portugal
Farhan	Khaled	ITALY
Given	Cindy	Finland
Gomes	Teresa	Portugal
Gregor	Susanne	Germany
Jakobs-Schönwandt	Desiree	Germany
Kostovcik	Martin	Czech Republic
Kavacec	Eva	Slovenia
Landi	Lucia	ITALY
Lohse	Rieke	Germany
Lopez	Sebastian	ITALY
Lucic	Eva	Germany
Mina	João	Portugal
Nobre	Tânia	Portugal
Poblaciones	María José	Spain
Poosakkannu	Anbu	Finland
Ragonezi	Carla	Portugal
Rodríguez	Carolina	Austria
Rybakova	Daria	Austria
Samad	Abdul	Austria
Tejesvi	Mysore	Finland
Valadas	Vera	Portugal
Velada	Isabel	Portugal
Lumbreras Corujo	Ana	Portugal
Sánchez García-Madrid	Ana	Spain
Poghosyan	Areg	Germany
Trainers		
Oliveira	M. Manuela	U. Évora - Portugal
Natário	Isabel	FCT-UNL - Portugal
Simões	Paula	ISEL - Portugal