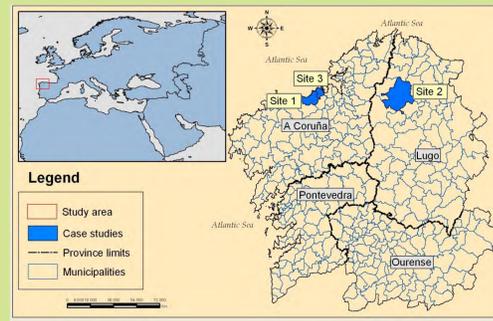


Long-term dynamics analysis of the agras cultural landscapes in Northern Spain
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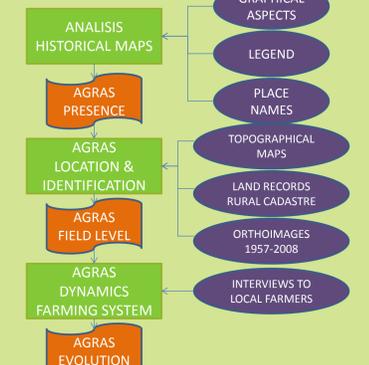
Abstract

In this research we present some results of using an integrative approach for the analysis of long term dynamics of *agras* cultural landscapes. Our approach involved the integration in a GIS of historical records, with geodatasets of place names, orthoimages and local knowledge. The three case studies were chosen from historical maps of the 18th century, with toponymy referring to *agras* and depicting explicitly this field system. The first historical map shows a highly detailed representation of the *Agra de Balai*. It has kept its original shape and boundaries though its agricultural use has mostly been abandoned. In 1957, this *agra* was still used as cropland, while the 2008 orthoimage shows the conversion to woodland and to scrubland in more than half of its extent. The second map shows roughly the location and extension of the *agras* or *Villares de Bosende & Pradieiro*, as well as other landscape features, such as landmarks and wetlands. Here, we were able to identify in the terrain and study the *agras* at plot level since the toponymy was kept in current land property records. We also learned about the farming system and recent dynamics by interviewing a local farmer. As in the previous case, we observed that part of the *agras* are being reforested, though here cropland still occupies more than 70% of their extent. Tree hedgerows marking the outer border of the *agras* have been preserved, as well as the access paths leading to the plots inside the *agras*. To some extent, traditional cereal rotations are also still in use. In the third case, the historical map displays the location and extent of the *Agra do Canaleiro*, *Agra de Mesoiro* and *Agra de Currelos*. The loss of toponymy, as well as the intense landscape transformation since 1957 from cropland to industrial uses, makes only possible an approximate identification of the location of these past landscape features. As a conclusion, we observe that despite agricultural modernization some features of the traditional *agras* landscapes are still kept as long as the agricultural use is maintained. Moreover, availability and quality of data seem to be key factors for identifying cultural landscape features in the field and therefore, for analyzing their dynamics.

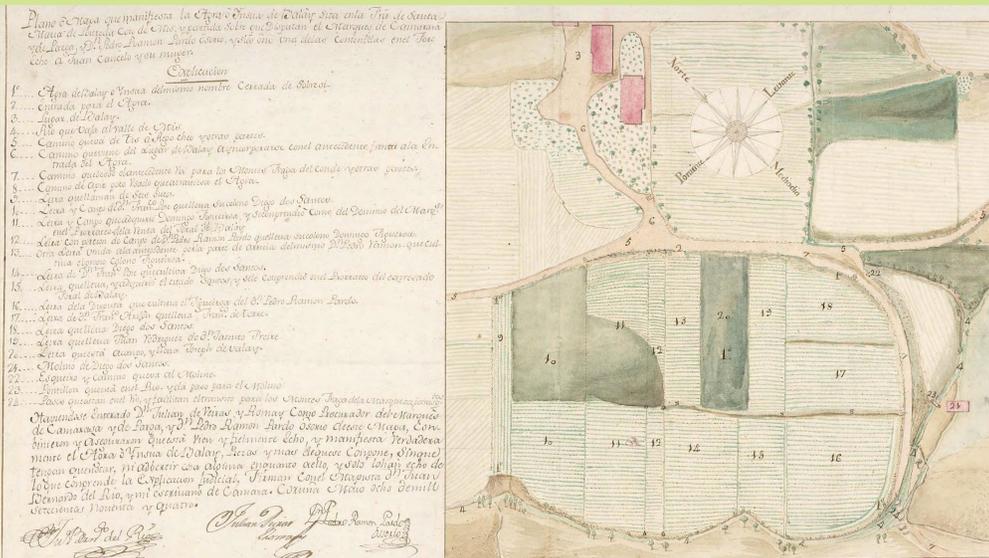
Study area



Methods



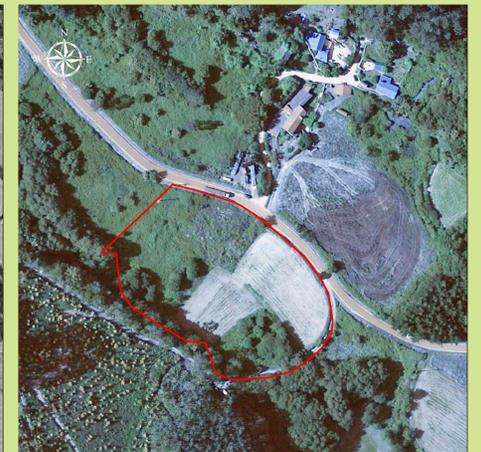
Case study I: Agra de Balai (Arteixo)



1957

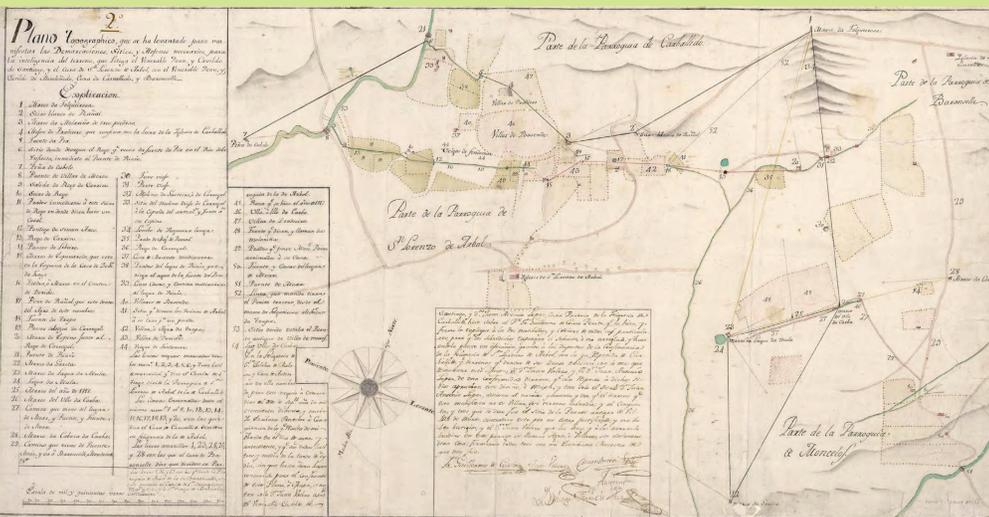


2008



This map is the example with more detailed representation of an *agra* we have found so far. It shows the internal division of the *agra* in open plots, its agricultural use, boundaries and access paths of the *Agra de Balai*. The orthoimage of 1957 shows that part of the *agra* was cultivated (bright colour) while the remaining land was either kept as fallow or meadow at the time of the image was taken. In 2008 is noticeable that the *agra* has kept its original shape and boundaries though its agricultural use is in decline. It is noticeable the conversion to woodland and to scrubland in more than half of its extent.

Case Study II: Villares de Bosende and Pradieiro (Vilalba)



1957



2008



In 1957 the *agras* were still using the traditional system of cereal rotation. It is noted that the *agra de Bosende* was managed homogeneously by the farmers' community at the time the orthoimage was taken, while in the *agra de Pradieiro* agricultural uses were more heterogeneous (difference in brightness). As in the previous case, we observed that in 2008 part of the *agras* are being reforested, though here cropland still occupies more than 70% of their extent. Tree hedgerows marking the outer border of the *agras* have been preserved, as well as the access paths leading to the plots inside the *agras*. To some extent, traditional cereal rotations are also still in use as indicated by the farmer.

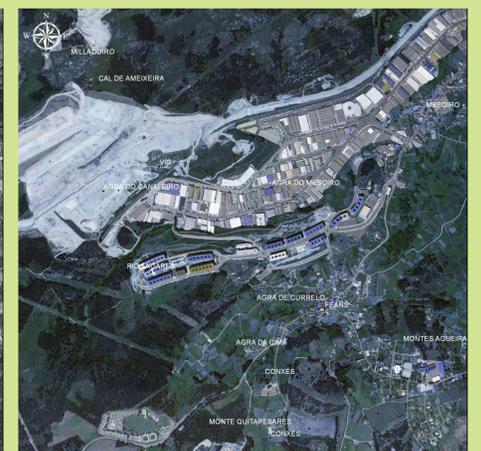
Case Study III: Agra de Canaleiro, Agra de Mesoiro and Agra de Currelos (Coruña)



1957



2008



The 1957 orthoimage shows that in this period the *agras* were still mostly used as cropland (bright colours). In 2008 the *Agra do Canaleiro* and *Agra do Mesoiro* disappeared as the area was turned into an industrial area. The other *agras* have kept the agricultural use though cropland has been replaced in many cases by permanent grassland. The loss of toponymy, as well as the intense landscape transformation since 1957 from cropland to industrial uses, makes only possible an approximate identification of the location of these *agras*.

Here we see in detail agricultural uses such as meadows, orchards, and permanent cropland, in particular it is shown the location and extent of three agras: the *Agra do Canaleiro*, *Agra de Mesoiro* and *Agra de Currelos*. Due to the lack of legibility of the legend we could only analyse the graphical aspects of the map. Typically, the *agras* occupy larger areas in comparison to the other agricultural uses.

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