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Public policies creating tensions in Montado management models: Insights from farmers' representations

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ABSTRACT

The Montado is the silvo-pastoral land use system dominant in Southern Portugal, and similar to the Dehesa in Southern Spain. These systems combine an open tree cover of cork and holm oaks with grazing in the under-cover. Despite the acknowledged value of these systems due to their adaptation to the scarcity biophysical conditions of Southern Iberia, the uniqueness of cork production, the biodiversity values and the support of multiple public goods and services, in Portugal the area of the Montado is declining every year. It has been shown before how this decline is related to increased grazing pressure and use of inadequate soil mobilization techniques. Supported on social sciences theoretical insights, this paper focus on the farmers decision process, and the representations that support their decisions. The analysis is grounded on a large scale survey followed by in-depth interviews to Montado farmers. The results show that there is an underlying conflict between farmers representation of the Montado and the practices they are applying in their everyday management. Dominant representations of the Montado by farmers rely strongly on the tree cover and the forestry component of the system. While their management is strongly focused on the livestock and grazing resources. Farmers are abandoning a resilient thinking of their farm system considering the factors internal to the system, to adapt an external, driver oriented representation of their farm system. CAP coupled payments are seen as the main cause of this change. If the policy construction remains in its present state, the resilience of the Montado as a complex socio-ecological system is threatened in the very short term.

1. Introduction

The Montado is the silvo-pastoral system dominant in the landscape of southern Portugal, and equivalent to the Dehesa in southern Spain. These land use systems occupy approximately 1 M hectares in Portugal and 3 M hectares in Spain, constituting the paradigmatic land use systems and landscapes of southern Iberia (Aronson et al., 2009; Ferraz-de-Oliveira et al., 2016; Pinto-Correia, 1993; Pinto-Correia et al., 2011). In the Montado, there is a tree cover dominated by evergreen oaks, mostly cork oak (*Quercus suber* L., 1753) in varying densities, and pastures in the undercover. These may be natural or improved pastures, and often there is dispersed shrub or patches of shrub in the most non-accessible patches. The livestock feed on the pastures and also profit from the masts and acorns, as well as the young tree shoots. In the dry season, livestock fodder may also be produced in other, more open plots in the farm. In a balanced Montado, the grazing pressure is such that the encroaching shrub is avoided and natural regeneration of the trees is possible.

Despite its adaptation to the scarce natural resources and variability of the climate, its acknowledged qualities as a High Nature Value farming system, a highly attractive landscape, and a regional identity fundament, these systems are nevertheless in decay. Recent studies have shown that the Montado's total extension has reduced in the last 25 years, with 5000 ha lost on average per year (Costa et al., 2011; Godinho et al., 2014, 2016). This decrease is not primarily due to cuts in the tree cover or replacement of the silvo-pastoral system by another land use system. It is caused by a progressive decline in the tree cover and a reduction in natural tree regeneration, and thus a reduction in tree density, which in turn leads to larger and larger openings in the Montado land cover (Almeida et al., 2013; Godinho et al., 2014, 2016). When the trees are missing or in too low density, there is an open grazing or shrub area, but the complementarity between grazing activities and the tree layer is lost, and the Montado has been dismantled as a silvo-pastoral system. Consequently, it is difficult to maintain the recovery of the tree cover, which traditionally regenerated by natural replacement of the old trees by young shoots

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(Acácio and Holmgren, 2012). Without the tree cover there is no Montado and the constraints imposed by the natural environment are a strong limiting factor for other regeneration actions or for other uses. As it has been proved in other situations throughout the world, the degradation of forest ecosystems due to tree cover loss and fragmentation has long-lasting and negative environmental consequences, such as species extinction, water and soil quality degradation, and invasive species, and is therefore a subject of upmost concern in terms of public policy (Hartel and Plieninger 2014; Liu et al., 2016).

Previous studies have shown how the trend towards an intensification and specialization of livestock production in the Montado is closely related to the decay of the tree canopy in the grazing areas, and thus the decline of the system (Godinho et al., 2014, 2016; Moreno et al., 2014). Even if other factors also played a role, the Common Agricultural Policy (CAP) and its specific application to Portugal have been seen as the main driver for this intensification in the last two decades: livestock payments have remained coupled to the total number of animals and cattle payments have progressively increased while sheep payments are kept rather low (Almeida et al., 2013; Guerra et al., 2015; Guerra et al., 2014). There are thus different and simultaneous changes which contribute to increased pressures on the tree cover and on the grazing resources in the Montado: replacement of sheep by cattle, replacement of light indigenous breeds of cattle by heavier breeds, increase in the number of cattle heads, and shrub control practices using heavy machinery. While the former lead to exhaustion of the natural pastures, disappearance of the young tree shoots, damage to the young trees, and soil compaction, the latter affects the system as it leads mainly to severe damage to the tree root system. The national discourse within the farming sector, following the specialization paradigm, has contributed towards reinforcing the intensification effect driven by the CAP (Fragoso et al., 2011; Pinto-Correia and Godinho, 2013).

Nevertheless, analyses of the processes of change in land use and landscape sciences tell us that policies and sector orientations do not directly affect the landscape or land use; they affect the farmers, who take decisions that affect and alter said land use and landscape. In order to understand how policies affect the farm and interplay with other factors, the analysis needs to emphasize the role of the farmer (Herzfeld and Jongeneel, 2012). Farmers take decisions according to a complex value system and management strategy. Therefore, the farm systems approach considers the farm as a unit composed of the farmer and his mental models, preferences, goals, abilities, etc., and the physical farm, with a variety of subsystems that include animals, crops, buildings, finances, etc. (Darnhofer et al., 2012; Milestad et al., 2012). The theoretical background developed by social sciences on farm systems helps us to understand the positioning of the farmer, or land manager, in the complex system of his or her farm and dealing with the institutional framework to which he/she is subject (Cochet, 2012; Schermer et al., 2016; Herzfeld and Jongeneel, 2012; Noe et al., 2008). Thus, understanding processes of change in complex land use systems such as the Montado, which ultimately also affect the landscape, requires an in-depth understanding of the farmer's decision-making processes (Darnhofer et al., 2012).

This is what this paper is about. The goal of the paper is to bring forward an analysis of the decision-making process characteristics of Montado landowners today. The paper aims to shed light on the different representations that the landowners have of this system and the existing convergence, but also conflict, between their value set and actions, ultimately constituting a framework for the difficult conservation of a balanced Montado. In order to address these issues, the paper is based on an empirical analysis undertaken in central Alentejo, in the municipality of Montemor-o-Novo, where the Montado still comprises 60% of the municipality's total utilized agricultural area.

2. Material and methods

2.1. The case-study

Located in the region of Alentejo (Southern Portugal), with an area of 1,232.1 km^2 and a population density of 15.1 hab/km^2, the conditions in the municipality of Montemor-o-Novo (Fig. 1) are generally favourable to silvo-pastoral production. The climate is typically Mediterranean, with marked differences between the dry season and the rainy season temperature ranges. However, due to the municipality's location, less than 100 km from the coastline, there is high precipitation and mild temperatures compared with southern Portugal as a whole. Likewise, there is a predominance of granite mother-rock and relatively deep soils in comparison to the average in Alentejo. Despite the presence of significant rugged surface areas, the landscape is dominated by plains.

As in the whole of Alentejo, the Montado farms are mainly large-scale, family-owned estates between 100 and 1000 ha, and in some cases between 50 and 100 ha. The Montado rarely covers the total area of the farm, though it usually covers the largest part – the remaining open pastures – which are also used for the livestock production. Usually, this primary activity is combined with cork and wood production, as well as with annual crops used for forage. As a testament to the high nature value of many of the Montado areas, the municipality land partially falls under two Nature 2000 sites: Cabrela (15% of the municipality) and Monfurado (13% of the municipality).

Most frequently, farmers have inherited the farm as direct successors or through marriage. In some cases the land has been bought recently or is leased from the traditional owners. Montemor-o-Novo is the municipality in Portugal with the highest proportion of farmers with a university degree, and also a more favourable demographic distribution than the Portuguese average: 40% of the farmers are over 65 years old, while at the national level this rate is 52%. This profile of more educated and younger farmers than the national average can be explained by a combination of factors, but the proximity of the metropolitan area of Lisbon (100 km) surely contributes to the higher capacity of the municipality to attract and maintain younger and well-educated families.

2.2. Methods

The analysis is based on in-depth interviews with selected Montado farmers in the municipality of Montemor-o-Novo.

Prior to these interviews, in a first step of the analysis, a detailed survey of the farms' and farmers' characteristics was applied to a representative sample of the farms in the municipality. From a total of 865 farm units in the municipality, 328 have more than 50 ha, and are thus likely to be Montado farms or farms where the Montado land cover is significant. In the first step, 51 of these large farm units, spatially distributed in the whole municipality territory, were surveyed.

The first step survey concerned farm and farmer characteristics, farmer management options and his/her attitudes towards farming, the environment, the market and public policy. A cluster analysis of the results has led to the identification of three types of Montado farmers: 1) productivist livestock farmers (58%), 2) entrepreneur cattle farmers (35%), and 3) multifunctional innovative (7%) (Almeida et al., 2013; Barroso and Pinto-Correia, 2014). The productivist livestock farmers are mainly full-time farmers, highly focused on increasing production and thereby increasing their income, highly determined by the CAP payments of the 1st