



Tropentag, September 17-19, 2014, Prague, Czech Republic

“Bridging the gap between increasing knowledge and decreasing resources”

An Interdisciplinary Monitoring Network of Diversity Hotspots for Long-Term *in-situ* Conservation of Potato Landraces

SEVERIN POLREICH¹, STEF DE HAAN¹, HENRY JUAREZ¹, ALEJANDRA ARCE INDACOCHEA¹, FRANKLIN PLASENCIA¹, RAUL CCANTO², MARIA MAYER DE SCURRAH², DOMINGO BEGAZO OLIVIERA³

¹*International Potato Center (CIP), Peru*

²*Grupo Yanapai, Peru*

³*CADEP-JMA, Peru*

Abstract

Custodian farmers have been cultivating a highly diverse and nutritive potato landrace portfolio over centuries in a sustainable and balanced manner. The largest part of cultivated potato diversity is not available in genebanks and custodians form a critical part for the future conservation of PGRs. To date no strategies and methods have been promoted for long-term monitoring approaches that are suitable to assess the dynamics and evolutionary processes within crop gene pools, which are important ecosystem services. In 2012 the International Potato Center (CIP) and partners have founded the initiative Chirapaq Ñan (Quechua = rainbow route), a network of diversity hotspots to monitor the world's largest potato gene pool from Colombia to Chile. The initiative focuses on (i) improving the understanding of the dynamics of ongoing evolution and its role as an adaptive process to changing environments, to strengthen the future provision of ecosystem services derived from ongoing evolution, (ii) implement a communication strategy linking stakeholders at community, private and national level across hotspots to foster in-situ management of PGR through custodian farmers, (iii) strengthening the engagement of the local youth in maintaining agrobiodiversity as heritage that consolidates the cultural identity of local communities for the future. The Initiative has thus far begun the monitoring effort in three selected hotspots in Peru and Bolivia and will expand by 2015 to four countries. As part of its baseline documentation the temporal-spatial management of potato fields and its relationship to risk mitigation, geographical setting and intraspecific diversity is investigated. Landrace diversity is characterised molecularly and morphologically following developed standard procedures for monitoring at gene, variety, species and landscape level. Potential interactions between extreme weather events -such as frost, hail, periods of heavy rainfall and drought- yield and diversity are explored at field level. Through yield sampling and potato diversity sampling methods which followed participatory field mapping, yield impacts for 312 native potato fields located between 3200 and 4200 meters above sea level were quantified by cultivar and weather stressor types. Results from the initial baseline documentation evidence high levels of contemporary diversity and a complex matrix of interactions at the biophysical and socio-ecological level.

Keywords: Agrobiodiversity, Andes, characterisation, conservation, *in-situ*, landraces, monitoring, ongoing evolution, potato