

Book of Abstracts



UNIVERSITY OF
BIRMINGHAM

NIAB
InnovationFarm

EUCARPIA



PGR Secure has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 266394

Exploration of underutilized crop diversity of *Capsicum* peppers in their primary center of diversity in Bolivia and Peru

Maarten van Zonneveld*¹, Marleni Ramirez², David Williams³, Michael Petz⁴,
Sven Meckelmann⁴, Teresa Avila⁵, Carlos Bejarano⁶, Llermé Ríos⁷, Dimary
Libreros², and Xavier Scheldeman²

¹Bioversity International, Turrialba, Costa Rica; ²Bioversity International, Regional Office for the Americas, Cali, Colombia.; ³Inter-American Institute for Cooperation on Agriculture (IICA), San José, Costa Rica; ⁴University of Wuppertal, Faculty of Mathematics and Natural Sciences, Department of Food Chemistry, Wuppertal, Germany; ⁵Centro de Investigaciones Fitoecogenéticas de Pairumani (CIFP), Cochabamba, Bolivia; ⁶PROINPA, Oficina Regional Valle Sur, Sucre, Bolivia; ⁷Instituto Nacional de Innovación Agraria (INIA), Lima, Peru.

*Corresponding author: m.vanzonneveld@cgiar.org

Abstract

The genus *Capsicum* is a highly diverse complex of domesticated and wild species that displays abundant variation in its main center of domestication and diversity in Bolivia and Peru but that remains under-researched. New collecting expeditions undertaken in 2010 by the Instituto Nacional de Innovación Agraria (INIA) in Peru and the Centro de Investigaciones Fitoecogenéticas de Pairumani (CIFP) in Bolivia have significantly increased the size of the collections. INIA Peru now maintains 712 accessions of the five domesticated species, making it one of the largest and most diverse national collections of native *Capsicum* pepper varieties in the world. The collection in Bolivia contains 492 accessions, including the five domesticated species, four wild species, and one wild botanical variety of a domesticated species. We report on the identification of promising native *Capsicum* germplasm for potential use in the development of differentiated products. Identification of promising material representative of native *Capsicum* diversity in both collections followed several steps: (1) Identification of a core collection of nearly 100 accessions per country representing the different species and their geographic distribution. Dried samples of these accessions were biochemically screened for commercially interesting attributes including capsaicinoid content, polyphenols, antioxidant capacity, carotenoids, lipid content and color; (2) Based on results of the biochemical screening, sub-sets of 44 Bolivian and 39 Peruvian accessions were selected, representing the different species and variation in biochemical attributes; and (3) The selected materials were grown in different environments to identify the agro-ecological conditions where they best express the special properties of commercial interest. The biochemical screening and agromorphological characterization and evaluation revealed that *Capsicum*

accessions from Bolivia and Peru have unique combinations of functional attributes, confirming that a wealth of commercially valuable properties can be found in *Capsicum*'s primary center of diversity. This study was financed by GIZ.

Keywords: *Capsicum*, Peru, Bolivia, Biochemical screening, Agromorphological characterization, Germplasm selection