4th World Congress on Agroforestry

20-22 May 2019
Montpellier, France

Book of Abstracts

L10.1_O.09

Activity analysis of coffee growers in complex agroforestry systems, understanding the farmers' practices

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In coffee based agroforestry systems, biodiversity management by farmers is a promising lever for innovation to promote system sustainability and increase income. We hypothesized that the co-design of agroforestry cropping systems based on ecological process, and on implementation of innovative practices have to take into account the reality of the technical work as well as the farmer concerns and the knowledge leading to the actual plot management. The aim of this study is to examine how coffee farmers understand the diversity of their agroforestry systems and how do they manage it through their practices.
We have developed an original methodology based on the activity analysis applied to the study of the shade trees regulation practices in the agroforestry coffee plot by coffee growers. The activity analysis is interested in human activity with a view to transforming and designing work situations. According to Theureau (2010), considering enaction paradigm, activity is considered as a dynamic of asymmetrical interaction between an actor and his environment[1]. Thus, human action is not considered to the actual achievement of a predetermined program resulting from the application of decision rules[2]. First, semi-structured interviews were conducted to understand the systems and the cropping practices drivers. Then, practices were studied in real situation, through participant observation and the use of methods of verbalization during practice, of self-confrontation and farmer-guided practice[1]. This study took place in Costa Rica (Turrialba). Agroforestry systems consists of coffee (C*offea arabica*) and various types of shade tree species.
Our results highlight each action carried out by the coffee grower, associated with farmers indicators, considered as the factors that farmer take into account in the agroforestry environment against the background of his concerns, knowledge or habits. These indicators inform about complexity of interactions between the coffee grower and his environment. This interaction occurred at several levels: for a systemic management (to favor the ecological processes like disease regulation), for an ergonomic management (to favor movements, or reduce risk of injury), for a personal management (based on an affective relation with the biotope). In that respect, shade tree regulation is not only intended to increase the incident light energy received by coffee, but also driven by other motivations. The re-design of innovative and sustainable cropping systems has to take into account the interaction between diversity of human situations and the agroforestry system complexity. In this context, how can practices be transformed? How can we support farmers to think about their own practices and initiate changes specific to them? The activity analysis is an efficient framework to nourish the thinking on current management practices and a promising way to support their progressive transformation in complex agroforestry systems.

Keywords: co-design, agroforestry system, coffee growing, activity, farmers indicators.

References:

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