The contribution of food forests towards a sustainable food system: Current state and potential in Europe

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Abstract

Food forests are multifunctional perennial polyculture systems that use the structures and functions of a natural forest as a model to cultivate a diverse range of edible plants. They represent an agroforestry practice that has the potential to combine the ecological, socio-cultural, and economic benefits of forest ecosystems and agricultural systems in one area. This study provides a comprehensive overview of the current state of food forests in the temperate climate of Europe by presenting empiric data from 30 food forests, expert interviews, and site visits. The findings highlight the potential but also the limitations of food forests to create a more sustainable food system while contributing to the United Nations' Sustainable Development Goals (SDG). Additionally, the study addresses challenges related to management, social acceptance, and economic efficiency of food forests, and provides guidance for financing and upscaling of those systems, as well as promoting their wider adoption into mainstream.

Introduction and Objective

The combination of woody perennials and agricultural systems, so called agroforestry, is recognized as a valuable tool for achieving global climate targets and creating resilient landscapes that provide multiple ecosystem services (Smith et al. 2013). Food forests (agroforestry systems with solely perennial components) (Fig. 1) are poorly studied in Europe, but can enhance ecological functions and socio-cultural services of landscapes and might have the potential to create a sustainable and resilient food system (Albrecht & Wiek 2021). The aim of this research was to identify characteristics of food forests in Europe, main services they provide, the role of food forests in food supply, and their contribution towards the Sustainable Development Goals (SDGs).

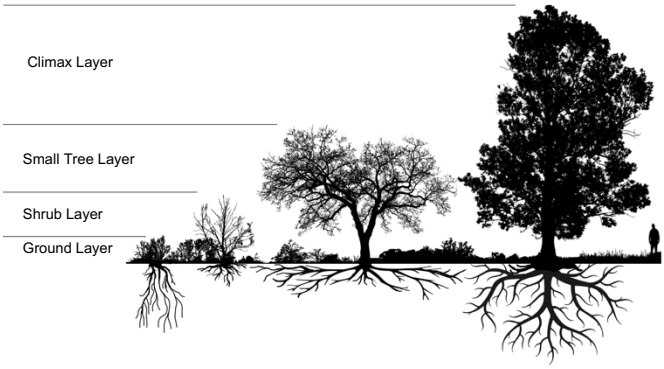

Figure 1 Schematic stratification of a four-layered food forest (Own illustration)

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Material and Methods

Semi-structured interviews with food foresters, expert interviews, as well as site visits were conducted in 2022. The criteria catalogue for the sustainability assessment was adopted from Albrecht & Wiek (2021). In total 30 projects, 22 private and 8 community food forests, from 11 European countries were investigated in this study. A standardized profile for each food forest was created, including information about the main services, location, size, design and age. Data was analyzed using qualitative text analysis according to Kuckartz (2014).

Results and Discussion

Results indicate that food forests typically prioritize local self-sufficiency, conservation of soil and biodiversity as well as educational programs over food production. They contribute to 9 of the seventeen SDGs by supporting adaption to climate change, local food security, conservation of soil and biodiversity, capacity building, and social inclusion. While food forests perform well on socio-cultural and environmental sustainability criteria, they often lack economic viability due to high manual labor requirements that arise from their complex designs. Enlarging projects by using simplified designs and focusing on main crops could enhance the economic performance of food forests (Björklund et al. 2019). At the current state, food forests mainly contribute to a sustainable food system on a regional scale by supporting biodiversity preservation and the integration of society into the process of food production. The reconnection between producers and consumers builds the essential social foundation for the creation of a sustainable food system (Willett et al. 2019) and food forests can support such a reconnection by providing an appropriate environment for ecological and social education.

Conclusion

Implementing public food forests in and around urban areas can be considered as a promising method for municipalities to achieve the SDGs and support a local sustainable transition. The “non-market values" (education, biodiversity, etc.) that food forests provide should be recognized and financially supported by society. Research and practical testing on economic models and customized marketing strategies are furthermore needed to improve the economic viability and thus the sustainability of private food forests.

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