COMPARATIVE ANALYSIS OF TWO ASSESSMENT METHODS FOR A FAMILY ORCHARD

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Abstract

This paper presents a comparative analysis of two distinct methods for assessing a family orchard located in the Mediaș area, Sibiu County, Romania. The first method adopts a land–legal perspective, viewing the orchard as lacking economic value and classifying it as a collection of scattered fruit trees. The second method applies economic principles and internationally recognized valuation techniques, assigning the orchard a value ranging between 3,120 and 9,652.5 RON, and identifying a significant value increase for the land.

The analysis highlights the advantages and limitations of each approach, emphasizing their relevance to current societal needs and the sustainable management of small-scale agricultural systems.

Key words**: **orchard valuation, comparative analysis, economic assessment, legal-land approach, sustainability

INTRODUCTION

The evaluation of small-scale orchards, often managed within family contexts, poses complex challenges from both economic and legal perspectives. These orchards are generally not operated as intensive commercial farms and therefore do not primarily aim for profit maximization. Instead, they perform multiple functions, providing ecological, recreational, aesthetic, and self-consumption benefits that strengthen household resilience and contribute to local sustainability (FAO, 2017; Gliessman, 2015).

From an economic standpoint, conventional valuation frameworks tend to focus narrowly on market-based productivity, often overlooking the non-market and ecosystem service values that characterize family orchards (Costanza *et al*., 2014; Daily *et al*., 2011). Such holdings are hybrid systems that combine agricultural, environmental, and social dimensions. Recent assessments of the same orchard illustrate these conceptual tensions: one method, grounded in legal–land classification, disregards measurable economic value, while another, based on economic and financial principles, estimates value through discounted income and replacement cost approaches (ANEVAR, 2020).

These methodological discrepancies mirror broader debates in international practice regarding the integration of economic, ecological, and legal perspectives in asset valuation (RICS, 2020; Teodorescu, 2009). Consequently, this study aims to compare and critically analyse two assessment methods applied to a family orchard located in the Mediaș area, Sibiu County, Romania, highlighting their theoretical foundations, practical implications, and

relevance for contemporary sustainability-oriented land management policies.

MATERIALS AND METHODS

To understand the fundamental differences between the two valuation approaches, a detailed analysis of the applied methodologies is required. They differ in their conceptual framework, the types of indicators used, and the purpose of their conclusions (Ţărău *et* Dicu, 2014; Teodorescu, 2009).

The orchard is located in the Mediaș area and covers a surface of 674 m². Its species composition includes 12 apple trees, 8 plum trees, 3 apricot trees, 2 peach trees, 1 sour cherry tree, and approximately 10 young trees used for replacement (36 trees in total, of which 26 mature trees form the basis of the valuation). The estimated age of the mature trees exceeds 30 years, with biometric measurements showing trunk circumferences between 35 and 70 cm.

Tree spacing, measured in the field, was 3.6 m between rows and 2.9 m between trees within rows. Maintenance activities included pruning, mowing, hoeing, and regular phytosanitary treatments. The soil was grass-covered, contributing to soil structure stability. Average productivity was estimated at 30 kg/tree/year for fruit-bearing species.

These characteristics position the orchard in a transitional stage between a productive plantation and a tree ensemble with predominantly ecological and social value. Species structure and productivity estimates were compared to average technical values published in specialized horticultural literature (Sumedrea *et al*., 2014), ensuring better data comparability and contextual accuracy for Romanian pomology.

The legal–land method is based on national legislation governing horticulture and cadastral registration (Bojincă *et al*., 2007). This approach classifies the land and plantation according to cadastral regulations, considering the standardized lifespan of trees and the legal regime of the property. The specialized literature (Racovicean *et* Doandeș, 2008) emphasizes that cadastral and topographic concepts are essential for substantiating real estate valuations, including orchard assets. Within this framework, the orchard is classified as a collection of scattered trees, assuming the investment has been fully amortized over its normative lifespan. Consequently, the plantation is considered to have no remaining economic value, and no land value increment is recognized.

The economic–financial method, by contrast, relies on internationally recognized valuation standards (ANEVAR, 2020; FAO, 2017; RICS, 2020). It employs two main techniques: the discounted income method and the replacement/reproduction cost method.

The former estimates annual yield by species, maintenance costs, and net income, discounted at a rate of 8% over a projected remaining economic life of 10 years. This produces the orchard's present economic value. The latter method estimates the current costs of establishing and maintaining an equivalent new orchard, adjusted for the physical and moral depreciation of the existing one (Doandeș *et al*., 2009; Teodorescu, 2009).

Recent literature applying cost–benefit analysis to orchard valuation highlights that financial indicators such as Net Present Value (NPV) and Internal Rate of Return (IRR) are key in assessing the economic viability of such plantations. A study by Jalić, Boroja, and Kljajić (2022) on an apple orchard in the autonomous region of Bosnia and Herzegovina demonstrated that detailed cash-flow analysis, correlated

with the economic lifespan of trees, provides more robust results than a static assessment of establishment costs.

RESULTS AND DISCUSSIONS

The results obtained from the two valuation methods are situated at opposite ends of the analytical spectrum.

The legal–land approach regards the orchard as having no economic value and attributes no value increment to the underlying land, while estimating a clearing cost of approximately 3,000 RON. This method focuses primarily on legal classification and the normative lifespan of trees, without taking into account actual field data such as species composition (15 apple trees, 10 plum trees, 3 apricot trees, and 2 peach trees) or the low productivity levels observed in situ.

In contrast, the economic–financial approach assigns the orchard a value ranging between 3,120 and 9,652.5 RON, and identifies a land value increment between 6,700 and 9,652.5 RON. The comparative analysis shows that the economic method is highly sensitive to underlying assumptions: a reduction in the discount rate from 8% to 6% or an extension of the economic life span from 10 to 12 years would significantly increase the estimated value. While the legal–land method remains rigid and bound by normative legal criteria, the economic method demonstrates greater flexibility and responsiveness to current agro-economic realities and market dynamics (Levers *et al*., 2016).

These findings underline the conceptual divergence between approaches that rely on regulatory classification and those that integrate dynamic financial indicators, suggesting the need for a hybrid valuation framework capable of reconciling legal and economic perspectives in the assessment of small-scale orchards.

The advantages of the legal–land approach lie in its simplicity and the clarity of its regulatory framework. It minimizes the risk of overvaluation and yields predictable, easily verifiable results. However, by disregarding actual data on species composition and productivity, this approach tends to undervalue family orchard assets and excludes their ecological and social benefits (Ţărău, 2008).

Conversely, the economic–financial method provides a more detailed quantification, using real data on existing tree species and productivity levels. This method better reflects the multifunctional role of family orchards in maintaining soil fertility, preventing erosion, and supporting household food self-sufficiency (RICS, 2020; FAO, 2017). Nevertheless, it requires precise field information and reliable market references, as the lack of active markets for small-scale orchards may lead to overestimation.

Recent literature supports the integration of ecosystem services—such as carbon storage, biodiversity, and social functions—into valuation models (Levers et al., 2016). Current recommendations encourage the development of hybrid valuation methods that combine legal clarity with economic and ecological analysis, thereby addressing the needs of contemporary society (Vlad et al., 2023).

The relevance of this analysis extends beyond the local or patrimonial context to the European policy framework. According to the new EU classification of agricultural holdings (European Commission, 2024), family orchards are explicitly recognized as a distinct category, emphasizing the need for adaptive valuation approaches that can

inform both statistical reporting and the Common Agricultural Policy (CAP).

Integrating ecosystem services into the economic valuation of family orchards is also supported by recent studies on mixed orchards in Southern Europe. Ioannidou et al. (2022) demonstrate that such systems generate not only market goods (fruits) but also essential services such as microclimate regulation, water conservation, and carbon emission reduction, directly influencing food security and resource sustainability. Linking family orchard valuation to these broader perspectives reveals that their true value extends beyond direct income, encompassing significant socio-ecological benefits relevant to sustainability and climate adaptation policies.

Another crucial aspect concerns the economic relevance of family orchards for rural communities. The literature highlights that even small-scale orchards generate benefits that exceed direct monetary income by contributing to production diversification and food security (Teodorescu, 2009). In this regard, the economic–financial method gains additional legitimacy, as it captures both use value and the integration potential of such holdings within the local agricultural economy.

CONCLUSIONS

The comparative analysis of the two valuation methods demonstrates that family orchards can be understood and assessed in fundamentally different ways, depending on the adopted perspective. The legal–land approach ensures clarity and simplicity in application, making it suitable for administrative and legal contexts; however, it shows clear limitations by failing to capture the economic and social realities of such holdings. In contrast, the economic–financial approach enables the estimation of positive values by quantifying both the direct and indirect benefits of the orchard, but it remains highly sensitive to calculation assumptions and market variability.

The comparison reveals that neither method is sufficient on its own. A realistic and socially relevant valuation must integrate legal, economic, and ecological dimensions, providing a comprehensive perspective that acknowledges market value alongside family utility and environmental benefits.

Although small in scale, family orchards play a crucial role in ensuring food security, maintaining biodiversity, and supporting rural identity. They should therefore be regarded not merely as economic assets, but as integrated systems with multiple functions that contribute to local sustainability and community resilience.

The overall conclusion of this study is that the future of orchard valuation cannot rely on a single, rigid approach. Instead, it should be based on an integrated methodology capable of addressing legal requirements while also reflecting economic realities and social needs. Such a perspective paves the way for more balanced and adaptive valuation practices, contributing to fairer decision-making processes for landowners, communities, and public institutions.

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