Water activity measurement applied to seed testing: assessment of the ISTA workshop
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quality interact to control the rate at which seeds age.

- Dr. Costas Thanos (Department of Botany, University of Athens, Athens, Greece) spoke on the “Timing of Seed Germination and Life History of Trees: Case Studies from Greece”. His talk focused on mechanisms involved with the post-winter timing of germination, including shifting the reproductive cycle so seeds are produced and dispersed promptly as germinating seeds at the end of the winter (*Pinus nigra*), and how a long exposure to freezing temperatures under snow cover can lead to germination before snow melt (*Aesculus hippocastanum*).

- Dr. Hugh Pritchard (Kew Gardens, Wakehurst Place, Ardingly, West Sussex, United Kingdom) spoke on “Ex situ Conservation Issues Associated with Recalcitrant Seeds”. His talk addressed the impacts of ageing, in particular the role of oxidative stress and associated processes that result in cells losing viability in recalcitrant seeds.

- Mr. Ben Wang (Natural Resources Canada, Canadian Forest Service, Petawawa, Ontario, Canada) spoke on the “Moist Chilling and Dormancy of Eastern White Pine (*Pinus strobus* L.) Seeds”. Mr. Wang presented his work on the analysis of data on the dormancy and germination of eastern white pine (*Pinus strobus* L.) from its natural distribution in Canada. This research demonstrated that dormancy in eastern white pine varied among individual trees, and between stands (populations), seed years, latitudes, and geographic locations. Also, pretreatments with 28 days of moist chilling were found to release dormancy and enhanced germination regardless of the seed source.

- Dr. Milan Mataruga (Faculty of Forestry, University Banja Luka, Banja Luka, Bosnia and Herzegovina) spoke on the “Dynamics of Imbibition, Seed Germination, and Seedling Development of Austrian Pine (*Pinus nigra* Arnold) from Populations Growing in Contrasting Habitats of Southeastern Europe”. Dr. Mataruga talked about his research assessing numerous physiological and morphometric parameters of seed collected from different provenances in either very hard rocky conditions or in favorable habitats. He provided evidence that there was some degree of adaptation to environmental conditions although the variability was very high within each provenance’s habitat types.

- Dr. Alvin Yanchuk (British Columbia Ministry of Forests and Range, Victoria, British Columbia, Canada) spoke on the “The Role and Future Challenges of Ex Situ Gene Conservation Approaches for Forest Tree Genetic Resources”. Dr. Yanchuk’s talk discussed the role and value of *ex situ* seed collections in a changing climate and how one should carefully re-examine *ex situ* priorities and collections, considering such factors as how seed are collected, stored, evaluated, and deployed to mitigate potential climate-change impacts.

- Dr. Marcelino Siladan (Forestry and Environment Research Division, Los Banos, Laguna, the Philippines) spoke on the “Assessment of Seed Distribution, Dissemination, and Diffusion Pathways of Priority Tree Plantation Species in the Philippines”. This talk discussed the impact of the origins and historical movement of seeds on the current state of the country’s seeds sources, origins and systems of seed distribution, and dissemination of priority plantation tree species in the Philippines.

Lastly, Taiwan was a wonderful venue for the symposium and many thanks to the chair of the organizing committee Dr. Ching-Te Chien, Taiwan Forestry Research Institute, who hosted an excellent meeting.

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**WATER ACTIVITY MEASUREMENT APPLIED TO SEED TESTING: ASSESSMENT OF THE ISTA WORKSHOP**

Cemagref in France and DRF in Québec have been cooperating since 2006 in a joint R&D project related to water activity (*a_w*) measurement applied to seed moisture quantification and testing. They have demonstrated the effectiveness of this technique for moisture management of forest tree seed and pollen. The Franco-Canadian team presented their results during the ISTA
Forest Tree and Shrub Seeds (FTS) Workshop in 2008 in Péri, Italy. Regarding the results presented at this workshop and more recently at the 29th ISTA Congress in June 2010 in Cologne, Germany, Cemagref was requested, in conjunction with DRF, to organize the first ISTA workshop dedicated exclusively to water activity measurement applied to seed testing.

The workshop, entitled "Water Activity Measurement Applied to Seed Testing", held October 13–15, was organised by Cemagref on behalf of the Moisture (MOI), FTS, and Storage (STO) ISTA Technical Committees. The workshop took place in Montargis, France.

This workshop aimed to evaluate the potential role of water activity measurement as a new ISTA rule to quantify seed moisture. The event welcomed 20 participants and 6 lecturers coming from Brazil, Canada, Croatia, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Italy, Netherlands, Spain, Sweden, and USA. About half of the participants were involved with tree seeds with agricultural crops represented by the remainder. Two thirds of the participants were ISTA members or people working in ISTA certified seed laboratories. The workshop combined lectures, a demonstration, and training session as well as social events in the Loire Valley and Montargis municipality.

P. Baldet and F. Mariette (Cemagref) and F. Colas (DRF) participated as lecturers and presented their collaborative work in order to demonstrate, in particular, the significant intra-and inter-specific variability of the relation between water activity and moisture content of a given sample at a given moisture state. These results demonstrated the complementarities of the two techniques to describe moisture in seedlots as a commercial basis for moisture content and a biological aspect for $a_w$. P. Baldet and F. Mariette presented the concepts of $a_w$, eRH (equilibrium relative humidity), and water mobility described with NMR (nuclear magnetic resonance) methodology. Fabienne Colas presented the operational applicability and implementation of water activity in seed centres, the construction and interpretation of sorption isotherms, and the use of $a_w$ in forest diversity management programs. The three chairmen of the ISTA committees (Mr. Fabio Gorian, FTS; Mr. Harry Nijëenstein, MOI; and Mr. Hugh Pritchard, STO) presented the needs, expectations, and experiences of the technical committees directly concerned with moisture management of seeds.

The first conclusions of the workshop demonstrated the real potential of $a_w$ to become a new ISTA rule for seed moisture quantification. It has been particularly noted that $a_w$ is a non-destructive, rapid, and easy to run test. These operational advantages show the way to a successful development of this technique among laboratories world-wide involved with agricultural, forest, or ornamental seeds. The official report on the workshop will be available on the ISTA website (www.seedtest.org).
The Organizing Committee is pleased to invite you to attend the 32\textsuperscript{nd} CFGA Conference to be held on August 15–19, 2011, at Lakehead University in Thunder Bay, Ontario. The conference theme is: **Forest Genetics and Tree Improvement: New Knowledge, Challenges and Strategies.**

Following the tradition of the CFGA, the conference will be comprised of presentations by invited and volunteer speakers on recent advancements of research and operations in forest genetic resource management and utilization.

The main CFGA conference will be held from Tuesday, August 16 to Thursday, August 18. The CFGA Tree Seed Working Group Workshop will be held on Monday, August 15. The forum on Conservation of Forest Genetic Resources (CONFORGEN) will be held on Friday, August 19.

Please plan to attend and share the latest information with friends and colleagues from Canada and around the world.

Abstracts are invited for oral presentations and posters. A one-page abstract (up to 500 words) for each oral presentation/poster should be submitted electronically by email to Paul Charrette no later than April 15, 2011.

**Pests and Diseases**

In the United Kingdom, *Phytophthora rhynorum* is spreading to *Larix leptolepis* strands and in France there is a new beetle attacking pine from the South to the North (the Bostrichid beetle on *Pinus pinaster*). It would be good if there was a harmonized protocol for seeds of *Prunus* species coming from Europe. Currently a review and acceptance of the protocol needs to be done to certify that the resulting plants are certified virus indexed. If one imports *Prunus avium* from Europe one can get seed into the US but one cannot claim that the resulting seedlings are certified virus free. Protocols for testing of the mother trees need to be determined that will be acceptable to the US Department of Agriculture (USDA), and the USDA will need to know that the protocol for each country is acceptable to them.

The participants expressed concern about the export restrictions caused by *Gibberella ciricinatum*. A participant reported that many samples of *Pinus taeda* seed had been imported and all had the fungus. In France there is currently a push to import *Pinus taeda* to replace *Pinus pinaster* that was destroyed by storms. Possibly