STATISTICAL TOOLS FOR PLANT PHENOMIC DATA ANALYSIS – Zaragoza (Spain), 20-24 January 2020

<table>
<tr><th>Hour</th><th>Monday 20</th><th>Tuesday 21</th><th>Wednesday 22</th><th>Thursday 23</th><th>Friday 24</th></tr>
<tr><td>9:00-10:00</td><td>Opening</td><td>Choosing the design for field and platform experiments
H.P. Piepho, J. Hartung, E. Millet</td><td colspan="2" rowspan="2">Statistical and machine learning techniques for feature extraction
F. van Eeuwijk, S. Chapman, E. Millet, D. Bustos</td><td>Integration of environmental, genomic and phenomic data
F. van Eeuwijk, E. Millet, D. Bustos, S. Chapman</td></tr>
<tr><td>10:00-11:00</td><td>Prediction, Prescription, Precision and Plant Phenotyping
J. Betrán</td><td>Practical work on design choice
H.P. Piepho, J. Hartung, E. Millet</td><td>Practical work on integration of environmental, genomic and phenomic data
F. van Eeuwijk, E. Millet, D. Bustos, S. Chapman</td></tr>
<tr><td colspan="6">Coffee break</td></tr>
<tr><td>11:30-12:30
12:30-13:30</td><td>Introduction to phenomics
A. Hund, L. Roth</td><td>Mixed models analysis of extracted features
H.P. Piepho, J. Hartung</td><td>Case study and practical work on correcting for spatial variation and temporal modelling
H.P. Piepho, J. Hartung, F. van Eeuwijk, E. Millet, D. Bustos</td><td>Case study and practical work on feature extraction from hyperspectral canopy reflectance data using indices and multivariate analyses
A. Hund, J. Anderegg, F. van Eeuwijk, E. Millet, D. Bustos, S. Chapman</td><td>Practical work on integration of environmental, genomic and phenomic data
F. van Eeuwijk, E. Millet, D. Bustos, S. Chapman</td></tr>
<tr><td colspan="6">Lunch break</td></tr>
<tr><td>15:00-16:00</td><td rowspan="2">Choosing the design for field and platform experiments
H.P. Piepho, J. Hartung, E. Millet</td><td rowspan="2">Mixed models analysis of extracted features
H.P. Piepho, J. Hartung</td><td>Environmental data for modelling phenomic data: Recording of environmental covariates for plant phenotyping experiments
A. Hund</td><td rowspan="2">Integration of environmental, genomic and phenomic data
F. van Eeuwijk, E. Millet, D. Bustos, S. Chapman</td><td rowspan="3"></td></tr>
<tr><td>16:00-17:00</td><td>Construction of environmental indexes
E. Millet, S. Chapman</td></tr>
<tr><td>17:00-18:00</td><td>Data collection and handling: Introduction to feature extraction
A. Hund, L. Roth</td><td rowspan="2">Case study and practical work on date-time formats and relational data tables
A. Hund, L. Roth</td><td rowspan="2">Case study and practical work on Rerandomization in platforms
H.P. Piepho, J. Hartung, F. van Eeuwijk, E. Millet, D. Bustos</td><td rowspan="2">Case study and practical work on modelling growth and developmental processes using environmental covariates
A. Hund, L. Kronenberg, F. van Eeuwijk, E. Millet, D. Bustos, S. Chapman</td></tr>
<tr><td>18:00-19:00</td><td></td></tr>
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