The gourd tree *Crescentia cujete*: phylogeography and ethnobotany of a useful fruit in Mexico

Xitlali Aguirre-Dugua,
Alejandro Casas
Laboratorio de Ecología y Evolución de Recursos Vegetales,
Centro de Investigaciones en Ecosistemas,
Universidad Nacional Autónoma
de México. Morelia, México 58190

Gourds made from the hard-shelled fruits of Crescentia cujete have been documented in Mexico since 1200 BC from archaeological studies and historical documents. The species grows in the wild where it is dispersed by water and mammals and is cultivated in homegardens in Veracruz, the Yucatan peninsula and the Isthmus of Tehuantepec. Indigenous names for these gourds have been recorded in at least 22 langua-ges of Mexico. Morphological differences between wild and cultivated trees and its long history of use suggest that artificial selection and human-mediated enlargement of its area of distribution have occurred. Objectives: To reconstruct the geographic history of Crescentia cujete and the genetic relationships between wild and culti-vated populations. To assess forms of management and artificial selection to analyze its domestication process. Methods: Eight to sixteen trees were sampled from 20 localities throughout Mexico, from homegardens as well as grasslands and seasonally flooded savannas. Five chloroplast microsatellite loci were analyzed and organized in a haplo-type network. Interviews were applied to 44 owners from eight localities to document varie-ties of cultivated trees and propagation practices. Results: Cultivated trees presented three exclusive haplotypes, the remaining five were found only in wild populations. Five different varieties of gourds were identified which differ in form, color, size and usage according to the interviewed persons. Cultivated trees are propagated by seeds and cuttings; some were planted from propagu-les brought from localities 25 to 100 km away. Conclusions: Cultivated populations were more related to each other than to any wild population, something that together with the move-ment of germplasm between localities suggests that gourd trees have been selected and continue to be propagated from specific genetic pools. However, varieties could not be differentiated with the genetic markers used. Future interviews on selection criteria and measures on fruit traits will be conducted to identify the targets of artificial selection.