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Ecosystem services in certified and non-certified coffee agroforestry systems in Costa Rica

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ABSTRACT

Coffee agroforestry systems provide ecosystem services, the quality of which depends on the management carried out by coffee farmers. This study evaluated the provision of four ecosystem services (maintaining habitats, improving water quality, erosion control, and carbon stocks) on certified and non-certified coffee farms. We studied 30 coffee agroforestry systems located in Turrialba and Orosi using three different certification systems (Utz-Rainforest Alliance, Nespresso, Organic) and some without certification. Certified coffee agroforestry systems provide more ecosystem services than non-certified ones; however, on some non-certified coffee farms, different activities that provide ecosystem services were performed. Of the coffee farms evaluated, certified Organic farms had the highest conservation activities.

KEYWORDS

Coffea arabica L.; sustainability certification; ecosystem services; organic; shade coffee

Introduction

Worldwide, coffee crops present the highest levels of sustainability certification, especially in Central American countries such as Costa Rica. Additionally, most certified coffee farms are located within areas with some biodiversity conservation importance compared to non-certified coffee agroforestry systems (Tayleur et al. 2018). The certification of coffee farms allows the conservation of biodiversity, since the farms promote a high density and diversity of trees, multiple vertical canopy strata, and the use of native trees rather than introduced species. They additionally contribute to the protection of associated vegetation (epiphytes) and use no pesticides or any other type of synthetic input (Tscharntke et al. 2015).

In Costa Rica, coffee farmers choose certification programs based on their ideologies, commercial strategies, quality of the coffee to be produced, market demand, and the price of certified coffee (Snider et al. 2016).

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