EUCARPIA European Association for Research on Plant Breeding
Europäische Gesellschaft für Züchtungsforschung
Association Européenne pour l'Amélioration des Plantes

UNIKASSEL VERSITÄT | ORGANIC AGRICULTURAL SCIENCES

Symposium on Breeding for Diversification

19 - 21 February 2018

University of Kassel, Witzenhausen, Germany

General objective

Various national and international projects aim at exploiting the benefits of species mixtures to design productive, diversified, resilient and environmentally friendly agro-ecological cropping systems less dependent on external inputs than current systems and acceptable to farmers and actors in the agri-food chain. Inter- or intra-species diversity can enhance water and nutrient use efficiency and improve the control of pests, diseases and weeds, while increasing crop productivity and resilience to biotic and abiotic stresses, including those triggered by climate change. Species mixtures can lead to reduced use of fossil energy and chemical inputs and enhance production of ecosystem services. This symposium will discuss breeding and management strategies for diversification both in conventional and organic agriculture in arable or forage crops or agroforestry.

This symposium will be organised by EUCARPIA Section Organic & Low-input Agriculture, ECO-PB, DIVERSify, INSUSFAR, HealthyMinorCereals, LIVESEED, ReMIX and Wheatamix projects.

Venue:

University of Kassel, Faculty of Organic Agricultural Sciences, Steinstraße 19, 37213 Witzenhausen, Germany.

Symposium homepage: http://eucarpia.ditsl.org/

Registration for Symposium: https://anmeldeservice.fibl.org/event/symposium-on-breeding-for-diversification

Detailed **Information for Symposium Participants** with hotels list and travel description: http://eucarpia.ditsl.org/docs/Information_for_Symposium_Participants.pdf

ECO-PB INSUSFAR ReMIX Species mixtures for redesigning European cropping systems DIVERSify HEALTHY MINORCEREALS.eu LIVESEED Wheatamix

Important dates:

- 1 February — Deadline Symposium registration
- 19 - 21 February — Symposium
- 22 February — Breeder's Day

Participant Fees

	Early registration, before **December 15, 2017**	Late registration, until **February 1, 2018**
EUCARPIA member	**90€**	**110€**
non-**EUCARPIA** member	**130€**	**150€**
students	**30€**	**30€**

Fees include symposium access, coffee, tea, meals, and Book of Abstracts.

Organic breeders' day on 21st February

As a part of Symposium on Wednesday 21st February, the **Organic Breeders Day** will take place from 9.00 until 17.00. The Organic Breeders Day is specifically dedicated to innovations, different approaches and examples of practical breeders and farmer breeders.

Online registration https://anmeldeservice.fibl.org/event/organic-breeders-day

Participation fee is **30€.**

PLEASE NOTE: if you have already registered for the three-day EUCARPIA Symposium on Breeding for Diversification, you **DO NOT NEED** to register for this event.

Final Symposium Program

Monday 19. February 2018

Morning: Project meetings

13.00 - 14.00: Registration for Symposium

14.00 - 16.45: Breeding for intra-species diversity

14.00 Welcome to the Symposium

14.05 – 14.15: Beat Boller for EUCARPIA

14.15 – 14.55: Lars Kiær, University of Copenhagen (DK): Trait plasticity and G x E challenges when breeding for mixture-ideotypes

14.55 – 15.15: Enjalbert et al.: WHEATAMIX: increasing within-field wheat diversity to foster the multifunctionality and sustainability of wheat production in the Parisian

15.15 – 15.45 Coffee break

15.45 – 16.05: Dumalasová et al.: Disease resistance of spelt wheat – results from the HealthyMinorCereals project

16.05 – 16.25: Baresel et al.: INSUSFAR: Innovative approaches to optimize genetic diversity for sustainable farming systems of the future. Intraspecific diversity of wheat for increased resilience and high yields and system specific adaptability

16.25 – 16.45: Horneburg et al.: On-farm management as a tool to maintain diversity and to select superior genotypes

16.45 – 18.00: Guided poster session on intra-species diversity

18.00 – 20.00: Diner and social gathering

Tuesday 20. February 2018

9.00 - 11.30: Breeding for inter-species diversity annual crops

9.00 – 9.40 Liesje Mommer, Wageningen University (NL): Lessons for agriculture: below-ground insights from biodiversity experiments

9.40 – 10.00 Ayenan et al.: Participatory designing of pigeon pea (*Cajanus cajan* (l.) Millsp.) ideotypes for adaptation to various cropping systems in Benin

10.00 – 10.20 Arncken et al.: Breeding for mixed cropping and anthracnose resistance of lupins

10.20 – 10. 40 Moutier et al.: Breeding for mixtures in organic farming systems: are the traits of pure wheat cultivars predictive of their behavior in wheat-pea mixtures?

10.40 - 11.30: Coffee and guided poster session on inter-species diversity and general concepts for breeding on improved diversity

11.30 – 12.15 Documentation of diversity breeding

Büllow et al.: Documentation of diversity breeding: the information system ROBUSTUM

12.15 - 13.15: Lunch

13.15 – 14.55: Breeding for inter-species diversity perennial crops / agroforestry

13.15 – 13.55 Martin Wolfe, Wakelyns Agroforestry (UK): Maximising diversification at the agricultural end of short food and energy chains

13.55 – 14.35 Cyril Firmat, INRA Lusignan (FR): Breeding for mixtures: varieties of approaches, opportunities and limitations

14.35 – 14.55 Cadena González et al.: Traditional agroforestry systems and options of crop-tree combinations, with focus on conservation of native species

14.55 - 15.25: Coffee break

15.25 - 18.00: General concepts for breeding on improved diversity

15.25 – 16.05 Paolo Annicchiarico, Centro di Zootecnia e Acquacoltura (CREA-ZA) Lodi (IT): Interspecific competition experiments aimed to define breeding strategies

16.05 – 16.45 Jacob Weiner, University of Copenhagen (DK): The concept of ideotypes in a crop mixtures context

16.45 – 17.05 Knapp et al.: The relation of intragenotypic, intra- and interspecific competition and related canopy architecture traits

17.05 – 17.25 Lingner et al.: The cropping system matters - contrasting responses of winter faba bean genotypes to drought stress

17.25 – 17.45 Janovská et al.: An integrated approach to diversify the genetic base, improve stress resistance, agronomic management and nutritional/processing quality of minor cereal crops for human nutrition in Europe

17.45 – 18.00 Edith Lammerts van Bueren summarizing the Symposium

19:00 Symposium dinner

Wednesday 21. February 2018

9.00 - 17.00: Organic breeder's day

9.00 – 10.30 Open EUCARPIA/ECO-PB Session on Practical organic breeders presentation (invited speakers only)

10.30 – 11.00 Coffee break

11.00 – 12.00 Open EUCARPIA/ECO-PB Session on Practical organic breeders presentation (invited speakers only)

12.00 - 13.00: Lunch

13.00 - 14.00 Introduction to the concept of systems-based breeding by Edith Lammerts van Bueren

14.00 – 14.20 Group work to apply concept on your own breeding activities

14.20 – 15.20 World Café (3 x 20 min)

15.20 – 15.40 Coffee break

15.40 – 16.10 Presentation World Café results

16.10 – 17.00 General discussions on the systems-based breeding concepts, challenges and action needed, examples to illustrate the concept and definition of a roadmap to substantiate the concept and achieve paradigm shift in attitude

Thursday 22. February 2018

Project meetings: To be announced within projects

Information for presenting authors

Authors presenting their abstract orally will have in total 20 minutes. The presentation should take 15 minutes and the remaining 5 minutes are reserved for questions and discussion. Please make sure to contact local organizers and upload your presentation before your Section begins.

Posters will be presented during two guided sessions. Each author will have 3 minutes to shortly present the poster and 2 minutes for questions. The posters should be printed in A0 size and portrait orientation. Please make sure to place the poster on reserved boards on Monday 19th after the Symposium Registration.

Oral presentations:

Breeding for intra-species diversity:

1. **Enjalbert et al.:** WHEATAMIX: increasing within-field wheat diversity to foster the multifunctionality and sustainability of wheat production in the Parisian Basin
2. **Dumalasová et al.:** Disease resistance of spelt wheat – results from the HealthyMinorCereals project
3. **Baresel et al.:** INSUSFAR: Innovative approaches to optimize genetic diversity for sustainable farming systems of the future. Intraspecific diversity of wheat for increased resilience and high yields and system specific adaptability
4. **Horneburg et al.:** On-farm management as a tool to maintain diversity and to select superior genotypes

Breeding for inter-species diversity annual crops:

1. **Ayenan et al.:** Participatory designing of pigeon pea (*Cajanus cajan* (l.) Millsp.) ideotypes for adaptation to various cropping systems in Benin
2. **Arncken et al.:** Breeding for mixed cropping and anthracnose resistance of lupins
3. **Moutier et al.:** Breeding for mixtures in organic farming systems: are the traits of pure wheat cultivars predictive of their behavior in wheat-pea mixtures?

Breeding for inter-species diversity perennial crops / agroforestry:

1. **Cadena González et al.:** Traditional agroforestry systems and options of crop-tree combinations, with focus on conservation of native species

General concepts for breeding on improved diversity:

1. **Knapp et al.:** The relation of intragenotypic, intra- and interspecific competition and related canopy architecture traits
2. **Lingner et al.:** The cropping system matters - contrasting responses of winter faba bean genotypes to drought stress

3. **Janovská et al.:** An integrated approach to diversify the genetic base, improve stress resistance, agronomic management and nutritional/processing quality of minor cereal crops for human nutrition in Europe

List of Posters:

Breeding for intra-species diversity:

1. **Blanc et al.:** Modeling competition for light in wheat mixtures
2. **Borg et al.:** Participatory approaches: Developing blending rules to design locally adapted cultivar mixtures
3. **Bülow et al.:** Network for the dynamic management of winter barely genetic resources
4. **Forst et al.:** Estimation of mixing ability for variety mixtures: statistical models and experimental results
5. **Kolesnyk et al.:** Application of molecular markers for plant breeding and variety investigation and diversification
6. **Ločmele et al.:** Yield stability of barley mixture and populations
7. **Petitti et al.:** Evolutionary-participatory breeding generates wheat populations adapted for organic agriculture in Italy
8. **Petitti et al.:** Future proofing decentralized evolutionary wheat populations' seed systems in Italy using a climate analogues approach: The example of Tuscany
9. **Vidal et al.:** Mixing susceptible and resistant wheat cultivars with contrasted stem height can reduce progression of disease dispersed by rain-splash
10. **Schmidt et al.:** Management histories of wheat composite cros spopulation (CCPs) drive yield in two tillage systems
11. **Van Frank et al.:** A participatory approach to breeding for diverse and adapted wheat mixture on farm
12. **Venger et al.:** Molecular-genetic polymorphism of glycinin encoding genes in Ukrainian and Serbian soybean varieties
13. **Weedon et al.:** Intra-specific diversity of wheat composite cross populations (CCPs) maintains yield in a low input system
14. **Kreps et al.:** Genotypic characterisation of spelt (*Triticum spelta* L.)

Breeding for inter-species diversity annual crops:

1. **Akkoc et al.:** Minor cereals exhibit superior antioxidative effect in human cancer cell lines compared to common wheat
2. **Vijaya Bhaskar et al.:** Effects of organic and conventional management for five years on early seedling traits of three winter wheat composite cross populations (CCPs)
3. **Hoebe et al.:** Overview SRUC related research on breeding for diversity
4. **Jumel et al.:** Assembling rules for the control of *Ascochyta* blight in winter wheat/pea mixtures
5. **Pappagallo et al.:** Effects of agrobiodiversity on pest control in *Vicia faba* L.

6. **Siebrecht-Schöll et al.:** Winter faba bean as target species in mixed-cropping with winter wheat
7. **Tavoletti et al.:** Effect on durum wheat and quality parameters of mixed intercropping with faba bean

General concepts for breeding on improved diversity:

1. **Bickler et al.:** Marketing of a genetically diverse wheat (ORC Wakelyns population): Lessons learnt and routes forward
2. **Knapp et al.:** High-throughput sorting of coloured wheat grains
3. **Venger et al.:** Modulation of three-dimensional structure and research of folding-analoges of AMB A 6 allergen of *Ambrosia artemisiifolia*

Local organisers

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Prof. Dr. Gunter Backes, University of Kassel, Germany
Dr. Jelena Baćanović-Šišić, University of Kassel, Germany
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