COST Action FA1306:
The quest for tolerant varieties –
Phenotyping at plant and cellular level

# COST final meeting

## March 20-21 2018

## Leuven

# Abstract book

WIWAM
Automated systems for plant phenotyping

PHENOSPEX
Smart Plant Analysis

# Scientific committee

Sebastien Carpentier

Rick Van de Zedde

Astrid Junker

Carl-Otto Ottosen

Carla Pinhiero

Estelle Goulas

Diego Rubiales

Dionysia Fasoula

Eva Rosenqvist

Ulrich Schurr

# Local organizing committee

Sebastien Carpentier, Marleen Stockmans, Suzy Voets, Eva Van Den Broeck, Jelle Van Wesemael, David Eyland, Nadia Campos, Nina Jacobi

**Abstract book editing**

Sebastien Carpentier, Nadia Campos

**Website & registration system.**

Ulrich Stegelmann

# Practical information

# Bus center (station) to campus:

Bus number 2 direction Heverlee Campus from platform 6, every 15 min. Get out at Kantineplein

Bus number 1 direction Heverlee Campus from platform 6, every hour. Get out at Kantineplein

Bus number 616 direction Zaventem from platform 14, every hour. Get out at Kantineplein

# Conference dinner

For those that registered for the conference dinner.

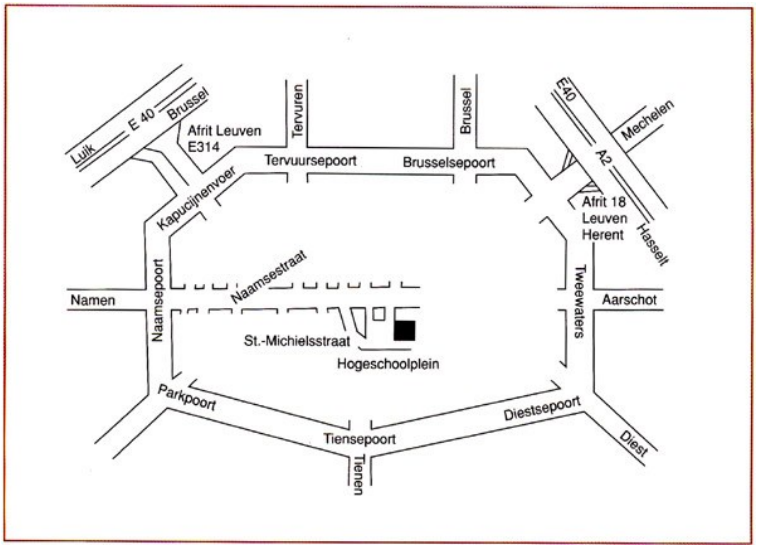
**Tuesday 20 March 2018 at 19.30h.**

SALONS GEORGES

Hogeschoolplein 15

3000 Leuven

Tel: 016 23 75 75
Email: info@salonsgeorges.be
Website: http://www.salonsgeorges.be



# Program

**March 20, 2018**

08:30-09:30 Registration/good morning coffee

09:30-09:35 Welcome by the COST chair Sebastien Carpentier

**Phenotyping Crop Biodiversity – chair: E Rosenqvist (DK)**

**Invited speaker**

09:35-10:15

**Kristian Thorup University of Copenhagen, (DK)**. "Semi-field phenotyping for root growth and function, early results from the RadiMax root phenotyping facility"

**Invited speaker**

10:15-10:55

**Benjamin Kilian CROP TRUST, (GE)** "Reaching back through the domestication bottleneck to feed a hot and crowded planet"

10:55-11:20 Coffee Break

- **Orals (3x20 min)**

11:20-11:40 S Carpentier (BE)The quest for climate smart varieties: phenotyping the banana biodiversity present in the gene bank

11:40-12:00 A Junker (DE) High-throughput quantitative analysis of shoot properties in diverse maize Genebank accessions

12:00-12:20 C Ottosen (DK) Heat priming effects on anthesis heat stress in wheat cultivars with contrasting tolerance to heat stress

12:20-14:00 Lunch- Break Poster Session

14:00-15:00 **Visit of the KULeuven/Bioversity International gene bank and phenotyping facilities**

- **Orals (2x20 min)**

15:00-15:20 P Mylona (GR) Phenotyping legume crop performance: bottlenecks and solutions

15:20-15:40 M Maia (PT) Grapevine resistance to Plasmopara viticola: combining metabolomics and phenotyping for biomarker discovery

15:40-16:20 Coffee Break Poster Session

**Integrated Solutions for high-end phenotyping – chair: X Draye (BE)**

- **Orals (3x20 min)**

16:20-16:40 U Schurr (DE) Phenotyping from lab to field – technologies, concepts and integration

16:40-17:00 M Neal (UK) Low-cost sensors for environmental and crop growth monitoring in agricultural settings.

17:00-17:20 J Westergaard (DK) "PlotCut 2: Developing a high-throughput UAS (drone) image-data extraction tool for plant breeders with user-friendliness and business needs as the main priority."

**Invited speaker**

17:20-18:00 **Cyril Pommier INRA; (FR)**, "Standardization in the phenotyping community."

18:30-19:30 Guided tour in Leuven

19:30 Conference dinner

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**March 21, 2018**

08:30-09:00 Registration

**Integrated Solutions for high-end phenotyping – chair: X Draye (BE)**

**Invited speaker**

09:00-09:40 **Christophe Salon, INRA, (FR)** In the context of sustainable agriculture how, with plant high throughput phenotyping, can we address the various challenges?

**Orals (2x20 min)**

09:40-10:00 D Raymaekers (BE) Drone based phenotyping for plant breeders

10:00-10:20 J Marques da Silva (PT) Using reflectance spectroscopy and artificial intelligence techniques to automatically identify maize genotypes and water stress physiological effects

10:20-11:00 Coffee Break

**Phenotyping for future climate scenarios – chair: R van de Zedde (NL)**

**Orals (3x20 min)**

11:00-11:20 P Peltonen-Sainio (FI) Diversity Induced Improvements in Resilience to Climate Change - The Scale Matters

11:20-11:40 A Schulman (FI) ClimBar: An Integrated Approach to Evaluate and Utilize Genetic Diversity

11:40-12:00 I Rieu (NL) Reproductive thermotolerance in tomato - pollen are key

12:00-13:00 Lunch- Break

13:00-13:30. Poster speed presentations

**Discussion COST, what's next? EMHPASIS, COST outputs – chair: S Carpentier (BE) U Schurr (DE)**

13:30-14:30 Live audio interrogation with online tool.

**Phenotyping for future climate scenarios**

- **Invited speaker**

14:30-15:10 **Edith Lammerts van Bueren, WUR (NL),** "Perspectives of breeding for ecological resilience"

15:10-15:40 Coffee Break

- **Orals (2x20 min)**

15:40-16:00 M Kuska (DE) Combined analysis of gene expression and optical reflectance properties of barley differing in their resistances to powdery mildew

16:00-16:20 A Virosta (ES) Impact of water deficit on growth and yield components of two garlic (Allium sativum L.) cultivars at different crop stages

16:20-17:00 **Invited speaker Arno Ruckelhausen (DE)** Technological tools for field-based phenotyping – about multi imaging sensor data fusion and (autonomous) platforms

18:00-19:00 MC/ Core meeting: Wrap up FA1306, reporting and what's next.

## 64 - Characterization of NS safflower (Carthamus tinctorius L.) and false flax (Camelina sativa L.) collections

**Dragana Milo?evi?[1], Petar Mitrovi?[1] Dragana Miladinovi?[1], Aleksandra Dimitrijevi?[1], Sandra Cveji?[1], Sreten Terzi?[1], Ankica Kondi? ?pika[1], Johann Vollmann[2].**

**1 - Institute of Field and Vegetable Crops, Maksima Gorkog 30, 21000 Novi Sad, Serbia, 2 - University of Natural Resources and Life Sciences (BOKU), Vienna, Austria.**

**Presenting author: Ana Marjanovic Jeromela** ana.jeromela@ifvcns.ns.ac.rs

Plant genetic resources are one of the most important natural resources for an agricultural country such as Serbia. Institute of Field and Vegetable Crops (IFVCNS), Novi Sad (NS), maintains the collections of major and minor oil crops, including safflower and false flax, that are used in breeding. Safflower (Carthamus tinctorius L.) that belongs to the Asteraceae (Compositae) family, is a thistle-like drought-resistant annual plant that is grown commercially for the production of oil and birdseed. False flax (Camelina sativa (L.) Crantz) is an oil crop from Brassicaceae family, which has become particularly interesting in recent years due to its diverse use and modest growing and cultivation requirements.

NS safflower collection consist of genotypes of different geographical origin (Ukraine, Italy, Turkey), while false flax collection comprises accessions exchanged between Universit�t f�r Bodenkultur Wien (BOKU) and IFVCNS, the participating institutions in the Serbian-Austrian bilateral cooperation project ?Introducing Camelina - a sustainable future oil crop? (2016-2017). Phenotypic observations of safflower genotypes during two growing seasons revealed that analyzed genotypes differ in flower color (yellow, orange, red), presence of spikes and in seed oil and protein content. Oil and protein content differed between years and genotypes, indicating large influence of genotype and environmental conditions on variations of these quantitative traits that are negatively correlated. False flax accessions were tested in the trial set up as lattice design and sown at two locations (Tulln, Austria and Rimski ?an?evi, Serbia). Oil and protein content analyses showed the differences between the two locations. Owing to the importance of these two minor oil crops and increase of their production as resilient crops, they were involved in our breeding programs and the cultivar registrations are in progress for the first time in Serbia.