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The production of olive-growing knowledge in Portugal: Ancestry, science, and landscape

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ABSTRACT

This article examines the olive tree as an aspect of the Portuguese landscape. After considering the notion of landscape as a concept, it traces references to olive tree cultivation and olive oil production, particularly within the Iberian context, from Antiquity through the twenty-first century. It argues that these practices form an important and understudied in the history of knowledge transmission, particularly what has been lately termed “artisanal knowledge.” It likewise points to the potential present-day value of recovering traditional practices for the future of industries connected to the olive tree in Portugal.

Keywords: Artisanal knowledge, historiography, landscape, olive oil, olive tree, Portugal

ARTICLE

1. Introduction

The olive tree is a part of the Portuguese identity. Its importance to local communities and, at the same time, its significance in the history of a country that is responsible for a quarter of the world’s production of olive oil, allows for establishing relationships between micro-history and global history.

From sixteenth century onwards in Portugal, adequate documentation exists for tracing the scientific and technological evolution of olive tree cultivation methods and olive oil production. By that time, olive groves had already formed an integral part of the landscape, and olive oil was mentioned as one of the kingdom's riches. Memories and ancestral practices of Portuguese olive cultivation were lost as production intensified, transforming the landscape and the relationship between humans and the environment. On the other hand, traditional forms of olive oil manufacture are considered strategic for

the future and contribute to the debate on preserving the territory's identity and its sustainable productive character.

Changes to the practice and technology of olive tree cultivation did not occur simultaneously throughout the Portuguese territory or at the same scale. From the perspective of the history of science and technology at the interface of environmental and landscape studies, this paper aims to contribute to a broader discussion concerning the importance of artisanal epistemologies in the historiography of Portuguese olive cultivation.

Taking as a starting point the notion that sustainable agriculture is supported by traditional agricultural systems, the importance of preserving the scientific heritage and the cultural and productive landscape of the olive grove, with an emphasis on Portuguese local expertise, is essential.

2. Landscape: the establishment of a concept

Observing an olive grove and understanding what this sight represents to the memory of a given people requires a deeper understanding of the diversity implicit in the term "landscape." Although commonly associated only with a visible space, the concept of landscape is, in fact, complex, multidisciplinary, and polysemic, opening up numerous alternatives for analysis. Currently, the debate around the landscape concept is extensive and occurs in various spheres of study and research.

In Florence, in the year 2000, the European Landscape Convention (ELC) was established, the first international treaty exclusively dedicated to the landscape. This instrument, drafted by the Council of Europe, aimed to promote the protection, management, and planning of European landscapes. Furthermore, it fostered debate around the landscape concept and encouraged a conceptual renewal, defining the landscape as "a part of the territory, as perceived by the populations, whose character results from the action and interaction of natural and/or human factors" (EUROPEAN LANDSCAPE CONVENTION 2020, 2). In 2005, Portugal recognized these precepts through a decree published in the *Diário da República*, assigning to the landscape the role of playing important functions of public interest in the cultural, ecological, environmental, and social fields.¹

Michel Collot (2013, 17), in his theory of landscape-thinking, asserts that the notion of landscape involves at least three intrinsically connected components: a location, a gaze, and, finally, an image. The second component is often undervalued, while the others have gained prominence over the years. The landscape is the result of the interaction between the location, its perception, and its representation. The author considers the landscape to be a phenomenon that is not limited to a pure representation or even a simple presence, but instead a product of the encounter between the world and a point of view, free from any dualism. As Honoré de Balzac remarked in the nineteenth century, "The landscape establishes an interaction that invites us to think differently [...] [it] has ideas and makes us think" (quoted from

¹ More information: <https://pnap.dgterritorio.gov.pt/convencao-europeia>.

COLLOT 2013, 18). If the environment becomes a landscape only when perceived by a subject, then understanding the diversity of socio-cultural and historical contexts of olive cultivation, starting from the Early Modern period, is necessary for unpacking the olive tree as part of the local landscape.

In geography, space takes center stage, especially in the relationship between society and nature. In this context, the French philosopher Henri Lefebvre (1901-1991), in his work *La présence et l'absence* (1981), contributes significantly to this conceptual debate with an integrative approach, relating the landscape to the vast field of representations. Such approaches to reality, construed by Lefebvre as mediations, can be understood as representations of social relations of production. This concept of landscape is fundamental to grasping the landscape of olive groves, because they exist simultaneously as effective products, sets of representations, meanings, and intentions of those who produce them.

The landscape itself can be considered a historical reference, a reflection of human representations of nature, and vice versa. It tells stories, chief among them a story of humans and their environment. Within the research tradition of environmental history, which seeks to study the relationship between society and nature, transformations in the landscape are of particular relevance. Solórzano, Oliveira, and Guedes-Bruni argue that a significant contribution from environmental history is in the discipline's providing new ways of looking at the landscape and nature: introducing novel questions and extracting important information about the history of societies. By adopting an interdisciplinary methodology, studies attentive to the historical aspects of ecosystems provide vital insights into landscape transformation past and present, including climate changes and landscape fragmentation (SOLÓRZANO, OLIVEIRA, & GUEDES-BRUNI 2009, 63).

3. History and agriculture: a historical account of olive tree's growth

Agronomic and botanical treatises constitute an important source for the study of olive cultivation in Portugal, and what is known about the territory's history of olive growing is primarily framed in terms of the history of agricultural sciences. Some significant texts on olive culture were initially written by farmers, especially in the Islamic world and during the Middle Ages (understood here as roughly 500-1500 AD). The content of these treatises is considered crucial for understanding the origins of and influences on Portuguese olive cultivation, making comparisons, and identifying significant technological leaps.

A key reference in Classical literature on olive oil production practices was authored by the Roman agronomist and writer Columella (Lucius Junius Moderatus Columella - Gades, 4 AD - Tarentum, between 60 and 70 AD). He is known for his treatises on agronomy, *De re rustica* and *Liber de arboribus*, written in the first century AD, and published, translated, and widely disseminated from the fifteenth to the nineteenth centuries. Columella wrote about a rudimentary method of producing olive

oil called *canalis et solea*, which involved crushing olives with wooden-soled shoes on a hollowed-out piece of wood, allowing the extracted liquid to drain off for collection (FERNÁNDEZ 1985).

A similar technique can be found in the description from the *Corografia do Reino do Algarve* (1577), where Friar João de São José from the Order of Hermits of St. Augustine mentions that olive oil was made in each house by treading olives underfoot, and that it was uncommon for the Algarvians to produce oil in mills with grinding stones and rods. Given this commonality, it is worth inquiring whether other such similarities may be discovered by cross-referencing ancient treatises and sources from the Early Modern period.

Among printed agronomic and botanical treatises addressing olive varieties, cultivation methods, and oil production, I have identified several which may have circulated in Portugal. These include *Agricultura General* (HERRERA 1513), *Libro de los secretos de agricultura, casa de campo, y pastoral* (AGUSTÍ 1626), *Economie Générale* (LIGER 1700), and *Livro de Agricultura* (GARRIDO 1749).

In the nineteenth century, treatises on olive cultivation were published by authors including Barjavel (1830), Tablada (1870), Gourrier (1881), and Rojo Payo Vicente (1840). Portuguese publications related to agrarian history, such as *Jornal de Horticultura Pratica*, *Boletim do Instituto do Azeite e Produtos Oleaginosos*, and *Boletim da Junta Nacional do Azeite*, as well as *Revista Universal Lisbonense* and *Industriador Portuense*, provide useful data for research, as olive cultivation, from a technological perspective, changed little in the transition between the eighteenth and nineteenth centuries.

Despite the lack of in-depth studies on Portuguese olive cultivation from the perspective of the history of science and technology in connection with environmental and landscape research, several scholars from other fields have contributed to the current state of knowledge on the subject. Internationally, the extensive Spanish bibliography predominates, including, for example, the comprehensive scientific and technical work by Escobar, Navero, and Romero (2017), *El cultivo del Olivo*, constantly updated and currently in its seventh edition, with insights from the foremost experts on the subject.

A notable contribution to the history of olive cultivation in Portugal was made by João Antonio Dalla Bella (1726-1823), a professor at the University of Coimbra, through the works *Memorias e observações sobre o modo de aperfeiçoar a manufactura do azeite de oliveira em Portugal remettidas à Real Academia das Sciencias de Lisboa* (1784) and *Memória sobre a cultura das oliveiras em Portugal apresentada à Real Academia das Sciencias de Lisboa* (1786). He suggested that despite the potential to produce the best olive oil, rivaling even those of Provence, the quality of Portuguese oil was lacking, primarily because the rules of olive cultivation and the method of producing oil were completely different from those used by the ancients (Greeks and Romans). He stated that the Portuguese apply “without reflection, liberties and abuses in practice” (DALLA BELLA 1784, xi), due to indolence, laziness, and disinterest in improvement. Apart from this diagnostic assessment, he recounts the various professionals involved in

all stages of manufacture, including detailed descriptions of gender, physical characteristics, and functions.

Dalla Bella valued ancient practices. Applauding their magnificence, he asserted that Portugal managed its olive cultivation without any criteria about quality. His work provides clues about the technologies used at that time, as well as why certain techniques were chosen (despite their consequent damage), especially compared to the robust ancestral techniques used in other European countries, especially Italy, which produced such highly valued oils. He was, however, deeply influenced by external theories and practices (perhaps from treatises or visits to Italy), and a thorough analysis is needed to properly understand the contemporary state of Portuguese olive oil. The analogous ideas expressed by Domingos Vandelli in *Memoria sobre a ferrugem das oliveiras* (1789) should be treated with the same caution.

In the remarkable *Tecnologia Rural ou Artes Chimicas, Agricolo-Florestaes* (1863), written by J. I. Ferreira Lapa (1823-1892), which in its second volume addresses *Productos Oleaginosos*, the same argument put forth by Dalla Bella can be identified, again pointing out the deficiencies of Portuguese olive oil. Lapa adds Spain to the criticism, stating that olive cultivation and oil production are subject to apathy and neglect (LAPA 1863, 14). The work likewise provides information about olive varieties in different parts of Portugal.

The history of olive oil production in the Early Modern period was addressed more recently by Franz Paul Langhans (1949), including references to the charters of Portuguese municipalities, providing information about toll charges and the functioning of the olive sector. It constitutes an important resource for the identification of areas specialized in olive cultivation and provides key primary sources.

In Portugal, much of the historical bibliography on this topic is associated with the origin of the olive tree and with the Roman period. Among major works are a study by the archaeologist Jorge de Alarcão (1979), later continued by Pedro Carvalho (2019). In addition to these, research by historian Carlos Fabião, published in *O Grande Livro da Oliveira e do Azeite* (2013), stands out, identifying and exploring the earliest stages of olive oil production in the western Iberian Peninsula.

In the field of economic and social history, Magalhães (2010) presented a study of the production and export of Portuguese olive oil, considering all production scales and territorial contexts, from the south to the Entre-Douro e Minho and Trás-os-Montes regions. It built upon the work of geographer Orlando Ribeiro, who wrote *O Significado ecológico, expansão e declínio da oliveira* in 1979, offering toponymic data that could help determine the extent of the olive grove area in the Early Modern period.

Some studies focused on specific regions, such as Tomar (GUIMARÃES 1979), have also been conducted, but such works are predominantly centered on Algarve (CAVACO, 1976; MABBERLEY PLACITO 1993; BALBI 2004; MAGALHÃES 2018; RIBEIRO 2018), a region exceptional for its specificities in olive cultivation.

Regarding the technologies involved in olive oil production, important commentators include Francisco de Paula Silva e Bombon (1969), Ernesto Veiga de Oliveira, Fernando Galhano, and Benjamim Pereira (in publications between 1983 and 1994), who dedicated themselves to understanding the machinery of some Portuguese olive oil mills and are also referenced in the study of hydraulic machines from an ethnographic perspective. In this context, Custódio's study of Alexandre Herculano's oil mill merits special note (1998). Isabel Drumond Braga wrote about olive oil in the ambit of cultural history, revealing its multifunctionality. Economic historiography includes several studies based on the price of olive oil across various timeframes (SALVADO 1961; MAGALHÃES 2018; TEIXEIRA 1995; FREIRE 2017).

4. Historiographical approaches: reading the agricultural traditions

The sources outlined above both raise questions and point to the need for comparative analyses of the treatises circulating in Europe at a given time; present-day publications, such as those supported by the Portuguese Academy of Sciences; and locally-produced documentation, including charters, parish memorials, and maps. By embracing a variety of sources, it may be possible to bridge the gap between “scientific” and “artisanal” domains of practice. This cannot be done without due attention to the cultural and social contexts specific to each region.

The history of science has recently directed its attention to the progress of practical knowledge and its significance in the development of “artisanal epistemologies” that may have led to the scientific revolution. The sources identified in this article, taken together, suggest that pre-modern practices of olive cultivation and olive oil production eventually contributed to the development of more abstract agronomic and botanical knowledge, a motif in discourses on artisanal epistemologies (VALLERIANI 2017; SCHMIDT 2007; LONG 2011; BERTUCCI & COURCELLE 2015; LEITÃO & SÁNCHEZ 2017).

It is worth considering the agents and contexts for innovations in this industry. During the Early Modern period, olive oil mills were present across virtually the entire kingdom of Portugal, with notable production centers four regions: Beira, Estremadura, Alentejo, and Algarve, which were associated with groups of greater economic power, such as the nobility and religious orders. The *lagareiros*, artisans who worked in the mills, were the drivers of this history, and their profession was regulated by the “Regimento dos lagareiros e dos lagares de azeite” of 1572. The grinders, who crushed the olives, and the carriers who transported the olives and the oil, also had sworn professions. Consequently, their activities could not be practiced by slaves or by women, who were prohibited from entering these structures.

David Edgerton's “technology-of-use” and Adam Lucas's “pockets of innovation” are useful concepts here. The mills, responsible for the transformation of olive oil, are the locus at which ancient technological principles were appropriated in different ways, both spatially and temporally. On the

other hand, the mills represent an object of interest for the history of science and technology, involving the local expertise of artisans, who not only mastered the use of such equipment but also adapted their operation to a given locale, making necessary adjustments or developments in their mechanisms.

Olive cultivation, as an agricultural practice, involves a complexity of practical knowledge transmitted over generations. It is ideally suited to the conceptual framework of artisanal epistemology, allowing us to understand how knowledge may be acquired, applied, and transmitted, and providing fundamental insights into practical wisdom shaped by specific historical and cultural factors.

Final considerations

The cultivation of the olive, among the most emblematic trees of the Mediterranean, is integral to the identity of Portugal. However, traditional methods are rapidly disappearing due to the increase in intensive olive cultivation – despite the fact that traditional olive oil production cooperatives are both valued and central to strategic debates on the manufacture of extra virgin olive oil. The shift to large-scale olive oil production has not gone uncriticized, with concern about how the associated practices impact various spheres of Portuguese society, and calls for a return to olive oil produced “the old-fashioned way”, acknowledging the cultural history preserved in such methods.

In this sense, initiatives that promote the safeguarding of ancient techniques have become urgent, encouraging the protection of the olive’s heritage, and enabling integrated, organic, and sustainable productions that incorporate traditional systems as elements of identity and product valorization. This is especially important in the face of growing demand for the recognition of local and manual production. Skills in traditional olive oil production have long enjoyed respect in the Portuguese context, despite their marginalization in the face of mechanized olive oil production.

The challenge of innovation related to this fact lies in the low prioritization of research focused on the conservation of public goods and natural resources, and in the quality and exclusivity of products originating from olive groves that promote a more sustainable culture across all production spheres. This prioritization should be led by the public sector to prevent the loss of this significant material and immaterial heritage. Unfortunately, the bibliography that might guide such a transition remains scarce.

This article proposes that by investigating artisanal epistemologies of olive cultivation, it may be possible to assess the resilience of related traditional knowledge to contemporary challenges, such as climate change and environmental pressures, contributing to the development of sustainable practices. It has aimed to lay groundwork for this approach by providing a variety of textual sources that may contribute to further inquiry through such a lens.

Olive cultivation can be a sustainable activity. Building bridges between historical texts, traditional artisanal practices, and the current challenges experienced in the Mediterranean landscape can help reshape trends in conceived and productive landscapes. Moreover, consideration of artisanal

knowledge in academic research can enrich conventional approaches and promote a more holistic and integrative understanding of agricultural practices. In this way, conditions are created to protect the cultural values and identity of a region and promote balanced, attractive biocultural landscapes.

REFERENCES

Printed Sources

- BALBI, A. (1821-1822). *Essai Statistique sur le Royaume de Portugal d'Algarve*. Paris: Reyck Gravier.
- Barbosa, V. (1860). *Cidades e Villas da Monarchia Portuguesa que teem Brasão D'armas*. Lisbon: Typographia do Panorama.
- BARJAVEL, C. F. H. (1830). *Traité complet de la culture de l'olivier*. Marseille: Camoin.
- BARROS, J. [1550] (2019). *Geographia d'entre Douro e Minho e Tras-os-Montes, estudo e transcrição Joana Lencart*. Porto: Câmara Municipal do Porto.
- BLUTEAU, R. (1712-1728). *Vocabulario Portuguez e Latino [...]*. I, Coimbra: Colégio das Artes da Companhia de Jesus.
- CÂMARA, P. (1850). *Dicionário Geográfico Histórico Politico e Litterario do Reino de Portugal e seus Dominios*. Lisbon: Typografia Universal de Laemmert.
- CARDOSO, L. (1747-1751). *Diccionario Geográfico ou Noticia Histórica de todas as Cidades, Villas, Lugares e Aldeas, Rios e Ribeiras e Serras dos Reynos de Portugal e Algarve, com todas as cousas raras, que neles se encontram, assim antigas, como modernas*. Lisbon: Regia Officina Silviana e da Academia Real.
- CASTRO, J. B. (1762-1763). *Mappa de Portugal antigo e moderno*. Lisboa: Officina Patriarcal de Francisco Luis Ameno.
- COSTA, A. (1712). *Corografia Portugueza e Descripçam Topográfica do Famoso reyno de Portugal com as noticias das fundações das cidades, villas e Lugares, que contem Varoens illustres, Genealogias das Familias nobres, fundações de Conventos Catalogos dos Bispos, antiguidades, maravilhas da natureza, edificios e outras curiosas observações*. Lisbon: Oficina de Valentim da Costa Deslandes.
- DALLA-BELLA, J. A. (1818). *Memoria sobre a cultura das oliveiras em Portugal apresentada à Real Academia das Sciencias*. 2.a ed. corrig. e anot. S. Trigo. Lisboa: Academia Real das Sciencias de Lisboa.
- FERREIRA LAPA, J. I. (1863). *Artes chimicas, agricolas e florestaes ou tecnologia rural (Volume 1)*. Lisbon: Typ. Da Academia.
- GOURRIER, A. H. (1881). *Traité de la culture de l'olivier et de la fabrication de l'huile d'olive*.
- JOSÉ, F. J. S. [1577] (1900). *Corografia do Reyno do Algarve*. Por Guerreiro, M. V. Universidade do Algarve.
- LEÃO, D. N. [1610] (2002). *Descrição do Reino de Portugal*. Lisbon: Centro de História da Universidade de Lisboa.

- LOPES, J. B. S. (1841). *Corografia ou Memoria Economica, Estadistica, e Topografica do Reino do Algarve*. Lisbon: Academia das Ciências de Lisboa.
- PREGO, J. M. P. (1902). *Olivaes e Lagares: Andaluzia, Catalunha, Nice, Toscana, Bari, Portugal*. Lisbon: Typ. da Livr. Férein.
- SILVA, L. A. and SILVA, R. (1868). *Memoria sobre a população e a agricultura de Portugal desde a fundação da Monarchia até 1865 Parte I (de 1097-1640)*. Lisbon: Imprensa Nacional.
- SOUSA, J. S. A. (1822). *Corographia Açorica ou Descrição Phizica, Politica, e Historica dos Açores*. Lisbon: Impressão de João Nunes Esteves.
- TABLADA, J. H. (1870). *Tratado del cultivo del olivo en Espana y modo de mejoralo*. Madrid: Librería de la Señora Viuda e Hijos de Dom José Cuesta.

Bibliography

- ALARCÃO, J. (1979). *Um lagar de azeite na antiguidade*. In *História*, nº 5, março, 46. Lisbon: Publicação Projornal.
- BERTUCCI, P., & COURCELLE, O. (2015). Artisanal Knowledge, Expertise, and Patronage in Early Eighteenth-Century Paris: The *Société Des Arts* (1728–36). In *Eighteenth-Century Studies*, 48(2): 159-179.
- BÖHM, J. (COORD.). (2013). *O Grande Livro da Oliveira e do Azeite*. Lisboa: Dinalivro.
- BOMBON, F. P. S. (1969). *A evolução do equipamento dos lagares de azeite*. Lisboa: Junta Nacional do Azeite.
- CARVALHO, P. (2019). *O azeite e a oliveira ao longo do tempo*. Bobadela: Museu do Azeite.
- CAVACO, C. O (1976). *Algarve Oriental*. 2 volumes. Faro: Gabinete de Planeamento da Região do Algarve.
- COLLOT, M. (2013). *Poética e Filosofia da Paisagem*. 1ª edição. Rio de Janeiro: Editora Oficina Raquel.
- CUSTÓDIO, J. (1998). *O lagar e o "Azeite Herculano": com uma introdução à tecnologia do azeite em Portugal no tempo de Alexandre Herculano (1810-1877)*. Santarém: Câmara Municipal, D.L.
- EDGERTON, D. (2011). *The Shock of the Old: Technology and Global History since 1900*. Oxford: Oxford University Press.
- ESCOBAR, F. NAVERO R., D. and ROMERO, L. R. (2017). *El cultivo del olivo* (seventh edition). Spain: Ediciones Mundi-Prensa.
- FERNÁNDEZ, P. S. (1985). *Columela, de R.R. XII, 52,6: Canalis et solea*.
- FREIRE, D. (2017). Changing the Olive Oil Value Chain: Food Regime and Development in Portugal. In Miele, M., Higgins, V., Bjørkhaug, H., and Truninger, M. (eds.), *Transforming the Rural: Global Processes and Local Futures* (Volume 24) (pp. 197 – 220). Emerald Publishing.
- GUIMARÃES, M. S. (1979). *A oliveira e o azeite na Região de Tomar: usos e costumes*. Tomar: Câmara Municipal de Tomar.
- HEHN, V. (1998). *Zeytin, Üzüün, İncir, Kültür Tarihi Eskizleri*. Ankara: Dost Kitabevi.

- Langhans, F. P. (1949). *Apontamentos para a História do Azeite em Portugal*. Lisboa: Junta Nacional do Azeite.
- LEFEBVRE, H. (1981). La présence et l'absence. *Revue Philosophique de la France et de l'Etranger*, 171 (2): 241-242.
- LEITÃO, H., & SÁNCHEZ, A. (2017). Zilsel's Thesis, Maritime Culture, and Iberian Science in Early Modern Europe. *Journal of the history of ideas*, 78(2), 191-210.
- LONG, P. (2011). Artisan/Practitioners and the Rise of the New Sciences, 1400-1600. *The Horning Visiting Scholars Series*. Corvallis: Oregon State University Press.
- LUCAS, A. (2006). *Wind, Water, Work: Ancient and Medieval Milling Technology*. Leiden: Brill.
- LUCAS, A. (2014). *Ecclesiastical Lordship, Seigneurial Power and the Commercialization of Milling in Medieval England*. London: Routledge.
- MAGALHÃES, J. R. (2010). Do tempo e dos trabalhos: a agricultura portuguesa no século XVII. *Revista Portuguesa de História*, 41: 59-72.
- MABBERLEY, D. J., and PLACITO P. J. (1993). *Algarve Plants and Landscapes: Passing Tradition and Ecological Change*. Oxford: Oxford University Press.
- MAGALHÃES, J. R. (2018). *O Algarve económico durante o século XVI*. Olhão: Sul, Sol e Sal.
- NUNES, M. F. (2001). *Imprensa Periódica Científica (1772-1852). Leituras de «sciencia agricola» em Portugal*. Lisbon: Estar Editora, Lda.
- OLIVEIRA, E., GALHANO, F., and PEREIRA, B. (1983). *Tecnologia Tradicional Portuguesa: Sistemas de Moagem*. Lisbon: Instituto Nacional de Investigação Científica.
- OLIVEIRA, E., GALHANO, F., and PEREIRA, B. (1986). Migrações temporárias e estacionais. Barrosões no Alentejo. In *Estudos em Homenagem a Mariano Feio* (pp. 541-563). Lisbon: Barbosa e Xavier.
- OLIVEIRA, E., GALHANO, F., and PEREIRA, B. (1994). *Construções primitivas em Portugal*. Lisbon: Publicações Dom Quixote.
- PEREIRA, B. (1990). Arcaísmo tecnológico: a extracção do azeite em dois lagares do Minho. *Trabalhos de Antropologia e Etnologia*, 30: 115-127.
- PEREIRA, B. (2005). *Tecnologia Tradicional do Azeite em Portugal*. Idanha a Nova: Câmara Municipal de Idanha a Nova.
- RIBEIRO, O. (1945). *Portugal, o Mediterrâneo e o Atlântico*. Coimbra: Coimbra Editora.
- RIBEIRO, O. (1979). Significado ecológico, expansão e declínio da oliveira em Portugal. *Boletim do Instituto do Azeite e Produtos Oleaginosos*, 2 (separata): 1-37.
- RIBEIRO, O. (2018). *Mediterrâneo. Ambiente e Tradição*. Lisbon: Fundação Calouste Gulbenkian.
- RODRIGUES, A. D. (2016). *Uma história de jardins: a sua arte na tratadística e na literatura*. Lisbon: Biblioteca Nacional de Portugal: Caleidoscópio.

- ROJO PAYO VICENTE, C. (1840). *Arte de cultivar el olivo: método teórico y práctico y económicamente rural de dar las labores con la debida inteligencia [sic], siguiendo en todo paso a paso la marcha de la naturaleza*. Valencia: Imprenta de Cabrerizo, XXXII.
- SALVADO, A. (1961). *Preços do azeite e de outros géneros, em Lisboa nos séculos XVII, XVIII e XIX*. Lisbon.
- SMITH, P. (2004). *The Body of the Artisan*. Chicago: University of Chicago Press, 2004.
- SMITH, P. and SCHMIDT, B. (eds.) (2007). *Making Knowledge in Early Modern Europe: Practices, Objects, and Texts, 1400-1800*. Chicago: University of Chicago Press.
- SOLÓRZANO, A., OLIVEIRA, R., and GUEDES-BRUNI, R. (2009). Geografia, História e Ecologia: criando pontes para a interpretação da paisagem. *Ambiente e Sociedade*, 12(1): 49-66.
- TEIXEIRA, M. S. C. (1995). Análise do mercado de azeite: mapa perceptual, segmentação, preferências, atitudes e funções de utilidade das características salientes do produto. (MA diss.). Universidade Católica Portuguesa, Lisbon.
- VALLERIANI, M. (2017). *The Structures of Practical Knowledge*. Cham, Switzerland: Springer.