



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

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UNDER THE PATRONAGE OF



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The plant landscape of Roman Tuscany and the peasant agricultural strategies in the Cinigiano area (central Italy)

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Introduction

In Cinigiano (Grosseto, southern Tuscany, Italy), the archaeobotanical study of small rural sites have been investigated to understand the relationships between Roman peasant farmers and the environment of central Italy. The research was carried out within an interdisciplinary project, the Roman Peasant Project, that addressed the lives of Roman rural smallholders (Bowes et al. 2011, 2017). Microscopical and macroscopical plant remains were collected from 8 sites and interpreted in the context of their archaeological and chronological frameworks (Rattighieri et al. 2013; Bowes et al. 2015).

The archaeobotanical material describes a period of intensive land use in the late Republican/early Imperial period, with possible use of convertible agriculture strategies.

Materials and Methods

Pollen, non-pollen palynomorphs (fungi and algae) and plant macroremains (seeds/fruits and charcoals) were taken from seven rural sites. All plant records are important palaeoethnological and palaeoecological indicators for environmental reconstructions. Pollen samples were treated according to the routine method for pollen analyses in use in the laboratory of Modena (Florenzano et al. 2012). Pollen was collected through syringe extraction from newly cleaned sections, as well from non-archaeological contexts to obtain near-site background levels. The treatment of 5–10 g of dry sediment per sample included the sieving through a 7-mm nylon sieve and heavy liquid separation with sodium metatungstate hydrate. *Lycopodium* tablets were added to calculate concentrations per gram.

All stratigraphically significant contexts were wet-sieved for plant macro-remains with sieves of 10, 0.5 and 0.2 mm. Seeds and fruits from each fraction were sorted under a Wild M10 stereomicroscope. The identification was made at 80 x magnifications with the reference collection, atlases and keys.

Results and Discussion

Pollen was found with variable concentration (~9000 p/g on general average) depending on the variable amount of organic matter; low preservation conditions were quite common in these archaeological layers. Pollen spectra show open areas, with scanty woodlands (AP/NAP = 13/87 on average) and presence of wet environments in the area. Grasslands and fields were part of the agricultural system. Cereals (4.5% on average) were distinguished in pollen and macro-remains and included a mixture of types: barley, rye and *Avena/Triticum* group among pollen, *Triticum aestivum/turgidum*, *T. dicoccum*, *Hordeum* group and *T. monococcum* as macroremains. The significant presence of pasture indicator pollen, mainly Cichorieae and also *Aster* type,

Centaurea nigra type, Ranunculaceae and *Potentilla*, indicates specifically pastures and animal breeding that constituted large part of the agrarian economy.

Conclusions

Altogether, the archaeobotanical data from the small agro-processing and farm sites show that the Roman-period occupation was mostly marked by a well-developed and complex agrarian landscape. These archaeobotanical data describe a sophisticated micro-management of the land including intensive agricultural systems with cultivation and breeding activities. Pollen evidence points towards a great importance of the animal husbandry as large part of land was allocated to a grazed pasture (Bowes et al. 2015).

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