



# Humans and environmental sustainability: Lessons from the past ecosystems of Europe and Northern Africa

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## **The environmental perspective from the Late Antique contexts of Villa del Casale and Philosophiana (central Sicily, S Italy)**

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### **Introduction**

Villa del Casale and Philosophiana are archaeological sites very close from each other and located in Sicily, southern Italy. They are among the best evidence of rural contexts of the Roman period in the island (Vaccaro 2013). These sites have been recently studied with focus to the end of 3<sup>rd</sup> until the 7<sup>th</sup> century AD, a time frame that was critical for the transition of different cultures. Archaeological researches, in fact, attest that human activity has strongly interested central Sicily since the beginning of the Roman Imperial Age, and has reached its acme in the Byzantine period. Based on interdisciplinary projects, the on-site palynological analyses allowed to obtain the reconstruction of the agrarian and cultural landscape of this area in the centre of the Mediterranean basin during Late Antiquity. This poster presents the data which were recently published by Mercuri et al. (2017 online).

### **Materials and Methods**

Among the numerous pollen samples collected from the layers of Villa del Casale (VdC) and Philosophiana (Ph) during several field seasons, pollen samples dating to Late Antiquity were selected to study the plant landscape of the area during about five centuries. Chronology was based on archaeological data, i.e. architecture (building techniques), stratigraphy and, above all, the archaeological findings.

The 27 VdC samples come from 5 trenches unearthed in different points of the site, and of about 50 to 200 cm depth; the 12 Ph samples comes from a sequence cut in the northern sector of the site. Sub-samples of about 5–10 g of sediment were treated for pollen extraction with a method including sieving and heavy liquid separation. Pollen sum includes all pollen counted. The ‘OJC’ and the ‘API’ groups are calculated according to Mercuri et al. (2013a, b). The first includes the trees that follow the development of cultural landscapes in Italy (*Olea*, *Juglans*, *Castanea*), and the second includes Cichorieae plus the other six ubiquitous taxa in archaeological sites of Italy (*Artemisia*, *Centaurea*, *Plantago*, *Trifolium* type, *Urtica*, cereals).

### **Results and Discussion**

Pollen shows that the landscape of these sites was characterised by low forest cover (10%) and many signs of human environments. Most of the pollen spectra are dominated, in fact, by anthropogenic indicators of pasturelands/breeding like Cichorieae (>50%) followed by Poaceae-wild group (12%), and other anthropogenic pollen indicators like Brassicaceae (4%) and Chenopodiaceae (3%). Data point to human-shaped environments producing cereal-type (2%) and grassland pollen grains, both included in the API sum with a number of wild synanthropic plants (other API: 6%). Pollen spectra of Philosophiana have a higher presence of cereals (Ph

3%, VdC 1%), showing the important role of cereal fields in the Late Antique economy of the area.

From the pollen spectra is also evident the OJC group (1%), present in many samples. In particular, there is evidence of *Olea* as arboreal crop production in the 3<sup>rd</sup> century AD (3% maximum value in VdC and 2% in Ph). Concerning *Vitis*, the grapevine pollen record may have a different interpretation in the two sites: an agrarian product in the Philosophiana farmhouse (0.4%), and ornamental lianas with edible fruits in the Villa (Montecchi and Mercuri 2016).

## Conclusions

Pollen and archaeological information confirm that this central Sicily area had the role of major producer of cereal foodstuffs. Our data support the idea of continuity of the agrarian landscape during the Late Antiquity. In fact, spreading of anthropogenic environments, where tree crops and cereals were cultivated, probably in alternation with pasturelands, marked the land use of this area. In addition and more specifically, ornamental and shade plants were concentrated in the luxury villa, while fruit trees and agrarian activities were more evident in Philosophiana. We assume that the centuries from the 3<sup>rd</sup> to 7<sup>th</sup> century AD represent a key phase to understand changes in the past vegetation to the modern landscape of this island (Mercuri et al. 2017 online).

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