

2nd International Agrobiodiversity Congress, Topic: Conservation

GERMINATION AND CHEMICAL CHARACTERIZATION OF OPUNTIA SEEDS OF ENDEMIC SPECIES FROM MEXICO, PLANTS THAT DEFIES CLIMATE CHANGE

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Abstract

A limitation of the conservation of Opuntia germplasm is the fact that there is very little literature on the chemical, physical and physiological quality of the seeds of the different species. For instance, very few data are available on germination and uniformity rate that are affected by the hardness of the testa and other types of seed dormancy. In addition, there is a need to improve the storage and conservation methods in Opuntia, since the wide range of germplasm to be conserved and the economic importance of species in many developing countries. Therefore, the aim of this study was to determine the germination rate and percentage of 12 endemic species of Opuntia from Mexico, as well as their seed organic and inorganic chemical characteristics by means of spectroscopy FTIR-ATR and SEM-EDS. Opuntia seeds showed differences in their germination rate and his chemical composition of cellulose, lignin and oils correlated to the germination rate. We also detected natural variation in content of macronutrients (N, P, K, S, Mg, Ca), micronutrients (Fe) without any variation in essentials elements (Na) through the different species. In seed cross-section, macronutrients (P, S, K, Mg) were mainly located in the embryo, while Ca was found in specific regions of the testa and the perisperm. Knowing the germination potential of the species is important to establish more adequate long-term conservation strategies. Seed collections are important tool of *in situ* conservation that play an important role in preserving cacti as well as in providing research and horticultural materials.

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