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The Botanical Record of Archaeobotany Italian Network - BRAIN: a cooperative network, database and website*

Abstract

Mariotti Lippi, M., Florenzano, A., Rinaldi, R., Allevato, E., Arobba, D., Bacchetta, G., Bal, M. C., Bandini Mazzanti, M., Benatti, A., Beneš, J., Bosi, G., Buonincontri, M., Caramiello, R., Castelletti, L., Castiglioni, E., Celant, A., Clò, E., Costantini, L., Di Pasquale, G., Di Rita, F., Fiorentino, G., Furlanetto, G., Giardini, M., Grillo, O., Guido, M., Herchenbach, M., Magri, D., Marchesini, M., Maritan, M., Marvelli, S., Masi, A., Miola, A., Montanari, C., Montecchi, M. C., Motella, S., Nisbet, R., Orrù, M., Peña-Chocarro, L., Pepe, C., Perego, R., Rattighieri, E., Ravazzi, C., Rottoli, M., Rowan, E., Sabato, D., Sadori, L., Sarigu, M., Torri, P., Ucchesu M. & Mercuri, A.M.: The Botanical Record of Archaeobotany Italian Network - BRAIN: a cooperative network, database and website. — Bocconea 28: 341-352. 2019. — ISSN: 1120-4060 printed, 2280-3882 online.

The BRAIN (Botanical Records of Archaeobotany Italian Network) database and network was developed by the cooperation of archaeobotanists working on Italian archaeological sites. Examples of recent research including pollen or other plant remains in analytical and synthetic papers are reported as an exemplar reference list. This paper retraces the main steps of the creation of BRAIN, from the scientific need for the first research cooperation to the website which has a free online access since 2015.

Key words: archaeobotany, network, database, Italy, Mediterranean.

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Introduction

Italy is an extraordinary cradle of cultural heritage located at the centre of the Mediterranean basin, hotspot of biodiversity, rich of habitats (Blasi 2010; Bartolucci & al. 2018) and scenery for incessant migrations and trade over the last millennia. Scholars from every side of the world come to this country to study the long-term coexistence between Culture and Nature, an interaction that has resulted in an uncountable number of archaeological sites.

Therefore, it is not a surprise that an interdisciplinary research field like archaeobotany, joining archaeology and botany, is so well developed that the study of pollen and other plant remains is more and more introduced in the archaeological projects planned in Italian sites (e.g. Roman Peasant Project: Bowes & al. 2015; SicTransit: www.sicilyintrasition.org) or considered in the vegetation history of the Mediterranean area (e.g. Mercuri & Sadori 2014; Fyfe & al. 2018). The archaeobotanical approach has been especially developed for the understanding of the relationships between people and environment, genesis and developing of cultural landscapes (De Pascale & al. 2006; Perego & al. 2011; Di Rita & Melis 2013; Di Rita & al. 2018), features and spread of cultivated species (Orrù & al. 2013; Sabato & al. 2015, 2017; Ucchesu & al. 2016, 2017; Bosi & al. 2017), links between plant processing and the religious value of food (Celant & Fiorentino 2017; Primavera & al. 2018), uses in medicinal preparations (Giachi & al. 2013), understanding of particular practices like metallurgy (Toffolo & al. 2018). The study of economic transformations under environmental/climate changes is investigated by considering plant exploitation and managing in prehistoric periods (de Marinis & al. 2005; Di Rita & al. 2010; Fiorentino & al. 2013; Cremaschi & al. 2016; Melis & al. 2018; Sadori 2018) and in historical ages (Greek: Florenzano 2016; Roman: Caramiello & al. 2013; Montecchi & Mercuri 2018; Moser & al. 2018; Bosi & al. 2018; Medieval and Renaissance: Bandini Mazzanti & al. 2005; Bosi & al. 2009; Rottoli 2014; Buonincontri & al. 2017). The research is usually highly interdisciplinary promoting a holistic and ecological approach to knowledge (Stagno & al. 2014; Vittori Antisari & al. 2016; Benvenuti & al. 2017; Arobba & al. 2018), also connecting palaeoecology with historical perspective (Izdebski & al. 2016), historical ecology (Moreno & Montanari 2008; Molinari & Montanari 2016), ecology (Marignani & al. 2017) and conservation themes (Bosi & al. 2015; Piovesan & al. 2018). Land cover and land use are explored in interdisciplinary investigations carried out through the analyses of pollen, non-pollen palynomorphs, microcharcoals, seeds and fruits, woods/charcoals, and less frequently via starch grains, phytoliths and other plant parts (Revedin & al. 2010; Guido & al. 2013; Mariotti Lippi & al. 2015; Pini & al. 2016a, 2016b; Mariotti Lippi & al. 2017). The research demonstrates that palynology is not only able to reconstruct long-term and regional vegetation history (Sadori & al. 2013), as well as the fire history of certain regions (e.g. Lago di Como: Martinelli & al. 2017), but this versatile science is also useful to known the ‘where, when and how’ of cultural landscapes development at ecological, formal and cognitive levels (Mercuri 2014). Indeed, the different approaches complement each other, highlighting the power of archaeobotany as a basic tool in reconstructing the history of past cultures and societies (Sadori & al. 2010; Celant & al. 2015).

From the scientific cooperation to the network

In 2014, the 9th EPPC European Palaeobotanical and Palynological Conference was held in Padua and saw the joint action of many Italian scholars in the fields of palaeobotany, palynology and archaeobotany. This stimulated the preparation of the book 'La Storia delle piante fossili in Italia/Palaeobotany of Italy' (Kustatscher & al. 2014) which deals with the long and illustrious history of the Italian palaeobotanical studies and the classical and modern methods for analyzing plant remains. The last paper of this book (Mariotti Lippi & al. 2014) consists of the first synthesis on the main researches (more than 200 research papers) and approaches on the botanical investigation on archaeological sites in Italy.

In this central Mediterranean country, archaeobotany was born during the first half of the 18th century when plant remains from archaeological excavations of the Vesuvian area became the focus of interest for a number of scholars (Borgongino 2006). The well-preserved plant remains were exhibited in Palazzo Caramanico (the Royal Palace) at Portici, near Naples. Starting with the researches in Palaeolithic sites, which shed light on the diet of the hunter-gatherer populations, the paper takes into consideration the origin of agriculture, the plant resource exploitation and human impact in the Bronze Age and Iron Age, cultivation and landscape management during the Roman Period up to the Middle Ages.

As an output of that congress, moreover, a volume on 'Changing flora and vegetation in Italy through time' was edited by Bertini & al. (2015) as special issue of the Review of Palaeobotany and Palynology hosted seventeen papers/syntheses on Permian and Triassic, Jurassic, Messinian, up to Pliocene, Pleistocene and Holocene vegetation history, probably one of the best examples of trans-chronological overview of Palaeobotany with high-level scientific examples. Three papers especially focused on archaeobotanical general (Roman harbours: Sadori & al. 2015) and site-centered themes (Fiorentino & Parra 2015; Mercuri & al. 2015a). Moreover, in a synthesis on the archaeobotanical research on Italian contexts (Mercuri & al. 2015b), fifteen archaeobotanist teams working on records collected from archaeological sites put together their data to write the first paper on the 'state of the art' of the archaeobotanical research in this country.

After that joint paper, the data collected were organised in a database that is free online and ready to be improved at www.brainplants.successoterra.net (formerly https://brainplants.unimore.it/index.html).

The database-network BRAIN

BRAIN - Botanical Record of Archaeobotany Italian Network was firstly introduced at the MedPalyno2015 Congress in Rome. It is a database of archaeobotanical research and analyses from archaeological sites in Italy. Under request, this database is now integrated with sites close to archaeological sites (off-sites, or near-sites: Mercuri & al. in press), and from sites located in the Mediterranean countries (Fig. 1).

Following the idea that archaeobotany is a key tool 'for the understanding of the biocultural diversity', the web site hosts the inventory of the archaeological researches including pollen, palynomorphs, seeds/fruits, wood, charcoals and other plant remains analyses,

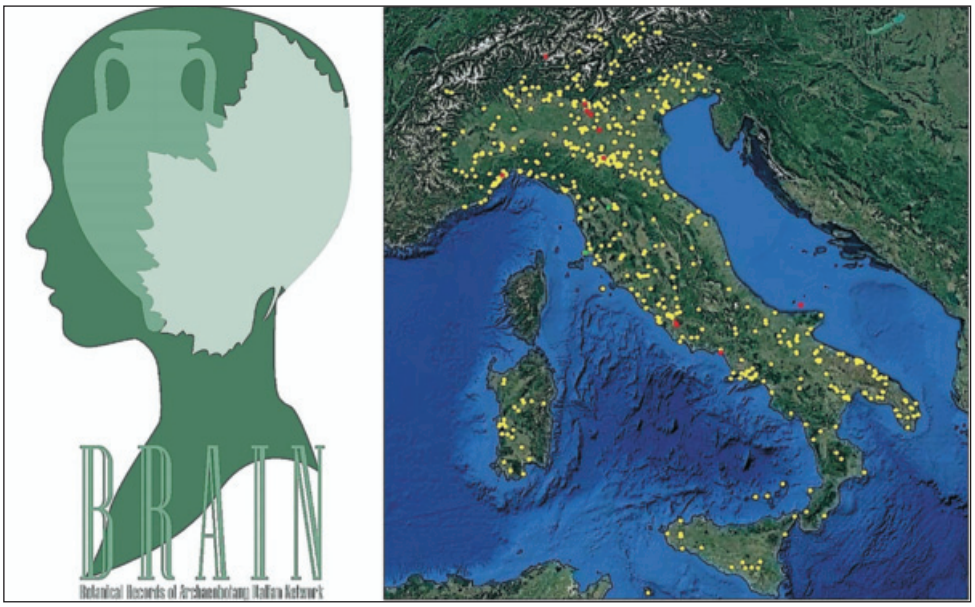

Fig. 1. BRAIN: The Logo (left) puts together humans and plants in one design whose profile recalls a female entity like science, botany and archaeobotany (by Serena Ferretti, Reggio Emilia). Distribution map of the sites in BRAIN (right).

fruitfully used to deepen the history of past vegetation, land cover, land-uses and palaeoethnobotany.

Currently, BRAIN includes >660 sites which has been object of archaeobotanical studies, among which 110 in Emilia Romagna, 74 in Apulia, 67 in Lombardy, 64 in Latium, and 39 in Tuscany. The studies have been mainly carried out on Neolithic (119), Bronze age (117), Iron Age (97), Roman (192), and Medieval contexts (119) (Fig. 2).

The website consists of six pages, two of which are especially dedicated to the database including Sites and References. Site position and density are immediately visible in a map while three graphs show updated statistics on the number of sites per area, or Cultural period, or type of plant remain. References may be sorted in alphabetical order, or author names. The first section included only On-sites; recently, three new sections were added: Off-sites, Spot records, and Extra-Italy. New contributors are welcomed.

BRAIN network is a useful instrument for both single and joint researches. The website is also a good way to publicize the impressive work done in the field of archaeobotany in the Italian on-sites (archaeological) or near-sites (human-related environmental sites) and makes the archaeobotanical data available for archaeological researches and studies on conservation and biodiversity on a long-term perspective.

The huge amount of data produced in the last few decades demonstrates that Botany has a key role in improving the knowledge of cultural/archaeological and natural heritage. The increase of the number of papers on archaeobotany (as evinced from BRAIN) shows the versatility and increasing importance of this science in the last years (Fig. 3).

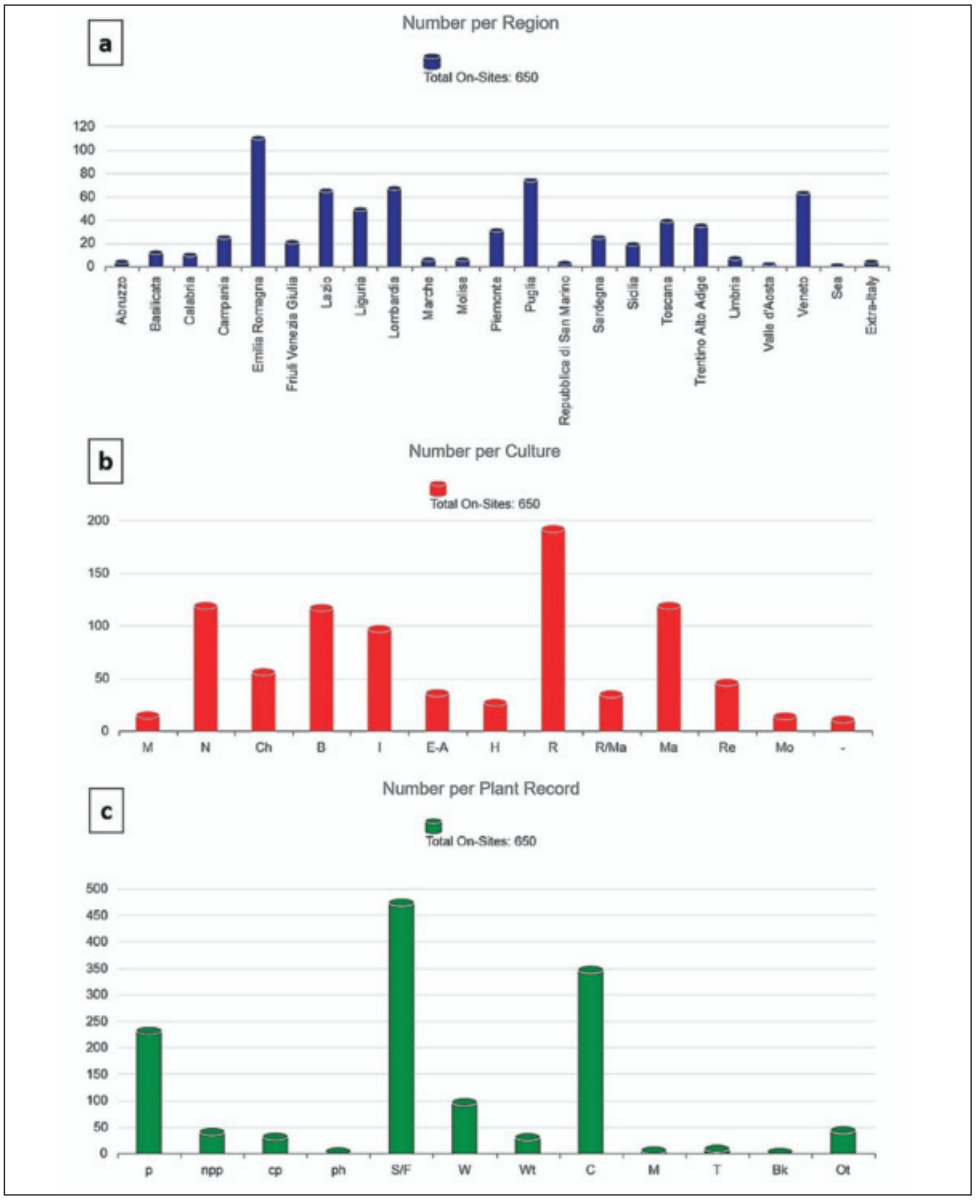

Fig. 2. BRAIN database: real-time statistics on the sites (retrieved October 12, 2018, from https://brainplants.unimore.it/sites.html): a) number of on-sites per region; b) on-sites per culture (M = Mesolithic; N = Neolithic; Ch = Chalcolithic; B = Bronze age; I = Iron age; E-A = Etruscan-Archaic period; H = Hellenistic period; R = Roman age; Ma = Medieval ages; Re = Renaissance; Mo = Modern age); c) on-sites per type of botanical record (p = pollen; npp = non-pollen palynomorphs; cp = micro-charcoal particles; ph = phytoliths; S/F = seed and fruit; W = wood; Wt = wood tool; C = charcoal; M = mould; T = textiles; Bk = basketry; Ot = adobe, bread or similar food, leaves and microsporophylls, mastic, moss, plant tissues, ropes, straw, wick).

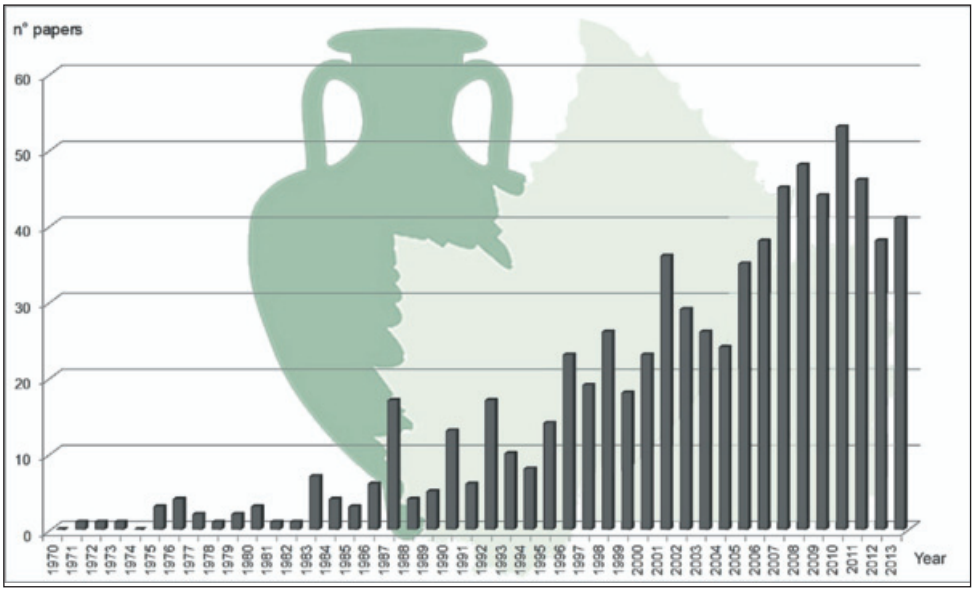

Fig. 3. Number of published archaeobotanical studies according to the list in the BRAIN website. Note the increase in time.

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MML and AMM planned the contribution and wrote the text, with the help of AF and RR; all Authors read and contributed to the synthesis.

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