Current Challenges in Plant Breeding: Plant Breeding a(nd) Data Science

6th annual seminar of the SGPW-SSA Working Group on Plant Breeding

Thursday, January 27, 2022, 09:00 - 15:20
Online via Zoom

On behalf of the SGPW-SSA Working Group on Plant Breeding, we kindly invite you to attend the sixth working group seminar on „Plant Breeding a(nd) Data Science".

Successful plant breeding has always relied on the efficient utilization of a broad range of data resources such as information on phenotypic characteristics, genomic constitution and environmental conditions. With the rapid advances in areas such as high resolution phenotyping, whole-genome sequencing, bioinformatics and data sciences, the availability of data potentially useful for plant breeding has drastically increased. How can we effectively use these resources in plant breeding programs? How can the various sources be integrated and optimally used for rapid and targeted breeding progress?

This seminar addresses these questions. It is also part of the ETH lecture „Current Challenges in Plant Breeding", where we aim to bring together MSc and doctoral students with national and international experts in plant breeding to discuss current activities, latest achievements and future perspectives. Therefore, the students will give their view and insights on „data and information sources for plant breeding", „the role of artificial intelligence for genomic selection, phenotyping and phenomics " and „the value of data sources beyond the nursery".

In addition, we have assembled a selection of very interesting keynote presentations by eminent speakers such as Mark Cooper (The University of Queensland, Australia), Sebastian Schultheiss (Computomics, Germany), John Hickey (Bayer Crop Science, United Kingdom) and Boulos Chalhoub (Agroscope, Switzerland).

Please register before 25.01.2022 under https://sgpw-ssa.ch/de/events/ccpb.

We are looking forward to an interesting seminar.

Best regards,

Bruno Studer

Program

09:00 - 09:10	**Welcome and introduction** Bruno Studer, ETH Zurich	

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09:10 - 09:30	**(Public) data and information sources for plant breeding** (Corinne Walser, Nina Gallmann, Robin Krischer, Yurun Jin, tutor: Roland Kölliker)
09:30 - 10:15	**Topics for design of prediction-based breeding strategies** Mark Cooper, The University of Queensland, Brisbane, Australia
10:15 - 10:30	**Break**
10:30 - 10:50	**The role of AI/ML for genomic selection** (Aman Karwasra, Federica Ciulla, Luc Gabel, tutors: Daniel Ariza/Carles Quesada Traver)
10:50 - 11:10	**The role of AI/ML for phenotyping/phenomic selection** (Amos a Marca, Argeo Ulrich, Carol Tanner, Corina Oppliger, tutor: Lukas Roth)
11:10 - 11:15	**Very short break**
11:15 - 12:00	**Higher-order machine learning models act as an approximation of biological regulatory mechanisms** Sebastian Schultheiss, Computomics, Germany
12:00 - 13:00	**Lunch break**
13:00 - 13:45	**Disruptions through data driven breeding will drive step changes in crop performance** John Hickey, Bayer Crop Science, United Kingdom
13:45 - 14:05	**Data sources beyond the nursery – potential and limitations of community/participatory breeding** (Andreas Pfister, Johannes Brunner, Lena Caminada, Luca Bäni, Rike Teuber, tutor: Samuel Wuest)
14:05 - 14:20	**Break**
14:20 - 15:05	**Genome selection to enhance genetic recombination and gain for precision and speed breeding in wheat** Boulos Chalhoub, Agroscope, Switzerland
15:05 - 15:20	**Final discussion and conclusion of the seminar**

Registration

Attendance is free, but registration is required before 25.01.2022 at https://sgpw-ssa.ch/de/events/ccpb. The link to the zoom meeting will be sent to registered participants on the day before the seminar.