Phenotypic Variability between Cultivated and Natural Populations of Indigenous Fruit Species Inga edulis Mart. (Fabaceae) in Peruvian Amazon

Alexandr Rollo, Bohdan Lojka, Petra Cepkova-Hlasna, Iva Viehmannová, Jitka Krausova, Daniel Preininger, Zbynek Polesny, Jan Banout

Czech Univerzity of Life Sciences Prague, Department of Crop Science and Agroforestry, Czech Republic

Abstract

The Amazon rain forest forms one of the most precious ecosystem and provides a habitat for more than 50 % of described plant and animal species. Increasing population density and human activity are destroying the forest landscape and inflicting the loss of biological diversity. The genus Inga (Fabacaeae) is an ubiquitous component of lowland and highland rainforest throughout the humid tropical zones from Mexico to Uruguay. *Inga edulis* Mart. is one of the most widely distributed and economically useful in the whole Amazon region. Due to the fact of domestication, which has been improved through the history by the human selection of the species in the agricultural landscapes of the region, it is said to show growth variability on different environmental sites. An understanding of the level, structure and origin of morphological variation within and among populations is essential for devising optimum management strategies for sustainable utilisation and conservation of *I. edulis*. Objective of the study is to indicate, if there exist any phenotypic variability between natural and cultivated tree populations in Peruvian Amazon. The field work was conducted from November 2009 to April 2010 in departments of Pasco, Junin, Huanuco, Ucayali and Loreto. In total, altogether 200 trees were sampled, 170 trees cultivated by farmers in different urbanized areas, or agricultural landscapes; 30 wild growing, where 20 in untouched lowland rain forest in National Reservation Pacaya — Samiria and 10 in urbanized areas; 155 sampled trees were collected in the lowland jungle, whereas 45 in the highland jungle ecoregion. All trees were randomly selected and morphologically evaluated by using specific descriptor focused on qualitative and quantitative features, developed especially for *I. edulis* species. The leafy material of each accession was also collected. The statistical analysis of gathered data was done and completed by Neural Network Analysis. The subsequent primary screening of DNA was done using PCR method. Tree polymorphism will be detected using ITS primers. The results show morphological variability, between tree populations cultivated in lowland and highland jungle and also high variability of qualitative and quantitative features, between cultivated and natural growing populations of *I. edulis* in the region.

Keywords: *Inga edulis* Mart., lowland and highland jungle, morphological variability, peruvian Amazon, population, qualitative and quantitative features

---

Contact Address: Alexandr Rollo, Czech Univerzity of Life Sciences Prague, Department of Crop Science and Agroforestry, Kamycka 129, 16521 Prague, Czech Republic, e-mail: rollo@its.czu.cz