

ORAL SESSION: HEIRLOOM AND WILD SPECIES FOR SUSTAINABILITY

Keynote presentation: Native wild forest species seed production: quality and social approach for landscape restoration

Fatima C.M. Piña-Rodrigues, Ivonir Piotrowski, José Mauro Santana da Silva and Lausanne Soraya de Almeida

Universidade Federal de São Carlos-Campus Sorocaba, Departamento de Ciências Ambientais, Sorocaba, São Paulo, Brazil

(fpina@ufscar.br)

Conservation and propagation of seeds of wild species and old landraces is essential for restoration programmes, crop improvement and establishment of new crops. Globally, there is a shortage of high-quality plant material of diverse native species to attend the pledges of large-scale restoration. We need to produce seeds for restoring 350 million hectares over the next 30 years. To achieve this goal, it is necessary to incorporate innovative social tools to rapidly promote species genetic and botanical diversity, including at the same time an increase in seed quality. Several community-based systems have been established to create opportunities for indigenous communities and smallholders to supply native seeds from terrestrial ecosystems. This strategy involves linking communities who have harvested, processed and stored seed with the restoration market. Overall, six networks in the Amazon, Savannah and Atlantic Forest have produced 386 tons of seeds and engaged 1046 collectors over the last 10 years. Nonetheless, seed quality was low and all the almost 200 species seeds commercialised from 2014 to 2020 showed less than 50% germination. Public policy arrangements can shape the restoration systems and markets, and standards of seed quality are established worldwide to guarantee seed of high quality and genetic diversity for restoring natural ecosystems. On the other hand, non-domesticated wild native species are adapted to local environmental conditions and present the necessary variability to be explored and used in restoration. The question is how seed quality standards can interfere with seed production for restoration. Brazil has a position as a global leader with a commitment of restoring 12 million hectares by 2030, and will require 18,88–88,86 tons of seeds, depending on seed quality. Local seed markets show a high variation (>75%) of seed germinability between sites and lots, even of the same species, provenance and harvesting year. At the same time, seed quality tests are a costly and slow operation, and correct storage conditions are required preceding the seed sale. Although a community-based model is a potential productive arrangement, for such initiatives to be spread it is essential to overcome the limitations in technical approach, and in uncertain policies and markets.

Seed germination and dormancy biology in some taxa and populations of the genus *Fritillaria*

Mohammad Khajeh-Hosseini and Hamid Sharifi

Department of Agrotechnology, Faculty of Agriculture, Ferdowsi University of Mashhad, Iran

(agr844@gmail.com)

The genus of *Fritillaria* comprises attractive, ornamental and medicinal species. To date, 19 species of the genus *Fritillaria* have been reported in Iran, of which ten are endemic to the country and are at risk of extinction. This study aimed to identify the class and level of seed dormancy. It also introduced appropriate treatments to break dormancy for rapid and large-scale propagation of *Fritillaria* for restoration programmes. Seed imbibition and phenology of embryo growth of 67 populations from 11 taxa have been studied, where mature seeds showed linear underdeveloped embryos. Temperature treatments of 5, 10, 15, 20 and 25°C showed optimum embryo growth at 5°C. Pre-chilling at 5°C for 2 to 12 weeks showed a positive effect in breaking dormancy at 6 to 12 weeks, depending on the species, ecotypes and populations. Germination of the seeds