PHENOComp: HT plant Phenotyping Data Analysis Report

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EUROPEAN UNION

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EUROPEAN UNION
Austria-Czech Republic
European Regional Development Fund

Pilot project introduction

- Project partners
  CEITEC Plant Sciences Facility & VBCF Plant Sciences Facility & VBCF BioComp Facility
- Complementary equipment/expertise used for the project (including pictures, if possible)
  Strong expertise in software engineering, data analysis and statistics at the VBCF BioComp, NGS data analysis, LemnaTec image analysis expertise at VBCF PlantS
- Basic project idea
  To develop a user-friendly, interactive tool for the analysis of LemnaTec derived HT plant phenotyping data.
- Project goal
  To extend the present HT plant phenotyping pipeline by the provision of an comprehensive data analysis and visualization report strengthening the HT plant phenotyping capabilities in the cross border region
- Potential end-users:
  - **Academic plant research groups (basic and applied research)**
  - **Food security agencies (AGES)**
  - **Plant breeding companies**

Project implementation

Very close collaboration between **VBCF PlantS, VBCF BioComp, CEITEC PlantS and Yasin Dagdas** research group (GMI)

(Real) data for product development (GMI Dagdas autophagy HT plant phenotyping project)

USER NEEDS - PROJECT PLANNING - "PRODUCT" DESIGN

Regular meetings of project partners – **continuous product improvement**

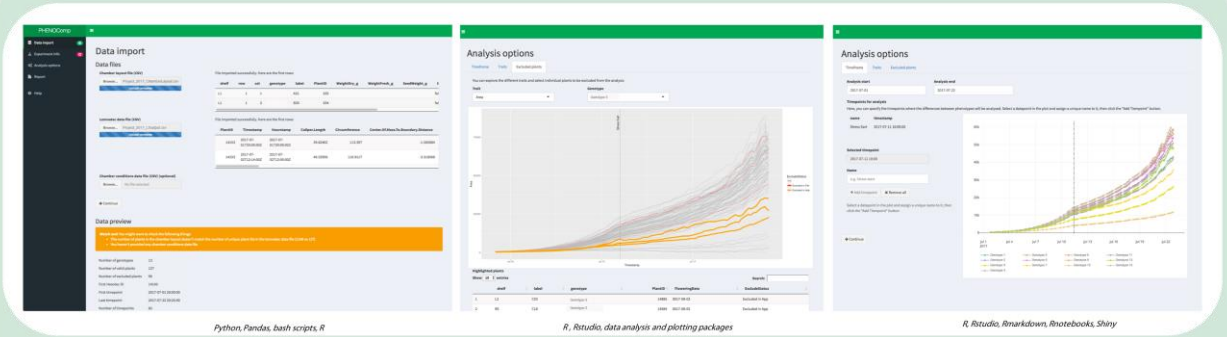
Transfer of final product (app, source code) to PlantS and deep **training** of staff

Manuscript in preparation

Another HT phenotyping project started last week

Project results

THE APP



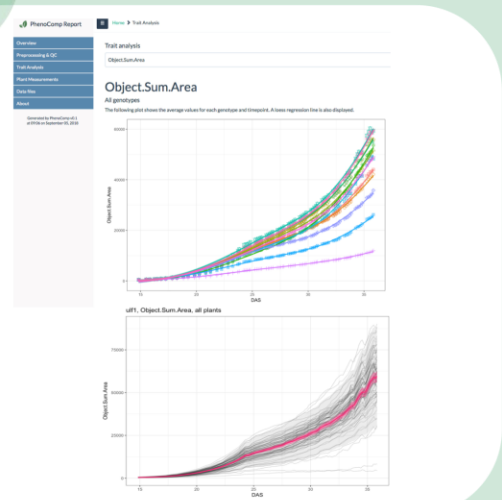
Python, Pandas, bash scripts, R | *R, Rstudio, data analysis and plotting packages* | *R, Rstudio, Rmarkdown, Rnotebooks, Shiny*

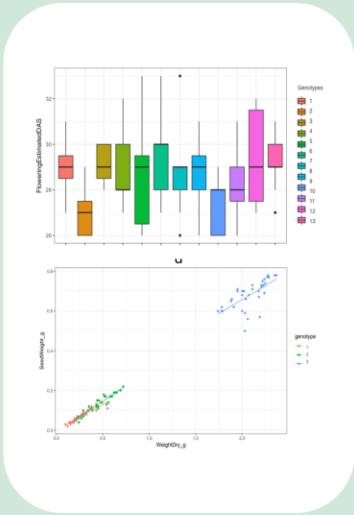
Data import: *LemnaTec* output, manually acquired data

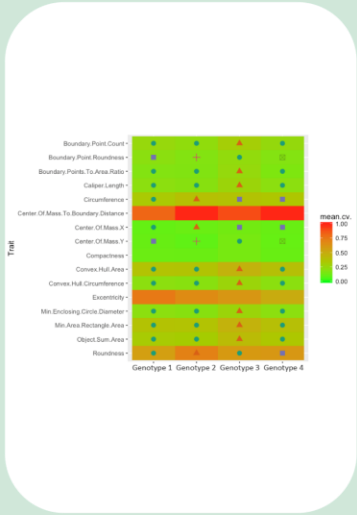
Experimental info: environmental conditions, genotypes, …

Analysis options: pot randomization, setting timepoints for stats, start- and end date

THE REPORT







LemnaTec data
- size (projected leaf area, circumference, …)
- shape (eccentricity, roundness, …)
- color (mean colors, …)

Manually acquired data
- dry mass weight
- seed weight
- flowering time

Statistics and quality control
- finding relevant traits

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