The Archaeobotanical Study of Agriculture of Roman Peasants: Skilled Farmers of the 1st BC–5th AD in Tuscany, Central Italy

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Introduction

This paper focuses on the archaeobotanical study of small farmhouses and rural facilities on Roman sites in central Italy studied in the framework of the Roman Peasant Project. These rural sites were probably occupied during seasonal agricultural activities. The integrated analyses of pollen, non-pollen palynomorphs, charcoal particles, charcoal macroremains and seeds/fruits allowed us to obtain information on site function, associated land use, and the palaeoenvironment of these archaeological contexts. The landscape we deal with was open, sparsely wooded, and mainly consisted of pasture, and cereal and legume fields. Past economies were largely based on cultivation, animal breeding, and wood exploitation that induced changes in the plant cover by reducing trees and favouring crops and pasture plants. As agriculture basically consists of plant management and the control of fruit production and plant cycles, botanists are indispensable for the study of the actual functioning of the rural economies of the past. Such studies are preferably done in close cooperation with archaeologists working on the rural landscape. Moreover, the study of plant remains from archaeological layers is extremely useful when aiming at diachronic reconstructions of environmental changes, including the transformation of land use at the local scale.[1] Pollen and plant remains preserved from archaeological sites are the direct evidence of plants that lived as part of Nature or were manipulated as objects of Culture in the past.

In 2010, we started a botanical research on archaeological sites of central Italy within a multi-disciplinary archaeological project, the Roman Peasant Project, that focused on lower-class rural dwellers of southern Tuscany, under the direction of K. Bowes.[2] The Roman Peasant Project was begun in 2009 as a systematic investigation of Roman non-élites in the municipality of Cinigiano (Grosseto, southern Tuscany). The project started from the results of a surface survey carried out by M. Ghisleni during her PhD research, alongside the excavation of a cross-section of the smallest/poorest of these sites; the goal was to illuminate the complexity of Roman peasant life-ways and environmental interactions.[3] Then, it developed into an interdisciplinary project aiming to produce descriptions of the landscape and agrarian activity, and above all, to evaluate the diversity of what it meant to be "poor" in antiquity. Small farmhouses and rural facilities were studied in order to contribute to the understanding of agricultural development during Roman times.[4] Our archaeobotanical studies focused on environmental variables and

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habitat diversity of seven sites: Case Nuove, Colle Massari, Podere Marzuolo, Podere Terrato, Poggio dell'Amore, and San Martino, Tombarelle.

Methods

The investigated archaeological contexts lie upon gentle slopes in a rolling landscape of Mio-Pliocene clays which is dissected down to the level of the intermediate terrace of the Orcia-Ombrone river system. These constitute small rural sites, probably only occupied for seasonal activities during the 1st century BC to the 5th century AD. The sites represent a whole range of functions (e.g. temporary work area or barn, drain, agro-processing point, permanent habitation) that show a great human control over the surrounding productive landscape that required investment of labour and materials. Labour investment appears to be highly concentrated in time, especially from the end of the 1st century BC to the mid-1st century AD. Plant remains (pollen, non-pollen palynomorphs, charcoal particles, and seeds and fruits) revealed functions of the sites as well as the environmental conditions for living and producing in this landscape.[5]

We studied 87 pollen samples and 84 samples containing macroremains. These were taken from a variety of contexts together representing a cross-section of the size and typology of the archaeological sites recorded. From each site the stratigraphy was taken into account; when possible, we collected pollen samples inside and outside the structures to compare airborne pollen deposited in the open with pollen transported into closed spaces. Pollen extraction included sieving and flotation that concentrated the grains even in sediments poor in organic matter.[6] Our aims were to analyse as many samples as we could to contribute to the understanding of the function of each site, while taking into account all the sites as constituent parts of the agrarian landscape of the region.[7] Samples of macroremains were systematically floated and sieved during the excavation. Macroremains, however, do not preserve well in calcareous/basic sediments and most of the results were obtained from pollen analyses.

Pollen was quite common with variable concentrations depending on its preservation and the presence of organic matter in the sediments. The floristic composition of pollen spectra gave good indications for the different uses of the sites. For example, plant diversity reflected the cultivation of cereal and legume crops.

The Case Studies of Case Nuove and San Martino

We discuss two sites taken as examples of the very different amounts and types of samples we studied from each site: Case Nuove and San Martino.[8]

Case Nuove was a small, open-air agro-processing point on a hilltop; there was a surface for foot-treading, a tank with a press, a deep well, and a dump of *dolia* remains.

Residue analyses indicated plant processing (tartaric and other acids in the *dolia;* possibly oil in the tank). Obtaining environmental data from the late Republican phase was hampered by the fact that no pollen could be collected from the use-phase layers due to the disturbance of the strata. Thus, the pollen information comes from a late antique rubbish pit representing only one phase (5th AD), whereas the macroremains and charcoal data come from both phases (1st BC and 5th AD). The landscape and woodland composition were characterised by a high diversity of species, corresponding to a fairly diverse environment with low forest cover. Pasture was a major part of the landscape around the site in late antiquity, but fields also were common. Among herb plants, cereals were the most significant, representing ca. 5% of the total pollen in the spectra. Pollen from cultivated woody plants was found in the late antique rubbish pit and included traces of *Olea, Vitis* and *Castanea.* Macroremains included also traces of *Juglans*-walnut, and some recordings of *Olea* and *Vitis.* The charcoal record, however, included only oak wood, and some unidentifiable charcoal fragments. This is in line with what one would expect, as olive trees and grapevines were prevalently exploited for fruits rather than for wood. The composition of cereals was quite varied and this is also evident from the macroremains, which point to a mixed cereal-producing regime: wheat species alternate or are grown alongside more drought-resistant types like barley.

Based on the pollen diagram and combining the botanical and archaeological evidence, and taking into account the geomorphology of the small hill, we concluded that the economic plants most likely were transported for processing to the top of Case Nuove. These plants prevalently consisted of cereals of different species, legumes, olives, and grapes. As the plant accumulations (pollen or fruits) found are limited, the amount of harvested yields transported to the top for processing will have been modest. There is evidence that the winnowing of cereals was practiced because the remains of chaff were found together with a high amount of pollen grains as discharge elements thrown in the late antique rubbish pit. We found that most land was devoted to pasture and that this practice was carried out through the entire use history of this site.

As cereals are processed in early summer and olive and grape fruits in autumn, the archaeobotanical evidence suggests that the site was used according to the seasons and their different agricultural harvests. Combining pollen, fungi, microcharcoal and plant macroremains, we assume that the farmers burnt any left-over rubbish and threw what remained in the pit to clean the site when processing activities were terminated. In fact, the majority of the macroremains, found in the top layer of the square pit, consisted of crop plants that were largely found charred. The place may have been periodically cleaned with small fires, but the fire cannot have been so prolonged as to destroy all the pollen in the deposit (as in fireplaces).

Very different from Case Nuove, San Martino was a small, single phase temporary or seasonal-use site. The structure's architecture suggests a modest investment consistent

with a structure designed for sporadic use. The structure probably had a single pitched roof, possibly in straw. The house seems to have had no hearth, no water storage, and ceramics and fauna were extremely poor.

Pollen of cereals was present but not as abundant as at Case Nuove. Interestingly, we observed that the amount of cereal pollen was higher outside than inside the small structure. Present were also pollen and macroremains of legumes like *Hedysarum, Medicago, Melilotus* and *Trifolium,* which are fodder plants. The diversity of pasture-grazing plant species, which includes high values of Cichorieae pollen, suggests that pastures covered an important part of the landscape all around the site.

Therefore, the most definitive evidence for the site's function comes from the botanical data. The combined presence of pollen of Cichoriae and Fabaceae, the presence of coprophilous fungi and parasite eggs associated with herbivore dung all strongly point to the use of the structure for animal stabling. The considerable quantities of algae in this context may have been transported with the water they drunk. Given the size of the structure those animals would likely have been sheep and/or goats. On account of the strong presence of pasture, as well as the absence of other nearby structures, it seems likely the structure was used sporadically rather than as a permanent stable.

Concluding Remarks

The landscape of the area covered by the Roman Peasant Project was rich in different habitats and humans brought *in situ* plants here from diverse vegetation types and belts. Although each site is 'locally disturbed' because human activities strongly influenced the pollen spectra, we considered data from all the sites in combination to obtain a landscape reconstruction of the area based on a set of pollen sums referring to natural and human-induced environments.

The forest cover was low everywhere, and this suggests that the sites were located in open environments; the woodlands included conifer woods, oak woods, possibly mixed, and Mediterranean shrub lands. Such woodland was, however, located quite distant from the sites we discussed. Besides the oak-*Quercus* and beech-*Fagus* that we found in the form of charcoal and thus used as firewood and for building purposes, we also recorded a number of wild woody species that were used as a food resource, such as *Corylus, Cornus, Pistacia, Sambucus* and *Prunus.* The latter we counted as pollen in the samples.

Hygrophilous woods grew nearer to the sites, and we infer that wet environments were present everywhere. The landscape we are dealing with was a particularly groundwater rich area that proved both a benefit and a challenge. Sites may have been chosen to take advantage of local groundwater for agricultural purposes, and multiple perennial springs occuring in the area. However, this required careful draining and management as demonstrated by the need to dig a drain.

In the local human environments there were cereal fields and, as we saw, some plant processing occurred at Case Nuove and at other small sites in the area. Significant values of legumes suggest that some fields were cultivated for producing forage. Probably legumes rotated with cereals. The high amount of Cichorieae points both to the presence of pasturelands and to the presence of weeds developing in abandoned fields during the dry season (late summer). Among the other pollen taxa, in addition to evidence for plants of forests and grasslands, we found also evidence for many synanthropic and pasture-grazing plants. This suggests that dry pastures covered an important part of these lands, around and in the vicinity of the sites.

To conclude, according to the data produced from our interdisciplinary research and direct evidence from botany, the Roman sites recorded in the Roman Peasant Project were located in a landscape characterized by patches of fields and pastures. These were simultaneously present in an open and water-rich landscape that was intensively exploited and managed by peasant people who were skilled farmers.

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Notes

[1] Mercuri 2014; Mercuri et al. 2015.

[2] Bowes et al. 2011.

[3] Bowes et al. 2011.

[4] Bowes et al. 2017.

[5] Rattighieri et al. 2013; Bowes et al. 2015.

[6] Florenzano et al. 2012.

[7] Bowes et al. 2015.

[8] Bowes et al. 2015; Vaccaro et al. 2015; Mercuri et al. 2018.

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