

Genetic Resources for Food and Agriculture in a Changing Climate

Lillehammer, Norway, 27th – 29th of January, 2014

Monday, 27th of January, 2014

08:30 - 11:30 Registration of the participants
11:30 - 13:00 *Lunch*
13:00 - 13:05 Welcome (*Odd Arne Rognli, chair of the organizing committee*)
13:05 - 13:20 Opening of the conference (*Pål Vidar Sollie, Ministry of Agriculture and Food*)

SESSION I: “What mitigation, adaptation and genetic challenges do we face in the light of climate change?”

Chair: Peer Berg

13:20 - 14:00 Effects of climate change on bioproduction (*Jørgen E. Olesen, Aarhus University, Denmark*)
14:00 - 14:30 Strategy building in farm animal practices – a look into the future (*Theo Meuwissen, Norwegian University of Life Sciences, Norway*)
14:30 - 15:00 Sustainable primary production in a changing climate – effects to barley and oilseed rape from the future climate (*Rikke Bagger Jørgensen, Technical University of Denmark, and Michael Foged Lyngkjær, University of Copenhagen, Denmark*)
15:00 - 15:30 *Coffee break*
15:30 - 16:00 Challenges for fish in warmer waters: the case of the Arctic char (*Sigurður Guðjónsson, Institute of Freshwater Fisheries, Iceland*)
16:00 - 16:30 Adaptation of Nordic forage crops to a changing climate (*Áslaug Helgadóttir, Agricultural University of Iceland, Iceland*)
16:30 - 17:10 Adaptability of forest trees to climate – what can we learn from their evolutionary history? (*Antoine Kremer, INRA Université de Bordeaux, France*)
17:10 - 17:30 *Coffee break*
17:30 - 18:10 Back to the future: The use of historical samples to assess and predict the consequences of climate change on the genetic resources of fish (*Einar Eg Nielsen, Technical University of Denmark, Denmark*)
18:10 - 18:30 Resilient and multifunctional-grasslands for agriculture and environmental service during a time of climate change (*Mike W. Humphreys, IBERS, Aberystwyth University, United Kingdom*)
18:30 - 18:50 Prepared for the climate change induced thermal fluctuations? Lessons from germs and flies (*Tarmo Ketola, University of Jyväskylä, Finland*)
19:30 - 22:00 *Welcome reception and poster session*

Tuesday, 28th of January, 2014

SESSION II: “Understanding genetic diversity and adaptation using molecular and quantitative genetic tools”

Chair: Torsten Nygård Kristensen

- 08:30 - 09:10 Genetic adaptation to climate change: Insights from natural populations (Ary A. Hoffmann, *The University of Melbourne, Australia*)
- 09:10 - 09:50 The molecular underpinnings of adaptation in *Arabidopsis thaliana* (Juliette de Meaux, *University Münster, Germany*)
- 09:50 - 10:15 *Coffee break*
- 10:15 - 10:55 On identifying variation related to local adaptation (Outi Savolainen, *University of Oulu, Finland*)
- 10:55 - 11:35 Association mapping of traits relevant to fitness of barley in the future climate (Cathrine Heinz Ingvorsen, *Technical University of Denmark, Denmark*)
- 11:35 - 11:55 Genome-wide patterns of climate adaptation in teosinte (*Zea mays*) (Tanja Pyhäjärvi, *University of Oulu, Finland*)
- 11:55 - 12:15 Phenotypic or molecular diversity screening for conservation of genetic resources? Lessons from three common grass species (Siri Fjellheim, *Norwegian University of Life Sciences, Norway*)
- 12:15 - 13:30 *Lunch*
- 13:30 - 14:10 The impact of glacial and postglacial history on the genetic structure of Norway spruce and Siberian spruce (Mari Mette Tollefsrud, *Norwegian Forest and Landscape Institute, Norway*)

SESSION III: “Modelling, and characterization and utilization of genetic resources”

Chair: Odd Arne Rognli

- 14:10 - 14:50 Need for seed banks in a changing climate (Roland von Bothmer, *The Nordic Genetic Resource Center, Sweden*)
- 14:50 - 15:20 *Coffee break*
- 15:20 - 16:00 Forest tree breeding in face of climate change (Yousry A. El-Kassaby, *The University of British Columbia, Canada*)
- 16:00 - 16:40 Breeding for the future – avoiding climate extremes and maximising yield of spring wheat in water-limited environments (Scott Chapman, *CSIRO Plant Industry, Australia*)
- 16:40 - 17:00 Using process-based models to design ideotypes for timothy in Norway (Marcel van Oijen, *CEH-Edinburgh, UK*)
- 17:00 - 17:20 *Break*
- 17:20 - 17:40 Assessing plant genetic resources for climate change adaptive traits (Abdallah Bari, *International Centre for Agricultural Research in the Dry Areas (ICARDA), Morocco*)
- 17:40 - 18:00 Characterization of European wide barley landrace material for implementation in crop development (Peter Hoebe, *The Scottish Agricultural College, UK*)

- 18:00 - 18:20 Development of national crop wild relative conservation strategies in Europe: Studies of Cyprus and Norway (*Jade Phillips, University of Birmingham, UK*)
- 18:20 - 19:00 A view from industry on genetic resource utilization in the light of climate change (*Mats Hansson, Carlsberg Laboratory, Denmark*)
- 20:00 → *Conference dinner*

Wednesday, 29th of January, 2014

SESSION IV: “Nordic Forage Crops Genetic Resource Adaptation Network”

Chair: Odd Arne Rognli

- 08:30 - 09:00 Sequencing approaches for estimating genetic diversity between ecotypes and populations in forage grasses (*Stephen Byrne, Aarhus University, Denmark*)
- 09:00 - 09:15 Adaptation to future climate: vernalization time, day length and temperature as regulators of growth and yield formation in forage grasses (*Mervi Seppänen, University of Helsinki, Finland*)
- 09:15 - 09:30 Relationships between induction of flowering, cold acclimation, deacclimation and reacclimation in a perennial forage grass species (*Åshild Ergon, Norwegian University of Life Sciences, Norway*)
- 09:30 - 09:45 Stress responses of clovers are affected by ploidy level and longer daylength at northern latitudes (*Ane Vollsnes, University of Oslo, Norway*)
- 09:45 - 10:00 Detecting genome-wide shifts in allelic composition by sampling in swards of a broad-based mixture of perennial ryegrass (*Lolium perenne* L.) grown and managed at five locations in Norway (*Mallikarjuna Rao Kovi, Norwegian University of Life Sciences, Norway*)
- 10:00 - 10:30 *Coffee break*

SESSION V: “Animal Genetic Resources in the Adaptation to Climate Change”

Chair: Theo Meuwissen

- 10:30 - 11:00 Genomic selection as a tool to decrease greenhouse gas emission from domestic ruminants (*John McEwan, AgResearch, New Zealand*)
- 11:00 - 11:15 Future trends in livestock production in the Nordic countries with a changing climate (*Bente Åby, Norwegian University of Life Sciences, Norway*)
- 11:15 - 11:30 Is feed efficiency a key trait in future breeding goals? (*Lotta Rydhmer, Swedish University of Agricultural Sciences, Sweden*)
- 11:30 - 11:45 Coping with climate change through sustainable breeding strategies for Red Maasai Sheep (*Emelie Zonabend, Swedish University of Agricultural Sciences, Sweden*)
- 11:45 - 12:00 Harnessing genetic diversity for improving productivity of local goat breeds to enhance adaptive capacity of communities in the arid zones of Ethiopia (*Tadelle Dessie, International Livestock Research Institute (ILRI) Nairobi (HQ) and Addis Ababa, Ethiopia*)
- 12:00 - 13:00 *Lunch*

SESSION VI: “Sustainable Primary Production in a Changing Climate”

Chair: Rikke Bagger Jørgensen

- 13:00 - 13:30 Carbon dioxide, climate change and agricultural productivity (*Lewis H. Ziska, USDA-ARS, USA*)
- 13:30 - 13:45 Utilization of the within a landrace genetic variability – a case study for common bean and lentil (*Ioannis S. Tokatlidis, Democritus University of Thrace, Greece*)
- 13:45 - 14:00 Diverse utilization of plant genetic resources improves durable plant disease resistance (*Marja Jalli, MTT Agrifood Research Finland, Finland*)
- 14:00 - 14:15 Berry production in northern areas – the importance of climatic adaptation (*Inger Martinussen, Norwegian Institute for Agricultural and Environmental Research, Norway*)
- 14:15 - 14:30 Improvements in nitrogen use efficiency of barley to meet the climate change induced challenges (*Ari Rajala, MTT Agrifood Research Finland, Finland*)
- 14:30 - 14:45 *Coffee break*

SESSION VII: “Genetic Resources and Climate Change – Science, Strategies and Policies”

Chair: Morten Rasmussen

- 14:45 - 15:00 Genetic engineering, transgenic crops, climate change and food security (*Rodomirol Ortiz, Swedish University of Agricultural Sciences, Sweden*)
- 15:00 - 15:30 A view on animal and plant genetic resources in the light of climate change (*Irene Hoffmann, FAO*)
- 15:30 - 16:00 General discussion
- 16:00 *Closing of the conference (Odd Arne Rognli, chair of the organizing committee)*