



KEYNOTE SPEAKER

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RESOURCE USE (Adaptation and Mitigation)

Genetic resources / climate change adaptation

Climate Change – Projected impacts on European Union Agriculture

- ↑ Winter rainfall (waterlogging)
- ↑ Water sea level
- ↑ Summer Temperature and drought
- ↑ Yield variability

- ↑ Temperature
- ↓ Annual rainfall water availability
- ↓ Heat and drought stress
- ↓ Yield
- ↓ Suitable crops

- ↑ Water sea/lakes level
- ↑ Storms, waterlogging
- ↑ Summer Temperature and drought
- ↑ Growth season
- ↑ Yield
- ↑ Pests
- ↑ Defrost

- ↑ Winter rainfall (waterlogging)
- ↓ Summer rainfall
- ↑ Drought risk
- ↑ Soil erosion risk
- ↑ Growth season
- ↑ Yield variability

Expected Impacts of Climate Change on Crop Production/Adaptation (Mediterranean Region)

- Agricultural production may decline along Mediterranean and in South-Eastern Europe
- Change land use, with cropping becoming non-viable
- Changes on pastures crops growth cycle with impact on animal production sustainability
- Production of temperate fruits and nuts will drop because of reduced winter chill
- Geographical spread of pests and diseases for plants and animals
- Yields and/or quality of crops like wine grapes are likely to decrease
- Increasing surface affected by desertification and salinization

Genetic resources/climate change adaptation

- For thousands of years farmers have adopted new crop species and varieties and adjusted their practices in accordance with changes in the environment
- As example, the Neolithic wheat dispersal (600-3000B.C.) resulted in a broad ecological differentiation as wheats adapted to different latitudes, altitudes, soil moisture regimes and cultural practices
- The Portuguese and Spanish settlers were also responsible for wheat spread to almost all of the current production areas during the colonial period.

Climate Change: Adaptation in Agriculture

- Reduce vulnerability to climate change and look for opportunities - Increase resilience
 - Multi-actor approaches – networking
 - Innovative breeding strategies (ideotype design, gene mining, phenotyping a vast range of genetic resources and germplasm development)
 - Large scale phenotyping (ecophysiology testing, field testing)
 - Genotyping (Gene mining to loci/genes controlling plant characteristics related to yield stability)
 - Multilocal field trials (**Portuguese network of experimental field stations**)

***Phaseolus vulgaris* L.**



***Solanum lycopersicum* L.**



***Zea mays* L.**



Hybridization



Genetic resources/climate change adaptation



Although the modern breeding technologies help optimize the predictability and the efficiency of plant breeding relationship between plant genotypes and the environment will continue to drive genetic improvements for future generations

