Update 1 - Workshop on Applied Math, Genetic Discovery for Climate Change

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Summary : read all presentations on Slideshare

Opening remarks

Dr Si Bennasser Alaoui on behalf of IAV Hassan II

Dr Mustapha El Bouhssini on behalf of ICARDA

Both presenters stressed climate change issues and the urgency of addressing the temperature increase associated with decreased rainfall with their implications for crops and insects.
Reference was made to the publication in Nature journal titled "Crop pests: Under attack" by Amy Maxmen at: http://www.nature.com/nature/journal/v501/n7468_supp/full/501S15a.html

Setting the scene

“Targeted search for crop germplasm with climate change adaptive traits to sustain agriculture in dryland systems “ by Dr Selvadurai Dayanandan

Workshop themes:

- THEME – 1 Climate change and its impact on agriculture [Moderator: Adi Damania]
- THEME – 2 Applied mathematics and the modelling approaches for adaptation of crops to changing climate conditions [Moderator: Abdallah Bari]
- THEME – 3 Plant phenomics for adaptation of crops to changing climate in dryland systems [Moderator: Fred Stoddard]
- THEME - 4 Plant genomics for adaptation of crops to changing climate in dryland systems [Moderator: Daya Dayanandan]
- THEME - 5 Region-specific challenges and opportunities for maintaining genetic resources for sustainable agricultural productivity under changing climatic conditions in the Dry Lands [Moderator: Zakaria Kehel]

Presentation on mathematics capturing patterns of plant populations with potential to quantify carbon uptake in the face of climate change based on use of fractal geometry at http://www.pbs.org/wgbh/nova/physics/hunting-hidden-dimension.html.

Climate change and its impact on agriculture [Moderator: Adi Damania]

Anticipated dryland expansion in scenarios of global warming

Christopher T. Simmons and H. Damon Matthew

Dr Christopher T. Simmons presented climate change and the different scenarios and those that are likely with a focus on dryland. He highlighted the difference in different models and the implications for each of the model when compared to averaging models outcome.
http://www.esmg.mcgill.ca/ICARDA.pdf

Geoinformatics and genetic resources under changing climate

Biradar Chandrasekhar

The potential of geo-informatics in predictions but also in generating data that is of value in targeting and locating climate change related traits in genetic resources.

Adaptation of farmers to climate change: A system approach – A case study of cereal production in Benslimane Region, Morocco

Topics

Gender/Youth

Identifying traits

Innovation transfer

Mathematics

Climate change

Geoinformatics and Genetic Resources under Changing Climate

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Abstract :

Each species requires minimum/optimum area for its survival, evolution and gene exchange. Analysis of habitat condition, function, composition, fragmentation, patchiness, interspersion and juxtaposition has an impact on the ecology and evolutionary process. Greater the variety of types of habitat, greater is the diversity of genetic resources and better the chances of mitigating the extinction risk from the ever changing climate. However, spatial representations of the habitat and genetic resources at a scale which can be used for genetic resources management and conservation planning are lacking. This paper presents application of geoinformatics technology in characterization of the genetic resources at landscape level. The resultant outputs in the geospatial domain help in delineation of the biodiversity rich hot-spots, its spatial pattern and variability under the influence of biophysical, socio-economic and climatic conditions. These will further assist in the identification of the potential areas for germplasm collection, in-situ biodiversity conservation, exploring the various traits for the climate smart agriculture. It also discusses bio-prospecting of the genetic resources and its implications in climate change adaption and mitigation.

Key words: Genetic resources, Geoinformatics, Ecology, Climate Change

Abstract for International Workshop on "Applied Mathematics and Omics Technologies for Discovering Biodiversity and Genetic Resources for Climate Change Mitigation and Adaptation to Sustain Agriculture in Drylands", Rabat - Morocco, 24-27 June 2014