

COBRA

Coordinating Organic plant Breeding Activities – for diversity

Program and abstracts for the COBRA Final Conference 24th and 25th November 2015 at Vingsted hotel & conferencecentre, Denmark



Financial support for this project is provided by funding bodies within the FP7 ERA-Net CORE Organic II





Organic plant breeding

Breeding of plant material adapted for organic agriculture is important in order to cope with stresses such as climate change, weeds and seed borne diseases. Conventional varieties may not meet the specific needs of organic agriculture. The use of plant material adapted to conditions of organic agriculture will have a positive effect on the productivity and sustainability of organic crop production.

COBRA (Coordinating Organic plant Breeding Activities for Diversity) is a European research project which aims to unleash the potential of plant genetic diversity for organic agriculture by linking up efforts on both pure line breeding and High genetic Diversity (Hi-D) systems in cereals and grain legumes. The COBRA project is part of the CORE Organic II program and is led by the Organic Research Centre (UK). It started in March 2013 and brings together 42 partner organizations from 18 countries. COBRA focuses on four major arable crops: wheat, barley, pea and faba bean.

The project deals with

- seed health
- response of crops to multiple stresses
- improvements in breeding efficiency for organic systems
- structural issues such as funding for breeding and the regulatory framework
- networking and coordination

The COBRA final conference takes place on 24th and 25th November in connection with the Danish Organic Congress. International experts from 16 different countries will attend the conference. On 25th November the international experts will take part in sessions about organic plant breeding at the Danish Organic Congress and this will be open to a broad audience.

The sessions at the Danish Organic Congress will introduce organic plant breeding to the listeners (session A6), and examples of breeding activities will be presented (session B6). Policy issues and farmers rights will be the subject of session C9.



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Program

24th November: COBRA final conference

12.00 – 13.00 Registration and lunch

13.00 – 13.15 Welcome by Bruce Pearce

Seed Health and quality (WP1)

13.15 – 13.30 Anders Borgen: Summary of achievements in the project period and future perspectives
“Manipulating protein content in diverse populations using NIRS single seed sorting”

13.30 - 13.45 Berta Killermann: “Screening of wheat cross material and breeding lines regarding
susceptibility for dwarf bunt on naturally infested and ecologically farmed fields”

13.45 – 14.00 Almuth Elise Müllner: “Mapping bunt resistance in winter wheat”

14.00 – 14.15 Johannes Ravn Jørgensen: “Detection of fusarium in wheat by multispectral Imaging”

14.15 – 14.45 **Poster presentations:**

Mara Bleidere: “Results of evaluation of spring barley and winter wheat genotypes for
resistance against loose smut and common bunt”

Linda Legzdina: “Testing for resistance to seed borne diseases in various spring barley
genotypes”

Linda Legzdina: “Yield stability and tolerance to seed borne diseases of various spring barley
genotypes under Baltic climatic conditions”

Franci Bavec: “The use of image-spectroscopy technology as a diagnostic method for seed
health tests and variety identification”

Jalli Marja: “Nutrient use efficacy and resistance to seed borne diseases in European spring
barley cultivars and landraces”

Anders Borgen: “Virulence pattern in Danish races of common bunt”

14.45 – 15.15 Coffee break

24th November: COBRA final conference

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Breeding for resilience (WP2)

15.15 – 15.45 Maria Finckh: Summary of achievements in the project period and future perspectives

15.45 – 16.05 Rikke Bagger Jørgensen “Adaptation of spring barley for extreme climates”

16.05 – 16.20 Nils-Ove Bertholdsson: “Weed competitive ability and yield stability of winter- and spring wheat populations, cultivar mixtures and cultivars”

16.20 – 16.50 **Poster presentations:**

Bruce Pearce: “Winter wheat variety performance in organic and conventional farming systems and the potential for organic plant breeding in the UK”

Silva Grobelnik Mlakar: “Adaptation of specific winter wheat genotypes (CCPs) to the Slovenian climate”

Martina Robačar: “Adaptation of 10 barley genotypes to the Slovenian climate”

Manfred Jakop: “Ranking the most resistant winter wheat varieties from the common Introductory programme of organic farming in Slovenian climate”

Karel Dewaele: “Performance of winter wheat CCP's in comparison to reference varieties in organic field trials in Belgium”

Riccardo Bocci: “Using populations in organic agriculture: the role of local adaptation, farmers’ selection and the awareness of the actors involved”

Improving breeding efficiency (WP3)

16.50 – 17.10 Peter Baresel: Summary of achievements in the project period and future perspectives

17.10 – 17.20 **Poster presentations:**

Isabelle Goldringer: “Agronomic evaluation of the first population–varieties developed within the wheat participatory breeding program in France”

Isabelle Goldringer on behalf of Veronique Chable: “On farm breeding strategies for diversity in winter soft wheat”

24th November: COBRA final conference

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Socio-economics and legislation (WP4)

17.20 – 17.40 Tove Mariegaard Pedersen and Riccardo Bocci: Summary of achievements in the project period and future perspectives

17.40 – 17.50 Regine Andersen: Seed Legislation in the context of Plant Breeding for Diversity in Organic Agriculture

Poster presentations:

Isabelle Goldringer on behalf of Frederic Rey: “Organic seeds and plant breeding from the seed companies’ perspective”

Dissemination and networking (WP5)

17.50 – 18.00 Riccardo Bocci: Summary of achievements in the project period and future perspectives

18.00 – 19.00 Dinner

19.30 – 21.00 COBRA work package meetings, - this part of the program is for more practical purposes and discussions and will be organized by work package leaders.

25th November: COBRA, grain legume workshop

9.00 – 9.15 Introduction (Maria Finckh)

9.15 – 9.30 Paolo Annicchiarico: “Pea breeding for organic systems. II. Genomic selection for higher grain yield”

9.30 – 9.45 Steffi Zimmer: “Suitability as protein-rich animal fodder and previous crop value of different grain legume cropping systems in organic agriculture in Luxembourg”

9.45 – 10.00 Alev Kir: “Screening Advanced Lines of Soybean (*Glycine max* L.) under Organic Management in Turkey”

10.00 – 10.30 **Poster presentations:**

Martina Bavec: “Genetic diversity - Assessment of *Vicia faba* accessions from the Slovenian plant gene bank”

Silva Grobelnik Mlakar: “Allelopathy of barley plant on in vitro pea emergence”

Evelyne Stoll: “Suitability of different grain legume cropping systems as protein rich animal fodder in an ON-FARM field trial under organic growing conditions in Luxembourg”

Karel Dewaele: “Organic field trials of winter and summer protein crop associations in Belgium”

Luciano Pecetti: “Effect of seed treatments with essential oils on plant emergence of ascochyta-infected pea”

Aina Kokare: “Comparison of pea genotypes under organic growing conditions”

10.30 – 11.00 Discussions and future perspectives.

25th November: COBRA sessions at Danish Organic Congress

11.30 – 13.00 Organic and High Diversity Plant Breeding

IFOAM has outlined principles for organic plant breeding; the main principles will be presented, as will different possible pathways to new varieties for use in organic farming.

Organic producers need crops that can cope with multiple stresses such as weeds, pathogens and environmental stresses. The use of populations of specific species has gained significant interest as a tool to breed for increased resilience and tolerance for climate variability. This breeding method favours the forces of natural selection, and farmers are enabled to take part in the breeding process.

Key questions

- What is the difference between organic breeding and breeding for organic farming?
- What is the definition of a population, and what is the difference between a population and a variety mixture?
- How can populations be beneficial in organic and low input systems?
- Is evolutionary breeding an applicable tool in organic plant production?

Principles and pathways in Breeding for organic farming

PhD Edwin Nuijten, Senior Researcher, Louis Bolk, The Netherlands

The agronomic potential of populations

MSc Organic Agriculture Odette Weedon, University of Kassel, Germany

On farm management of diversity and participatory plant breeding

Dr. Isabelle Goldringer, Head of research team Diversity, Evolution and Adaptation of Populations (DEAP), French National Institute for Agricultural Research - INRA, France

Chairman

Professor Dr. Maria R. Finckh, University of Kassel, Germany

25th November: COBRA sessions at Danish Organic Congress

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14.00 – 15.30 Breeding of Cereals and Grain Legumes for Organic Farming

Breeding for organic farming can range from evolutionary and participatory plant breeding of diverse plant material to breeding of varieties in conventional breeding programs. Here you will be presented with different examples of breeding activities all targeted for organic farming: Cycling populations of wheat in different countries, participatory breeding of pea in Italy and breeding activities for organic farming in the Danish breeding companies.

Key questions

- What are the specific needs for varieties in organic production systems?
- Is it possible to have high yielding varieties which at the same time are adapted to the growth conditions of organic farming?
- Is participatory plant breeding an option for e.g. Danish farmers?

Observations in Cycling populations of wheat

MSc Organic Agriculture Odette Weedon, University of Kassel, Germany

Evolutionary and participatory breeding approaches in Pea Breeding for Organic Systems

Paolo Annicchiarico, Centro di Ricerca per le Produzioni Foraggere e Lattiero-Casearie (CRA-FLC), Italy

Breeding of cereals for organic farming in Danish Breeding Companies.

Barley breeder Lene Krusell, Sejet Plant Breeding, Denmark

Chairman

Organic plant breeder Anders Borgen, Agrologica, Denmark

25th November: COBRA sessions at Danish Organic Congress

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16.15 – 17.45 Farmers Rights and Policy issues in the context of Plant Breeding for Diversity

Plant breeding and marketing is tightly regulated in order to protect both breeders and farmer's interests regarding pure line breeding. Breeding for higher diversity on the other hand has met legal hurdles within the EU, since diverse plant material cannot meet requirements of standard variety testing. Within the EU a trial period for marketing populations of some cereals has been implemented and examples are given from different countries.

The session will also offer insight into Farmers Rights according to international treaties and other commitments.

Key questions

- Can a farmer legally sell or purchase a population or other diverse plant material?
- Is it possible to protect the farmer's interests when purchasing a population?
- What are the Farmer's Rights in the context of breeding for higher diversity?

Farmers Rights - Seed Legislation in the context of Plant breeding for Diversity in Organic Agriculture

Dr. Regine Andersen, Executive Director Oikos – Organic Norway, Norway

Marketing of Populations

Dr. Bruce Pearce, Deputy Director, Organic Research Centre, United Kingdom

Chairman

Riccardo Bocci, Italian Association for Organic Agriculture - AIAB, Italy

COBRA, list of participants (COBRA partners)

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Anne-Kristin Løes	Norwegian Institute for Bioeconomy Research, NIBIO	Norway
Berta Killermann	Bayerische Landesanstalt für Landwirtschaft	Germany
Bruce Pearce	The Organic Research Centre	United Kingdom
Edwin Nuijten	Louis Bolk Instituut	Netherlands
Evelyne Stoll	Institute for Organic Agriculture Luxembourg	Luxembourg
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Karel Dewaele	Inagro vzw	Belgium
Kevin Dewitte	Ghent University	Belgium
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