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Conservation of Potato Landraces in Three Microcentres of Diversity in Ecuador

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Abstract

Ecuador is an important centre of diversity for potato. We identified 3 areas with a high potato diversity, also known as microcentres. These are the provinces of Carchi (North), Chimborazo (Center) and Loja (South). The objectives of this study were to describe the current state of *in situ* conservation of potato in Ecuador by analysing the genetic diversity present at these microcentres, conducting collection of germplasm, survey the germplasm donors, and a molecular characterisation of the collected materials using SSRs. A total of 159 potato landraces were collected at the microcentres. The surveys (150) identified the landraces that farmers consider as lost. Interestingly, according to the names provided by the farmers, a large number of landraces they considered lost are still in hands of other farmers in the same microcentres. This suggests a limited exchange of seed potatoes (and information) among farmers. To verify that similar/identical names also constitute identical genetic materials we conducted molecular analysis to the landraces. Eight simple sequences repeats (SSR) were used to characterise the 158 landraces. Using these markers, 78 alleles were identified. To analyse the relationships between the collected landraces, a dendrogram was constructed using NTSYS. In general a high degree of diversity was found among the Ecuadorian potatoes from the three microcentres. However, genetically identical materials were identified from the same microcentre (same or different names) as well as among microcentres (same or different names). One group of landraces was unique for Loja and another for Chimborazo, whereas some landraces from different microcentres also grouped together. These data indicate that farmers' seed exchange in the past was more dynamic that we previously thought because landraces moved from North to the South of Ecuador. Finally, these preliminary results also suggest that an important part of the genetic diversity of potatoes is still present *in situ*, maintained by farmers as a food security resource regardless the factors that could produce genetic erosion, such as the introduction of new high yielding potato varieties.

Keywords: Genetic diversity , *in situ* conservation, potato landraces

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