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Benefits of agroecological agroforestry systems as perceived by family farmers for adding value to products

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Abstract

A major challenge to overcome in order to maintain and expand the scale of production of agroecological agroforestry systems is the marketing of their products at a fair price that remunerates family farmers who produce healthy food in systems that promote positive socioeconomic and environmental impacts. The project "Design for biodiversity: co-design as a participatory tool for the consolidation of agroforestry systems in the state of São Paulo" aims to build, in a participatory manner, using co-design process tools, design solutions to improve the communication of benefits generated by agroecological agroforestry systems and improve the presentation to consumers through a new visual identity of their products. This summary presents one of the stages of this project, which aimed to define these benefits in the perception of family farmers from four organisations in different regions of the state of São Paulo that have implemented, produce, and market products from their agroforestry systems. Three workshops were held in each region to define and prioritise the benefits, with the participation of farmers from the Cooperativa da Agricultura Familiar de Sete Barras – Coopafasb (southern region); From the Rural Producers Cooperative of Ipanema and Region - Coprir and the Association of Agroecological and Biodynamic Producers of Family Farming in the Sorocabana Region - APBio (south-central region) and the Association of Agroforestry Farmers of the Sepé Tiaraju Settlement (northeast region). The definition of benefits was guided by five dimensions: environmental; social; productive; immaterial/ethical and economic. Farmers were invited to record up to three benefits for each dimension on cards, later grouping similar benefits and naming a single benefit. After systematizing the results of the workshops in the three regions, farmers were invited to prioritise benefits, resulting in 17 benefits. Among these, seven benefits were selected for communication to consumers, in the dimensions: environmental - conserving nature; productive: polyculture, knowledge on the plate, produced without pesticides, living soil; and immaterial/ethical: cultivating happiness and beauty. The next step involved developing a protocol with parameters for identifying these benefits being promoted by the agroforestry systems of these and other organisations that wish to add value to their products.

Keywords: Agroecology, agroforestry, socioeconomic and environmental impacts, value addition

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Introduction

Agroforestry systems (AFS) are multifunctional land-use systems in which trees are integrated with crops and/or livestock in spatial arrangements designed to promote interactions among their components, providing a wide range of socioeconomic and environmental benefits while reconciling environmental conservation with food production (Young, 1989; Miccolis et al., 2016). However, family farmers face several challenges in maintaining and scaling up production within AFS. Key challenges include generating information on the socioeconomic and environmental impacts of implementing these systems along with communicating them to different stakeholders, including farmers, consumers, and policy makers, as well as expanding market opportunities and increasing market value of sociobiodiversity products derived from agroforestry systems (São Paulo, 2021)

In this context, the project entitled "Design for biodiversity: co-design as a participatory tool for the consolidation of agroforestry systems in the state of São Paulo" aims to co-develop design solutions with family farmers, using co-design tools, to enhance communication of the benefits provided by agroecological agroforestry systems and improve how these products are presented to customers through the development of a new visual identity.

This study presents one stage of the project, which aimed to identify and define the perceived benefits of AFS from the perspective of family farmers belonging to four organizations located in different regions of São Paulo State, Brazil. These organizations are involved in the establishment and management of agroforestry systems, as well as in the production and marketing of agroforestry-derived products.

Material and Methods

The present study adopted a qualitative action research approach, as defined by Thiollent (2011), involving 27 family farmers affiliated with four organizations located in different regions of São Paulo State, Brazil: Cooperativa de Produtores Rurais de Ipanema e Região (Coprir), in the central region; Cooperativa da Agricultura Familiar de Sete Barras - SP (Coopafasb), in the southern region; and Grupo de Agricultores Agrofloresteiros do Assentamento Sepé Tiaraju,in the northeastern region of the state (Figure 1).

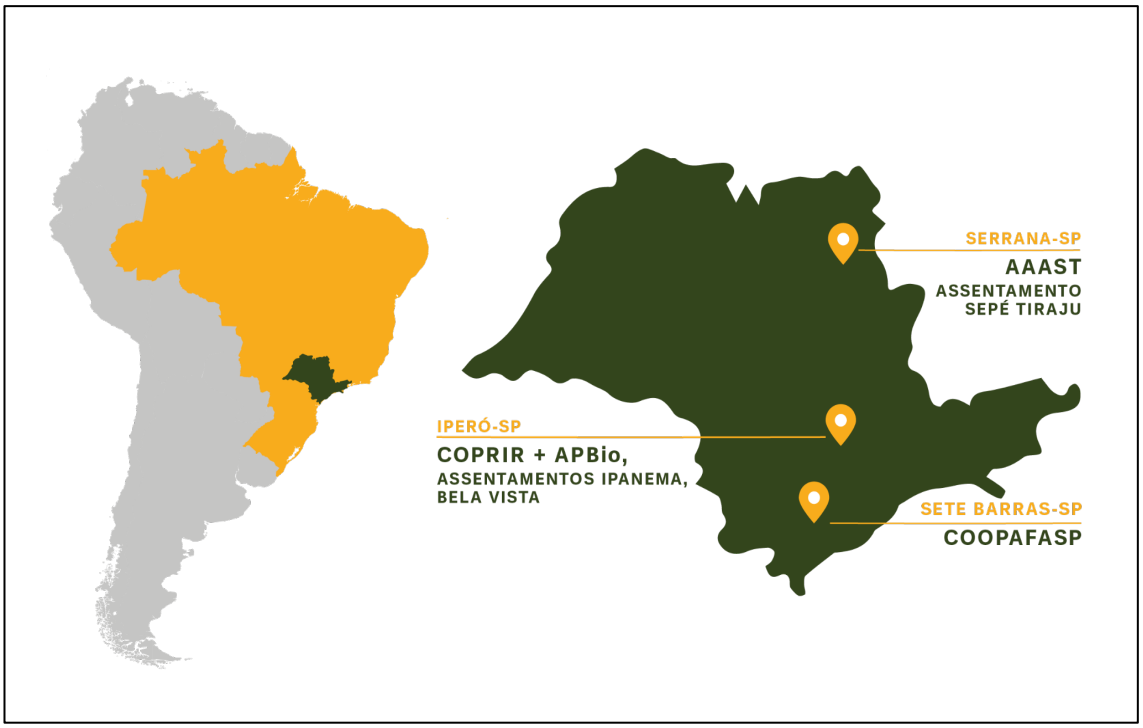


Figure 1: Location of the three study areas and four partner organizations in São Paulo State, Brazil.

Participatory tools were employed in the collaborative development of the Protocol to foster dialogue and enable the participants to express their opinions and share their knowledge (Minayo, 2014; Geilfus, 2002). The process comprised three stages – identification, systematization, and prioritization – conducted in three rounds of workshops with participating farmers in each region.
During the workshops, the activities and corresponding participatory tools included brainstorming (Geilfus, 2002) and culture circles (Brandão; Assumpção, 2009) for the identification, followed by prioritization matrix (Geilfus, 2002; Verdejo, 2006) to select benefits relevant to consumert communication; and the "que bom, que pena e que tal" (what was good, what was disppointing, and what could be improved) evaluation tools (Biazoti; Almeida; Tavares, 2017).
During the identification stage of AFS benefits as perceived by farmers in each region, the participating farmers recorded three benefits per round, shared their perceptionsin plenary sessions, and subsequently, the benefits were grouped according to their similarities into categories corresponding to five dimensions of susteinability, according to by Caporal and Costabeber (2002) (Figure 2).



Figure 2: Participatory workshops with partner farmers for the identification, systematization, and prioritization of agroforestry system benefits.

The results of the workshops conducted in the three regions were systematized, and, in the following round of workshops, the benefits were prioritized focusing on communication with consumers. The benefits to be communicated through icons and seals on product packaging and labels were then selected. For each selected benefit, indicators and their respective parameters, which constituted the protocol, were chosen. In a subsequent round of workshops, the proposed protocol, resulting from the systematization of the previous workshops conducted with the groups, was validated.

Results and Discussion

The workshops resulted in 168 records of AFS benefits as perceived by the farmers, which, after being systematized and grouped, resulted in 74 benefits. Of these, 24 benefits were prioritized, and in another round, resulted in 17 benefits belonging to five dimensions of sustainability. For communication with consumers, seven benefits were selected from the following dimensions: environmental, productive, and intangible/ethical (Figure 3).

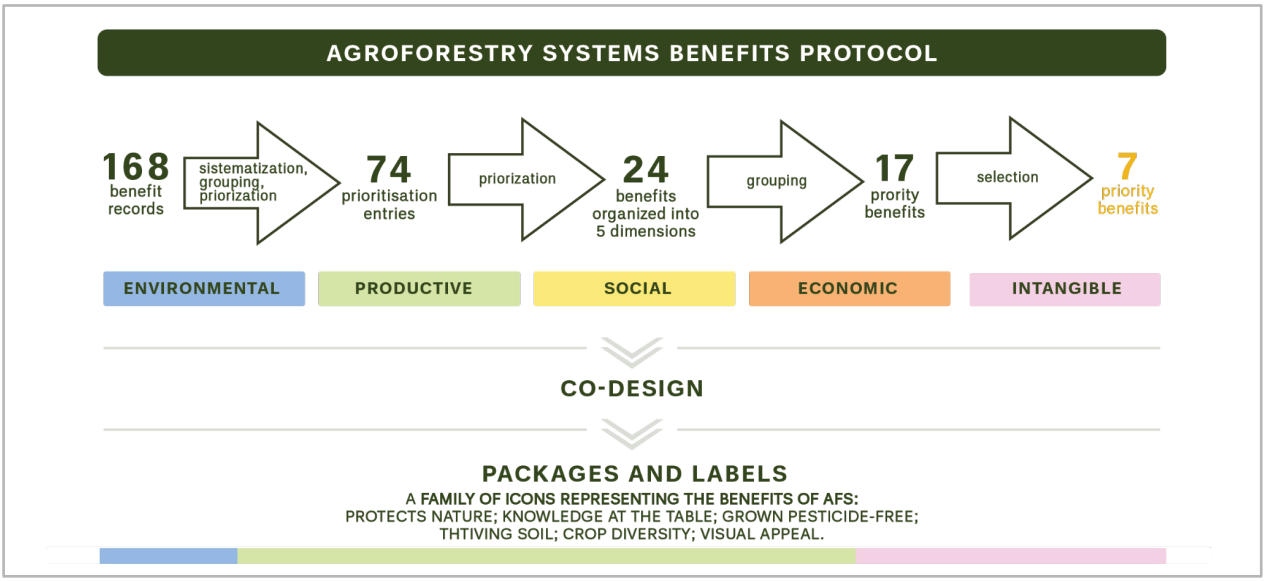


Figure 3: Systematization and prioritization of agroforestry system benefits and co-designed icons for product labels.

The selected benefits provided the basis for defining indicators and their respective parameters, which constituted the Protocol for identifying the benefits provided by AFS. This Protocol can be used by these and other organizations seeking to enhance the value of their products.

Conclusions and Outlook

The participatory co-design process enabled the identification and prioritization of agroforestry system benefits and their representation through a set of icons designed to communicate these benefits to consumers and other farmers. This is expected to add value and increase the commercialization of agroforestry products.

Acknowledgement

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References

1. BIAZOTI, André; ALMEIDA, Natália; TAVARES, Patrícia. Caderno de metodologias: inspirações e experimentações na construção do conhecimento agroecológico. Viçosa: Universidade Federal de Viçosa, 2017. 84 p.
2. CAPORAL, F. R.; COSTABEBER, J. A. Análise Multidimensional da Sustentabilidade: Uma proposta metodológica a partir da Agroecologia. Agroecologia e Desenvolvimento Rural Sustentável, Porto Alegre, v. 3, n. 3, p. 70-85. 2002.
3. GEILFUS, Frans. 80 herramientas para el desarrollo participativo: diagnóstico, planificación, monitoreo, evaluación. San José, Costa Rica: IICA, 2002.
4. MICCOLIS, Andrew; PENEIREIRO, Fabiana M.; MARQUES, Henrique R.; VIEIRA, Daniel L. M.; ARCO-VERDE, Marcelo F.; HOFFMANN, Maurício R.; REHDER, Tatiana; PEREIRA, Abilio V. B. Restauração ecológica com sistemas agroflorestais: como conciliar conservação com produção: opções para Cerrado e Caatinga. Brasília, DF: Instituto Sociedade, População e Natureza (ISPN): Centro Internacional de Pesquisa Agroflorestal (ICRAF), 2016. 266 p.
5. MINAYO, M.C.S. (org). Pesquisa Social: teoria, método e criatividade. 21 ed. Petrópolis: Editora Vozes, 2001.

6. SÃO PAULO (Estado). Secretaria de Infraestrutura e Meio Ambiente. Biodiversidade como fonte de renda na agricultura familiar: caminhos, desafios e aprendizados do PDRS: Projeto de Desenvolvimento Rural Sustentável / Secretaria de Infraestrutura e Meio Ambiente, 2021.7
7. THIOLLENT, Michel. Metodologia da pesquisa-ação. 18 ed. São Paulo: Cortez, 2011.
8. VERDEJO, Miguel E. Diagnóstico rural participativo: um guia prático. Brasília: Ministério do Desenvolvimento Agrário, 2006. 61 p.
9. YOUNG, Anthony. Agroforestry for soil conservation. Wallingford: CAB Internacional, 1989, p. 276.