



Sustainability indicators in integrated coconut-dairy production

Geraldo S. RODRIGUES^{1*}, Inácio de BARROS², Carlos R. MARTINS³

¹ Embrapa Meio Ambiente, Jaguariúna, 13820-000, SP, Brazil. ² Embrapa Tabuleiros Costeiros, CP 44, 49025-040, Aracaju, SE, Brazil; ³ Embrapa Clima Temperado, Pelotas, CP 403, 96010-971, RS, Brazil. E-mail address of presenting author*: geraldo.stchetti@embrapa.br

Introduction Integrated production is assumed to favor agricultural sustainability, whatever its conformation. A peculiar example of livestock-tree integration has been constructed in a dairy-coconut farm, which through smart management has been obtaining productivities among the highest registered, for both products simultaneously. In order to check the advantages of this integrated system beyond the economic dimension alone, an integrated sustainability assessment was carried out, under a project aimed at fostering ecological intensification in fruit production in Northeastern Brazil.

Material and Methods This illustrative case study was carried out at *Grangeiro Farm* (Ceará State), a 207 ha establishment where 100 ha of irrigated coconut orchards are combined with approximately 07 ha of Tifton pastures to feed a herd of ~60 Holstein dairy cows. Heifers and dry animals share the understory of the orchards for feeding, while all organic residues are stabilized and applied as fertigation. A field survey was carried out to analyze the performance of the farm with the set of 62 multi-attribute indicators included in the ‘System for weighted environmental impact assessment of rural activities’ (APOIA-NovoRural, Rodrigues et al., 2010).

Results and Conclusions Apart from soils characterized by very low bases saturation, implying a lower performance index, all sustainability dimensions studied resulted in performances well above the conformity level modeled in the indicators system (0.7 in a 0-1 utility scale, Fig 1). Besides observing of all aspects of the national forest code, and warranting excellent conservation status for natural habitats and other landscape ecology criteria, the establishment maintains excellent water quality, attesting a good status for the environmental quality dimension. Also, all indicators in the socio-cultural and the economic values dimensions resulted positive, confirming an excellent business position.

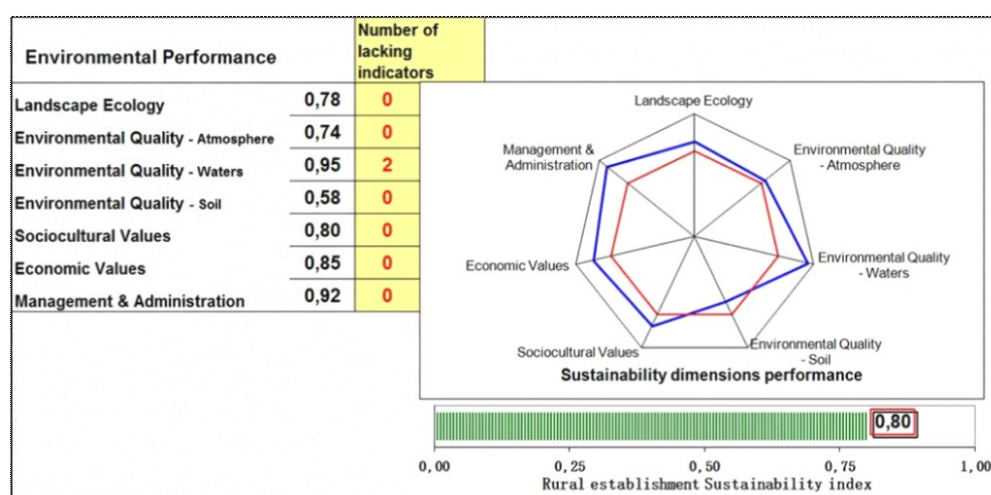


Fig. 1. Multi-attribute environmental performance indices observed in the coconut-dairy production system

An explanation for this success is shown in the good situation of the Management and administration dimension, a confirmation of the valuable decision of integrating tree-livestock for both productive and environmental performances, a gain for the sustainability of the farm.

Reference cited Rodrigues et al. (2010) Environ. Imp. Assess. Review. 30(4):229-239.