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Traditional Agroforestry Systems: An Option for Improving Agro-Ecological Knowledge and Conserving Native Species

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Abstract

Although a number of studies have analysed strategies of cultivation, structure and the role of species in agricultural systems, there is an urgent need for studies at local level that support small-scale farmers in exchanging and improving knowledge on the design and structure of their agroforestry systems (AFS). More specifically, there is a demand among many subsistence farmers that research projects effectively improve the agro-ecological knowledge, especially the knowledge on native plant species.

Our research aims at (i) identifying local factors that influence farmers' decisions to cultivate native species or not, at (ii) studying the traditional structure of AFS, and at (iii) assessing gaps in agro-ecological knowledge at local level in the municipality of La Vega, Cundinamarca, Colombia.

Data were obtained via qualitative and quantitative methods: community meetings, questionnaires, semi-structured and structured interviews with farmers, and expert interviews, open talks, and visits to farms. In total, 71 farmers participated in the study. Based on the plant species described by the farmers, it was possible to do further research and to characterize the agro-ecological requirements of these species.

In this paper, we report on the structure of local AFS and give a detailed agro-ecological characterization of the cultivated crops and trees. Among the information are origin of the species, drought tolerance, nitrogen fixing and red-list status.

We characterized 152 species, including crops and trees, of which 103 have been identified as perennials, and 20 species belong to the group of annuals and biennials. Among these species, 50 are exotic and 71 natives; 22 are nitrogen-fixers, 17 species are resistant to drought, some of them with clear limits of resistance as they can only survive droughts of maximum three months. The most popular agroforestry systems in the locality are home gardens and intercropping systems.

We expect to contribute significantly at local level to: (i) the improvement of design and structure of AFS based on the potentials of local plant species and agro-ecological knowledge, (ii) the promotion of diversification, (iii) the conservation of native plant species, (iv) the process of communication of results and transfer of knowledge.

Keywords: Agroforestry systems, conservation and benefits, crop diversification, native species, plant conservation, transfer of knowledge

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