THE WILD SPECIES OF CHILI IN BOLIVIA

Reyes Ximena [1], ÁvilaTeresa [1], Atahuachi Margoth[2], Ariel Choque[1]
[1] Pairumani Phytoechogenetic Research Center,
[2] San Simón University, Martin Cárdenas Herbarium
x.reyes@fundacionpatino.org

Centro de Investigaciones Fitoecogenéticas de Pairumani
FUNDACIÓN SIMÓN I. PATIÑO

INTRODUCTION

Bolivia is a country that has diverse ecosystems with varied climatic and pedological conditions, constituting an important center of origin, domestication and diversification of many species. These varied conditions have allowed the development of a great diversity of species and varieties of native peppers, since their range of distribution covers different ecological regions of the country.

The Pairumani Phytoechogenetic Research Center until 2010 formed collections of germplasm from different crops, currently having work collections of 11 important genera and species for agriculture. Among these, is the collection of the Capsicum genus with 731 accessions collected throughout the country, where 15 species have been characterized, of which 10 are wild type. At present, the revision of specimens that have some different characteristics of the wild species already described is being carried out. In recent years there has been increasing interest in the description and study of these wild species, especially in Bolivia, to the extent that it is believed that Bolivia is the center of origin of the genus Capsicum since C. chacoense Hunz appears as the most primitive taxon of the genus.
Many of these species are conserved in herbarium specimens or are described in articles through drawings, some of which are conserved in collections of germplasm banks.

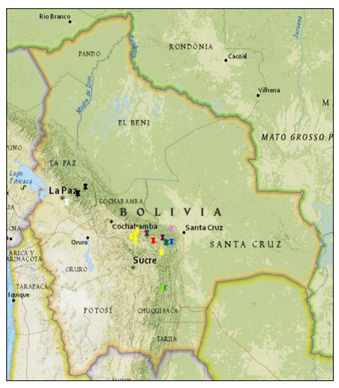
OBJECTIVE

Our objective was to verify the existence of living plants in their habitats and observe the degree of vulnerability to which they may be subject, in order to contribute to their study and conservation.

METHODOLOGY

The exploration was carried out in the months of December, February and March, to find both immature and mature fruits and flowers. The departments of La Paz, Cochabamba, Santa Cruz and Chuquisaca were covered, according to the following routes:

- Route # 1 La Paz: North and South Yungas: Coroico, Vila Bridge, Huancané, Apa Apa and Villa Marka.
- Route # 2 Cochabamba: High Valley of Cochabamba: Totora, Hoyadas, Mesa Rancho and Valle Grande.
- Route # 3 Old Cochabamba-Santa Cruz route, from El Empalme on the way to Khara Huasi, Comarapa, Pulkina, Yerba Buena, Mairana (La Yunga and Quebrada Seca), Samaipata, La Negra.
- Route # 4 Santa Cruz: Amboró Park: area south of Buena Vista past the Surutú River to La Chonta Park.
- Route # 5 Chuquisaca: Padilla and Monteagudo.



RESULTS

The species expected in the planning of the collection and found are described below:

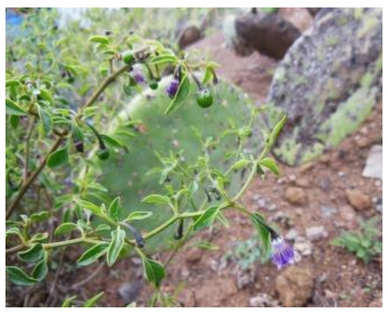
***Capsicum ceratocalyx* Nee** Ají de yunga. It is characterized by its ribbed calyx and apparently winged pedicels. Unfortunately we could not find a single plant of this species.

Capsicum chacoense Hunz They grow in dry inter-Andean valleys and in the Chaco. The collections were made in areas far from the houses, although several plants were found, these were not together. They are compact shrubs and of perennial habit, with flowers are small and white. Fruit of elliptical shape of 1 cm in size.

Capsicum baccatum L. var baccatum

It grows in tropical moist forests, in very hot and humid areas, it was found in many places, it could be said that several families tend to own at least one plant in their house. The plants that were collected from this species were of a fairly large population, plants of good size, measuring up to 1.30 meters in height and in some cases more than three plants were found together.

***Capsicum cardenasii* Heiser & Smith** Ulupica. It grows in areas of greater height, they are found above 2500 m.s.n.m. The plants of robust and rustic bearing, are in considerable population. It was found in association with prickly pear (Opuntia ficus-indica), which has meant that many of the diseases of the tunas are transferred to chili, such as rust fungus, for example.30



Capsicum eximium Hunz

Ulupica. This species extends over a wide area, it is found in mesothermic valleys and subtropical dry forests. The plants are found in larger populations, near rivers and not far from settlers. They are susceptible to deforestation for sale in green (immature) and it was possible to observe cases of hybridization with *C. pubescens* due to the proximity to places where it is cultivated.

***Capsicum eshbaughii* Barboza** It grows in a restricted area of the center-south of Bolivia (Santa Cruz and Cochabamba), presents a type of glandular pubescence that densely covers the vegetative organs of the plant. The specimens that were found were solitary, one on the edge of the main road and another on the edge of a property with crops. One of them was very mature and with many fruits and the other was cut as part of the cleaning of the roads, because of this it could not bear fruit.

Capsicum caballeroi Nee

Ají de monte or ulupica de yunga. It was possible to collect from two places, one on the side of the main road from Comarapa to Torrecillas, which was difficult to access as the road was extended and the plant was practically trapped in the rubble. A rather large solitary plant covered with moss was collected, it presented many flowers but few fruits. The other place was the dirt road from El Empalme to Khara Huasi, west of Comarapa, where two plants were found in very poor condition, due to signs of felling and burning vegetation. The plants had few flowers, few fruits and were also covered with moss.

Capsicum minutiflorum (Rusby) Hunz. It grows in the tropical rain forest. The plant that was found was quite high up to 2.5 mt. of resistant stem and solitary, with many flowers and fruits in the side of a tributary of water and near the entrance of a property, although it was not exposed.

Capsicum coccineum (Rusby) Hunz

Ají de monte or tá-yejti. The plant that was found inside the Amboró park at the entrance to La Chonta was quite robust, decumbent, without flowers, with many fruits and the typical calyx of *C. coccineum*, solitary, on the edge of a very thin path which implies that be cut very often by the clearing for the road.

***Capsicum neei* Barboza & Reyes** Apparently, it is endemic to southeastern Bolivia, mainly in the Iñao, Yahuañanca and Khaskha Orkho mountain ranges of the department of Chuquisaca, it is found most frequently in the Bolivian-Tucuman forest, between 1100-1750 m of altitude. The plant that was found was solitary and inserted in the vegetation, of fragile and decumbent aspect, it presented few flowers and a ripe fruit red round, without seeds.

CONCLUSIONS

The planning of the collection was effective in 90%, finding almost all the species that grow in the selected area, with flowers and fruits in various stages of maturation.
In cultivated taxa, fruits are highly variable in their morphology due to human selection, as well as pungency and size, in the case of wild peppers, the fruits are usually small, with high pungency and their color is red invariably, the shape of the fruit is spherical, locally called " Ulupica " or elliptical locally called " Arivivi ".
The specimens show a high degree of vulnerability due to the growth of the human population affecting their areas of growth, the increase of agriculture, grazing, clumsy extractivism, the opening of paths, the construction of local roads and national roads, diseases caused by which are being affected, in addition to the lack of mechanisms of dissemination and success of seeds to germinate. The exploration and search of wild species of chili has become more difficult in recent years, it is believed that climate change could be one of the most important factors since certain meteorological events have affected the growth zones. There are areas of difficult access and unexplored so far, therefore, there is still much to explore.

AKNOWLEDGEMENTS

We would like to thank Gloria E. Barboza from the Multidisciplinary Institute of Plant Biology (IMBIV), CONICET, Córdoba, Argentina for sharing her high knowledge about capsicum for sharing her high knowledge about capsicum and Carolina Carrizo Department of Botany and Biodiversity Research Wien University, Wien, Austria IMBIV (CONICET-UNC) for genetic analyzes for the description of a new specimen, and her exploration team.