Kiel University

Institute for Ecosystem Research

Geobotany

Master Thesis

Local adaptation in Tabaquillo across an altitudinal gradient

Background: Plants inhabiting the **high mountain system** of the Andes are exposed to multiple stressors. The quality and intensity of **stress** in these environments varies across an **altitudinal gradient**. While extreme drought and cattle herbivory dominate the mountain foots, frost and solar radiation intensify towards the summits. The evergreen, endemic tree species ***Polylepis australis* (Tabaquillo)** inhabits both extremes of this environmental gradient and should thus exhibit **local adaptations**. The project aims at investigating whether *Polylepis australis* populations from low and high altitudinal origins differ in their responses to drought, herbivory, frost and high solar radiation.

Methods: Plants originating from low and high altitudinal levels will be exposed to specific stress combinations under controlled conditions. Growth and survival of tree saplings will be monitored, and their stress responses will be characterized in collaboration with the Department of Food Technology with metabolomics techniques and cutting-edge mass spectrometry.

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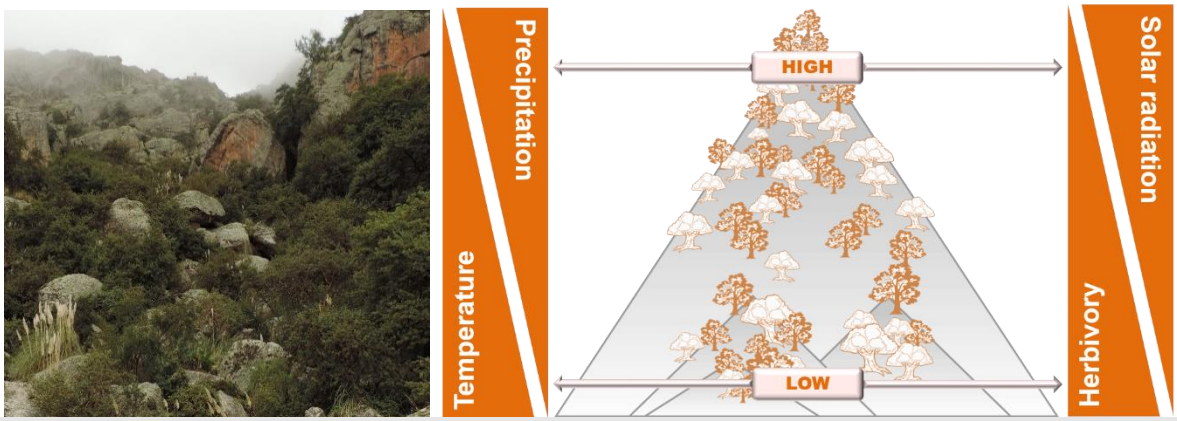

Left: *Polylepis australis* woodland, Right: Environmental gradients in the Andean mountains