

A Review On Traditional Agroforestry Systems In Europe Revisited: Biodiversity, Ecosystem Services, And Future Perspectives

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Abstract : Traditional agroforestry systems are land-use practices still widespread in tropical and subtropical countries, while in Europe have significantly decreased due to land-use intensification, land abandonment, and urbanization. Nevertheless, scientific evidence reveals that traditional agroforestry systems significantly support biodiversity and ecosystem services and may positively contribute to socioeconomic rural regional development. We worked out a review that follows the PRISMA approach and compiled comprehensive information on traditional agroforestry systems in Europe. Based on the differentiation of different land-use systems, also considering the agricultural as well as forestry components, we compiled information regarding current distribution, management (agrodiversity), biodiversity and agrobiodiversity, ecosystem and landscape services, threats, and restoration initiatives. From a total of 3,304 studies that dealt with agroforestry systems in Europe, both “modern” (e.g., buffer strip) and “traditional” (e.g., meadow orchards), we filtered out 158 studies from 35 European countries which represent the basis for in-depth investigation. We found, for example, that the traditional pastoral agroforestry system in the Mediterranean region, the so-called Dehesa, can harbor up to 300 plant species as well as 238 bird species, of which 134 are breeding birds. With regard to carbon storage, the traditional orchard agroforestry system in Germany stocks ranged between 6.5 and 9.8 Mg C ha⁻¹, showing significantly higher values compared to an intensively used grassland with around 3.4 to 6.7 Mg C ha⁻¹. With the remarkably high benefit for biodiversity and ecosystem services provided, the important role and multifunctionality of traditional agroforestry systems in Europe should be acknowledged and promoted.

Keywords : biodiversity, ecosystem services, landscape services, traditional agroforestry systems

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