



# IX International Congress on Cactus Pear & Cochineal

*"CAM crops for a hotter and drier world"*

COQUIMBO - CHILE 2017

Book of Abstract and  
Symposium Program





## WELCOME

Dear colleagues, On behalf of the International Society for Horticultural Science (ISHS) and FAO-ICARDA International Technical Cooperation Network on Cactus, the University of Chile honored to receive you at the **IX INTERNATIONAL CONGRESS ON CACTUS PEAR AND COCHINEAL “CAM crops for a hotter and drier world”** and the **General Meeting of the FAO-ICARDA International Cooperation Network on Cactus Pear and cochineal (CACTUSNET)**, in **Coquimbo, Chile, March 26<sup>th</sup> - 30<sup>th</sup>, 2017**.

The University of Chile, with Dr. Fusa Sudzuki as convener, organized the II International Congress on Cactus pear and Cochineal which was hosted in Santiago in 1992. This special opportunity for hosting the IX<sup>th</sup> congress, allows us to bring back the congress to Chile, one of the few countries worldwide where cactus pear fruits (“tunas”) are commonly consumed and form part of the traditional diet. Many things have changed during these 25 years: Chile has consolidated as one of the world leaders in the fresh fruit export industry and, regarding cacti, new CAM-crops (eg. “Copao” [*Eulychnia acida*], pitahaya) are being developed. And the use of *Opuntias* as a source of fodder and energy has grown in the country.

Now we have the opportunity to share these new developments with the international Cactus community in the beautiful city of Coquimbo, at the southern margin of the driest desert of the world (Atacama) along the Pacific coast and at the feet of the Andes mountain range. The city is surrounded by valley oases which host a third of the Chilean cactus pear growing area. It shall be our pleasure to welcome you back in Chile.

## THE CONVENERS

### **Dr. Nicolas Franck**

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## COMMITTEE

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### SECRETARIAT OFFICE

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**Edition Book of Abstract**

Universidad de Chile

Facultad de Ciencias Agronómicas (IHB)

Design of the Congress logo: Carmen Sáenz Escobar



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## SESSION 1: Genetic resources and breeding of Opuntia

### MORPHOLOGICAL CHARACTERIZATION OF CACTUS PEAR (*OPUNTIA FICUS-INDICA*) ACCESSIONS FROM THE COLLECTION HELD AT AGADIR, MOROCCO

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The North Africa region falls under arid and semi-arid climate and it is considered as a hot spot for climate change. To face feed shortage, increase income of the rural poor and to mitigate the effect of climate change, around 1 million ha of cactus crop has been planted in Tunisia, Algeria and Morocco. Aware of the importance of germplasm, *in-situ* collections are being initiated in the region where promising accessions have been introduced from many countries. The objective of this contribution was to assess the genetic diversity of 20 cactus pear accessions from the *in-situ* collection located in the INRA Morocco research station of Agadir using morphological characterization based on FAO-Cactusnet descriptor. The data were subjected to Principal Component Analysis (PCA) and Agglomerative Hierarchical Clustering (AHC) using XLSTAT 2015 package. The results showed that the accessions can be discriminated by the morphological descriptors. Many of these morphological descriptors are significantly correlated as the number of cladodes and the number of fruits ( $r=0.73$ ), the number of cladodes and the plant diameter ( $r=0.73$ ), the length of the cladode and the plant height ( $r=0.7$ ), the length of the spine and the number of areoles ( $r=0.67$ ). The cladode shape and the number of spines and areoles are the recommended descriptors, and are capable to discriminate accessions with a suitable accuracy. Other descriptors do not seem to influence the morphological characterization as the cladode thickness, the number of spine, the plant height and the cladode shape index. Therefore, Principal Component Analysis (PCA) and Agglomerative Hierarchical Clustering (AHC) are good tools to segregate accessions using a reduced number of morphological descriptors. Another important finding is that the number of morphological descriptors may be reduced without potential risk of reducing the accuracy of the phenotypic characterization.

Keywords: cactus pear, genetic diversity, phenotypic characterization, morphological descriptors, multivariate analysis





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