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Diversity of Edible Plants in Milpas of the Tenek in Mexico and Implications for *in situ* Conservation

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Abstract

Ancestral land use systems such as the milpa, a farming system based on maize, beans and squash production, are important reservoirs of plant genetic resources and key components of *in situ* conservation in tropical landscapes. The milpas of the indigenous people in the Huasteca Potosina in northeastern Mexico are still managed traditionally. Farmers apply shifting agricultural techniques and cultivate numerous different food crops in the same field.

In order to understand their contribution to the conservation of plant genetic resources we analysed the diversity of food plants in the milpas of the Tenek, one of the most representative indigenous groups in the research area. We measured directly in fields and evaluated via participatory workshops the intraspecific richness and abundance in the milpas of 33 farmers in three localities along an altitudinal gradient ranging from 66 to 1100 m.

In total, 192 edible plants, including 85 species and 107 variants (varieties and landraces) that belong to 39 plant families and 68 genera, were registered. The number of species and variants in each milpa ranged between 3 to 39 and patterns changed according to altitude. Farmers in the intermediate altitude (640 m) cultivate an average of $16,75 \pm 8,1$ (SD) edible plants, whereas in the lower altitude (66 m) and higher altitude (1100 m) the milpas show averages of $8,2 \pm 3,9$ and $7,4 \pm 5,2$, respectively.

Most of the variants have been registered only once (65 %) and almost half of them (30 variants) were found in the intermediate altitude. Different diversity indices also indicate higher values in this altitude.

Our results show that the milpas of the Tenek contain a high number of species and variants and thus have special importance for *in situ* conservation initiatives, especially in the intermediate altitude. Still, richness, alpha and beta diversity varied noticeably. Considering social and cultural changes that threaten traditional agricultural systems, these results can contribute to design target-orientated strategies necessary to accomplish conservation goals of specific plant genetic resources.

Keywords: Diversity, *in situ* conservation, Mexico, milpa, traditional agriculture

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