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BOOK OF ABSTRACTS



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Diversity of wild and domesticated *Arracacia* species in Peru, as a unique reservoir to improve arracacha, one of the most promising Andean root and tuber crops

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In order to promote under-utilized species in Andean regions, a study was conducted to clarify the genetic diversity, the taxonomic status and the geographical distribution of Peruvian *Arracacia* species, including wild and cultivated populations. The principal objective is to valorise the genetic resources of the only domesticated species of the genus *A. xanthorrhiza*, commonly known as arracacha, a promising Andean root crop in marginalized highland regions. Phyletic relationships between *Arracacia* species were investigated in several accessions covering different taxa: mainly *A. elata*, *A. equatorialis*, *A. incisa*, *A. xanthorrhiza* and *Neonelsonia acuminata*. Study of morphological and molecular markers, under both *in situ* and *ex situ* conditions, showed a higher genetic difference at between species level than at within species and populations levels. Accessions considered previously as *A. equatorialis* were regrouped with populations of *A. xanthorrhiza*. These comparisons and multivariate analysis resulted in the selection of discriminatory characters to identify the three *Arracacia* Peruvian species: *A. elata*, *A. incisa*, *A. xanthorrhiza*. *A. xanthorrhiza* included the cultivated form and the wild forms monocarpic and polycarpic. The polycarpic form appeared to be the most closely related to the cultivated arracacha. On the other hand, the wild taxon *A. incisa* was closely related to *A. xanthorrhiza* wild forms. Morphological and molecular characterization resulted in the identification of morphotypes and duplications within germplasm collections. The same chromosome number was determined for the three analysed species *A. elata*, *A. incisa*, *A. xanthorrhiza*, identifying the *Arracacia* genus as tetraploid, with $2n = 44$ chromosomes. *Arracacia* species in Peru have a wide geographical and ecological distribution, covering both dry and humid zones of different altitudes (from 700 to 4,050 masl). Such information is useful to establish *in situ* and *ex situ* management of germplasm and to identify the most interesting ecological and agronomical areas for the cultivation of arracacha.