

Applied Research Partnerships with Developing and Transition Countries

Swiss Universities of Applied Sciences and Universities of Teacher Education

Project title

Development of efficient phytochemical and activity-guided selection methods for the sustainable production of Maqui Berries in Chile

Thematic focus

Preservation of wild plants and sustainable agriculture

Year

2012

Project location

Chile



Swiss Institution

Zürcher Hochschule für angewandte Wissenschaften
Institut für Biotechnologie
CH-8820 Wädenswil

Partner Institution

Universidad de Talca,
Facultad de Ciencias Agrarias,
Región del Maule, Chile

Description

Aristotelia chilensis is a wild growing shrub in central to southern Chile and western Argentina, which is known for producing tasty and antioxidant rich berries, locally called „Maqui“. For the nutraceutical supplements industry, the high antho-cyanin content and antioxidant activity of the berry is in high demand and the exploitation of the wild resources in Chile has grown extensively. The Universidad de Talca has started a project, financed by FONDEF, Chile, which aims at the selection, domestication and cultivation of Maqui on an agroindustrial scale in order to provide industry with sustainably produced Maqui berries with standardized quality characteristics.

The assessment of the phytochemical content and variation of the berries in dependence to genotype, culture and postharvest conditions is the basis for selection and agricultural management techniques. The Phytopharmacy research group of the ZHAW Wädenswil has strong competencies in the field of modern, standardized and hyphenated High Performance Thin Layer Chromatography (HPTLC) screening methods for comparison of phytochemical fingerprints of medicinal and aromatic plants. In this respect, the cooperation between the two research groups provides for a great scientific and sustainable benefit to the ongoing research of Universidad de Talca.

Development relevance

The following UN Millenium Development goals are met:

- Goal 3 Gender equality: The cooperation involves exclusively female researchers: 2 scientist and a PhD student. The PhD student will come for scientific exchange to Switzerland.
- Goal 7 Ensure environmental sustainability: the projects involves multiple aspects for preservation and

sustainability of natural resources and safeguard of biodiversity in natural habitats of *Aristotelia chilensis*

- Goal 8 Contribution to Global Partnership: The project addresses the topic of Access and Benefit Sharing (Convention on Biological Diversity) for Maqui Berry, before industry from Western Countries take exclusivity

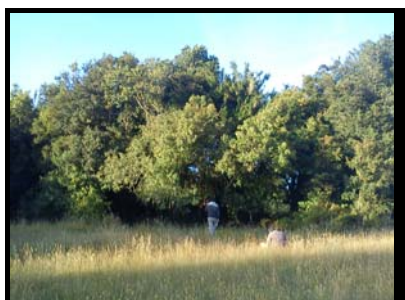


Figure 1: Wild habitats of the typical Chilean shrub *Aristotelia chilensis* are threatened by overexploitation of the wild population due to high demand of Maqui Berry in the nutraceutical industry. (Photo UTalca)



Figure 2: Plantation Experiments supported by a Chilean National funds Project at Universidad de Talca, Chile. (Photo UTalca)

Main features of the project

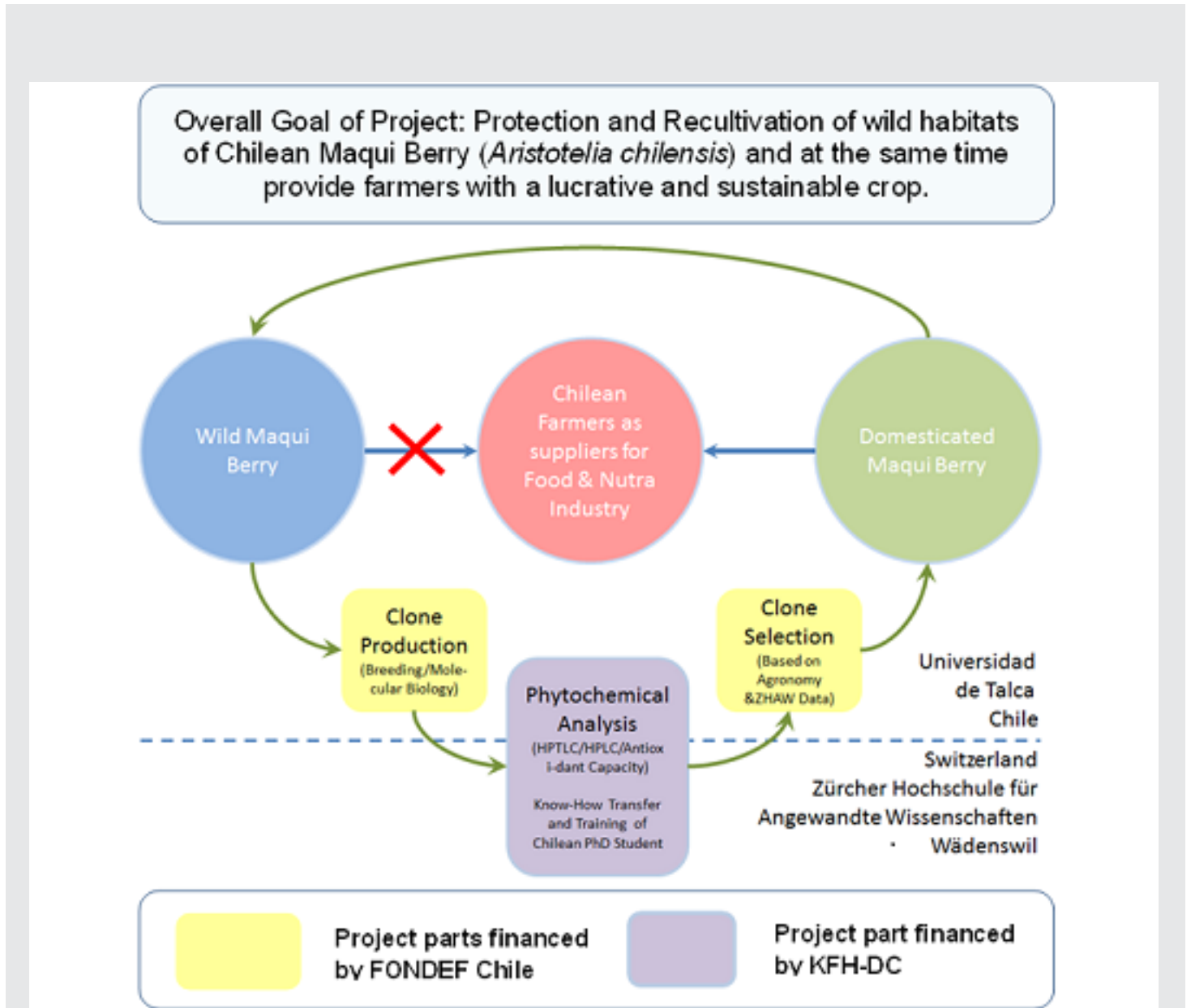


Figure 3: Fresh Maqui Berries - raw material for nutraceuticals, especially in the US market. (Photo UTalca)

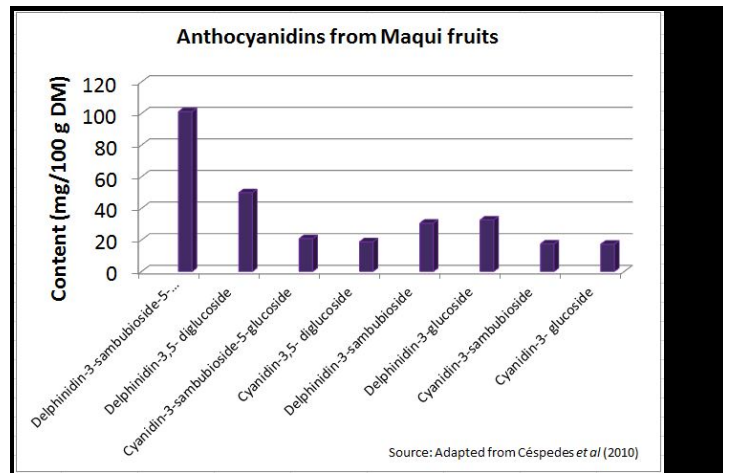


Figure 4: Anthocyanin Profile of Maqui Berries (*Aristotelia chilensis*) (adapted from Céspedes et al 2010)