Introduction

> In former generations people even got their surnames from trees . . . And in the matter of fruit-trees no less marvellous are many of those in the districts surrounding the city, the produce of which is every year knocked down to bids of 2000 sesterces per tree, a single tree yielding a larger return than farms used to do in old days. It was on this account that grafting, and the practice of adultery even by trees, was devised. . .
>
> (Plin., *NH* 17.7–8, trans. H. Rackham, Loeb edn)

This book investigates the cultural and political dimension of Roman arboriculture. Pliny the Elder's passage with which I have opened this section alludes to key themes treated in this study: the layered interactions between humans and plants ('people even got their surnames from trees'; humans devising grafting to cultivate fruit trees) and the reference to productivity (both agricultural and financial). These themes are framed by the apparatus of Roman moral discourse, with its set of contradictory stances (grafting, an essential practice in arboriculture, is here seen as introducing 'adultery' to trees).

Much has been written on Roman agriculture and agricultural practices, focusing especially on the Mediterranean triad of crops: grain, grape, and olive. However, the cultivation of other fruit trees has not received the same attention; this is only in part surprising if we think that even in the case of the fundamental cultivations making up the Mediterranean triad, scholarly studies have progressed in stages. In 1996, David Mattingly wrote that 'the olive has been consistently undervalued, overlooked, and underestimated in studies of the Roman world',[1] with viticulture and cereal culture receiving most attention. Since then, things have changed and many studies have dealt with oleiculture and the trade in olive oil, showing the importance of olive cultivation in the Roman agrarian

[1] Mattingly 1996, 213.

economy. This book aims at correcting this imbalance and investigates the cultivation of fruit trees, bringing into focus the role arboriculture had not only in respect to the economy, but above all in Roman cultural discourse.

Arboriculture had an unequivocal cultural role in the Roman world. In the late Republic, it was used to construct the public persona of many elite Romans; introducing new plants from faraway regions or developing new fruit varieties became part of the competitive display in which the upper classes engaged. Ancient texts tell of prominent figures, such as L. Licinius Lucullus and Pompey the Great, introducing new fruit trees into Italy, building large gardens and personally engaging in grafting. Exotic plants were also displayed as trophies in military triumphs, the plant being at once a symbol of a newly conquered region and, in the case of valuable plants, an indicator of the new revenues now under Roman control. Therefore, plants too were elements of the language of imperialism, while specific plant foods connected to distinct dietary habits could signify a particular social and cultural identity.

This book investigates Roman arboriculture and the associated movement of plants and fruit trees from one corner of the empire to the other from two convergent perspectives, the ideological, as revealed in the literary texts, and the practical, as revealed by archaeological data. On the one hand, we have the literary evidence – the agronomists, Pliny the Elder's *Naturalis Historia*, but also the compositions of poets such as Virgil, so texts written by elite writers for elite readers – clearly referring to fruit cultivation and the key techniques that go with it (e.g., grafting) in a highly symbolically charged manner. In such texts, arboriculture, in particular the creation of new fruit varieties, is largely presented as an occupation of prominent Romans, who experimented with selecting plants with specific traits and qualities. They grafted the trees in order to obtain new varieties that they then named; the new fig variety named after Pompey the Great, its *inventor*, is a possible example. Textual sources also preserve anecdotal references to the introduction of new plants, almost always from the eastern Mediterranean,[2] into Italy first and the provinces later. Such botanical acquisitions are remembered in the context of military campaigns, for instance L. Licinius Lucullus bringing the cherry tree to Italy from Pontus. Governors and military personnel deployed in a province also brought new plants or new cultivars back to Rome, as did L. Vitellius when he returned from his post as legate of Syria. These actions too have a symbolic meaning; they talk of botanical imperialism and of

[2] Several fruit trees and vegetables were first domesticated in the Far and Near East.

taking possession of everything a province has to offer, including its vegetal resources.

There is, however, a more practical underlying motivation: interest in the amelioration of the agricultural production of one's estate, in distinguishing it from what the neighbours and other peers were growing on their *fundi*. The desire to own something different could have been motivated by ostentation and by the search for personal satisfaction, but also by real financial considerations: growing a new type of fruit or a better variety of an existing fruit can give a commercial advantage on the market. Did the wealthy Romans make such considerations? The answer I offer in this book is that some certainly did; Pliny's text suggests so when alluding to the fact that naming new fruit varieties after their illustrious creator worked, ultimately, as an efficient marketing expedient.

The varied evidence examined in this book sketches a picture of large-scale arboriculture as a phenomenon, on the one hand, primarily driven by elite activity, and on the other as a consequence of imperialism. Not only were the wealthy the only ones to have the resources necessary for the investment needed by *large-scale* arboriculture, they also actively pursued the decorative potential of fruit trees, displaying them in their villa gardens. Display of wealth and status were essential to Roman elite life. Display was not limited to dress, domestic décor, number of properties, *clientes*, and so forth; it extended also to include the agricultural productivity of the villa, its wine cellar, the press rooms, and other stores. Orchards and fruit trees in ornamental gardens were on display to please the eyes and allude to the idea of agricultural productivity and skills of the *dominus* in controlling nature. Fruit-galleries were part of this 'culture of display'; Varro's description of Scrofa's *aporotheca* of course comes to mind, the setting for dinner parties.[3] Fruit trees in gardens of elite villas and houses were plants with which the various members of the household – from servants to guests – interacted in different ways. Sometimes mundane interactions with these trees are unexpectedly preserved in the archaeological record. Many years ago, during targeted excavations at Villa Sora near Herculaneum, a luxurious maritime villa which once sported a 150 metre long front, a curious find was made. While investigating the earlier archaeological phases under an *opus sectile* floor, in a fill containing many fragments of wall paintings, the archaeologists found a perfectly preserved apple core, the refuse from someone's snack.[4] It is a touching find that brings ancient daily life in front of our eyes. One can imagine a possible scenario: a worker or maybe a

[3] Varro, *Rust.* 1.59.2; Nelsestuen 2016. [4] Pagano 1991, 158.

supervisor overseeing the building works that were taking place at the villa, stretching a hand to pick an apple from a nearby tree and then tossing the core in the fill constituting one of the preparatory layers for a new floor.

The complex entanglement binding the metaphorical references to plants and agricultural techniques such as grafting and the practicalities of successful commercial arboriculture, however, cannot be fully understood without first understanding how, in the late Republic, green spaces and individual plants came to reflect elite ideology and aspirations. This type of 'plant–people entanglement'[5] is certainly not unique to ancient Rome. Many ancient civilizations vested plants with symbolic meanings, and in later historical periods too we find numerous cases of plants attracting the interest of the political and financial elites, from the botanical gardens created by colonial powers to the private gardens of the European ruling elites such as Joséphine Bonaparte's Château de Malmaison, with its exotic and rare plants, heated greenhouses, and *c.*250 varieties of roses.[6] Even today, plants can have powerful symbolism and considerable political cache. Consider Georgia's richest man and former prime minister Bidzina Ivanishvili. He has been intent on acquiring the oldest and tallest trees in the country, digging them out to transport them, by road and ship, to his residence in Tbilisi. The whole operation makes a statement about his financial means, but owning the oldest and tallest trees in the park of his residence is also a powerful symbol of how he sees his role in the country and how he wants to be seen.[7] The nationalistic drive of Turkey's president Recep Erdoğan offers another example of the political symbolism of plants. The removal of the archaeobotanical and reference study collections held by the British Institute at Ankara, in connection with a 2019 decree authorizing the government to assume control of local plants and seeds, sent an unequivocal message about control and the importance attached to Turkey's heritage, even in the case of archaeobotanical finds. While these finds from excavations in Turkey do ultimately belong to that country, it is clear that the removal of the collection is linked with the first lady's 'Ata Tohum' (Ancestral Seed)

[5] On plant–people entanglement and the materiality of plants, see Van der Veen 2014.

[6] See the official museum and park webpage: https://musees-nationaux-malmaison.fr/chateau-malmaison/en/park-malmaison (accessed 16 October 2020). Some 200 plants were grown in France for the first time by Joséphine in this garden.

[7] 'Georgia's new regime – Shallow roots', *The Economist*, 1–7 July 2017, 32–4. The article discusses the sociopolitical power he wields in Georgia and the caption to a photo of a tree being transported by ship reads 'the image of a 100-year old, 650-tonne tulip tree sailing over the water is an apt symbol for Mr Ivanishvili's role in Georgia' (p. 32).

Project which promotes the cultivation of genetically unmodified indigenous plants and agriculture as the key to Turkish national sovereignty.[8]

The motivations behind these contemporary actions and their symbolism are not that different from what occurred in ancient Rome. Rome's gardens and plants became an element of political competition. Roman gardens have been investigated from numerous perspectives: their relationship with the surrounding architecture of the *domus* or the villa; their social and religious use, for instance as a setting – imagined (in the case of literary works) or real – for the pursuit of cultured, Hellenized *otium* or for ritual offerings;[9] and their physical appearance. What plants were grown in Roman gardens, and what the relationship between real and painted gardens was, have been the object of several publications.[10] For the purpose of this study, I am exclusively concerned with the symbolic association between gardens and the public image of the owner. Plants chosen for a garden space could convey a number of meanings reflecting the owner's qualities and achievements, and this is a development that is very evident in the last decades of the Republic in the examples of Cicero's villa gardens, Pompey's public project (the Porticus Pompeii), or in Lucullus' *Horti*. This development is the necessary basis on which elite interest in importing new plants from newly conquered territories and in developing new plant varieties rested.

The Augustan era represents the culmination of the trends that had started in the late Republic, due to concurrent circumstances. The end of decades of civil wars and political turmoil meant that peace and, with time, prosperity were back. Ownership was no longer disrupted by mass proscriptions and violence, nor were the trade networks. Moreover, the standardization of weights and measures across Italy helped commerce while reducing transaction costs. In the agricultural realm, medium- and long-term planning – a fundamental requisite of arboriculture – could take place. The timings required for arboriculture are longer than for other types of cultivation. *Serit arbores, quae alteri saeclo prosint*, 'he plants the trees to serve another age', said Cicero, quoting Statius' famous words, to make the point about farmers who tirelessly labour at things which they know will not profit them but will come to fruition with the next

[8] Amberin Zaman, 'British archaeology falls prey to Turkey's nationalist drive', *Al-Monitor*, 7 October 2020, www.al-monitor.com/pulse/originals/2020/10/turkey-seed-bank-british-archaeobotanical-erdogan-ata-tohum.html#ixzz6b3a9ZuqP (accessed 7 October 2020).

[9] E.g., Robinson 2002; Giesecke 2007; Hartswick 2018; Morvillez 2018.

[10] E.g., Jashemski 1979–93; Ciarallo 2004, 2006; Farrar 1998; Landgren 2004; von Stackelberg 2009; various chapters in Jashemski *et al.* 2018.

generation.[11] Even if, as we shall see, thanks to vegetative propagation techniques the time needed for arboricultural cultivation was not always this long, commitment to large-scale fruit cultivation needs stability, in terms of both property rights and market demands. Therefore, the positive impact the establishment of the *pax Augusta* had on horticultural productions should not be underestimated.

We know that, of course, cultivating fruit trees and vegetables was an important part of ancient agriculture. Ancient texts in general have plenty of references to horticulture and arboriculture. Cato stressed, in a classification of the best (and most lucrative) uses one could make of a piece of land, that the *hortus inriguus* – the irrigated vegetable patch – came second, after the vineyard and ahead of the olive grove, pasture field, and cereal field.[12] On the basis of well-attested parallels from other contexts and chronological periods, when looking at the relationship between urban settlements and cultivated areas feeding a city, we would expect that vegetable gardens and orchards, whose products are perishable and cannot travel great distances in a fresh state, were to be found in suburban areas. Crops that could be transformed and preserved for consumption, such as grapes and olives, could, on the contrary, be cultivated further away from the town. This is the well-known theoretical model on land use formulated by the economist Johann Heinrich von Thünen in the nineteenth century, a concept, however, that, in its general essence, was not ignored by the ancients.[13] Indeed, Cato famously advised: 'Near a town it is advisable to have a garden planted with all manner of vegetables, and all manner of flowers for garlands.'[14]

By the early first century AD, Rome's population had swollen to reach *c.*1 million inhabitants, and this in turn increased the city's demand for fresh vegetables and fruit. Some new and exotic fruit trees were introduced to Italy in this period – the peach, the apricot, and possibly the lemon – while many new varieties of existing fruits were created. It can be inferred that the more intense and systematic application of agricultural techniques like seed selection, careful irrigation and manuring, together with technical advancements like new grafting techniques and the diffusion and use of water-lifting devices for irrigation, brought about an intensification of horticultural production. The history of plants and trees is as much a royal and imperial history as one of hard work on the ground; its continuation into the Mediterranean is one of the main subjects of this study.

[11] Cic. *Sen.* 7.24–5; *Tusc.* 1.14.31. [12] Cato, *Agr.* 1.7. [13] Von Thünen 1826 (1966).
[14] Cato, *Agr.* 8.2: *Sub urbe hortum omne genus, coronamenta omne genus.*

This book also discusses what the ever-broadening perspective offered by archaeological and archaeobotanical data contributes to our understanding of arboriculture, the cultivation of new exotic fruit trees in Roman Italy, the diffusion in the provinces of new fruits and vegetables, and the choices farmers made about the crops to grow on their estates. From an archaeological point of view, it is much easier to identify traces of viticulture and oleiculture – and, to an extent, cereal culture – than horticulture and cultivation of fruit trees. Farming of the olive, grape vine and cereals practised on a certain scale normally required processing facilities such as presses and olive mills, in order to transform the fruits into wine and oil, or granaries in which to store the grain harvest, and these structures and equipment are for the most part archaeologically durable and visible. Horticulture and arboriculture, on the contrary, did not require specific processing facilities built in archaeologically durable material like stone and masonry. Unless the actual agricultural soil layer, with, for instance, furrows and planting beds to grow vegetables or tree pits are preserved and identified in excavation, ideally with associated archaeobotanical material, it would be hardly possible to determine whether vegetables or fruit trees were grown. One can try and use indirect evidence, such as cisterns connected to the irrigation of garden land rather than providing the water supply for a villa, as has been done for the area north of Rome,[15] but this datum alone is not enough to unquestionably identify commercial horticulture and arboriculture. The cisterns may as well have watered ornamental gardens and fed fountains and *nymphaea*.

The Romans have been credited with the introduction of a number of plants into the European territories they conquered, and recent research relying on archaeobotanical data has shown that many and more varied food plants appeared in western provincial territories in the Roman era. In the case of fruit trees in particular, the reason why such introduction is attributed to the Romans (or for some fruits and specific areas, to colonizers of an earlier period, the Greeks and Phoenicians/Carthaginians) is that several cultivated fruit trees do not have any native, wild progenitors in northern Europe. Even when a native wild species exists, as in the case of the apple and the wild crab apple, genetic studies determined that actually the wild plant is not the progenitor of the domesticated apple that spread throughout Europe and that is cultivated today.[16] Therefore, plants with no indigenous wild progenitor were certainly introduced from somewhere else. Given that successful cultivation of these 'new' fruit trees

[15] Thomas and Wilson 1994; Wilson 2008. [16] Harris *et al.* 2002.

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also requires the technical knowledge of how to cultivate and propagate them (as we shall see, largely by grafting or cuttings), introduction by colonizers who had already been cultivating these plants at home makes sense. Various studies focusing on ancient Gaul or other Roman provinces north of the Alps have concluded that marked changes in the types of plant foods available, and in plants cultivated, occurred due to the interaction between the Romans and local populations.[17] Understanding in which cases the leap from imported exotic to acclimatized and locally cultivated plant took place is not always possible. In the majority of cases archaeobotanical remains for fruit and vegetables come from the places where they were consumed (towns and military settlements offer the most abundant evidence) rather than from the farms and rural settlements where they were cultivated,[18] but sometimes it is possible to archaeologically identify the cultivation of fruit and vegetables. The overall picture – albeit fragmented – revealed by archaeobotanical data suggests a notable dispersal of plants in provincial territories in the course of the first century AD. Military settlements seem to have played an important role, firstly in creating aggregate demand for a range of foods, including fruit and vegetables, previously not found or scarcely attested in a territory, but also, it seems, actively acclimatizing and cultivating these vegetables and fruits.

It is difficult to disentangle the roles the soldiers and local civilians may have played in this context, considering that the agency of indigenous people is rarely acknowledged in the ancient texts, and assessing it in the archaeological record is still problematic. The apparent important role the Roman military (and, as discussed in the book, the Roman colonists) played in introducing the cultivation of new plants in provincial territories may, in fact, have not been as critical as the *current* available evidence suggests, and further archaeological discoveries will hopefully one day clarify the degree to which local populations may have initiated the movements of plants. The role of soldiers and colonists, and the full extent of the two-way exchanges that occurred between them and indigenous

[17] For example, Wiethold 2003 (on the Burgundy region, suggesting that viticulture, well-developed horticulture, and import of Mediterranean and exotic spices and vegetables were the results of the Roman presence; newly introduced cultivated plants included the cultivated grape vine, olive, bottle gourd and lupin); Bakels and Jacomet 2003 (analysing data from 180 sites in Belgium, the Netherlands, Luxemburg, northern France, Germany, Switzerland, Austria, and Hungary); Livarda and van der Veen 2008.

[18] On the issue of identification of consumer vs. producer sites, see van der Veen and Jones 2006.

people, certainly needs further clarifications.[19] However, on the basis of our current knowledge, we can say that the geographic mobility of military personnel and other individuals connected in some fashion with the Roman army, such as traders and craftsmen, and the settlement of colonists within the large-scale late Republican and early imperial colonial foundation schemes, likely made a decisive contribution to the arrival of new plants in provincial territories.[20]

As is evident from these observations, archaeobotanical evidence for fruits and vegetables and archaeological evidence related to cultivated fields and orchards have been integrated into my discussion. The use of these data is not unproblematic, however. First, it must be remembered that the archaeobotanical record available for the Roman era is very patchy and uneven, and this makes any attempts at a more general synthesis and identification of general trends very challenging and necessarily subject to revision when new evidence becomes available. Likewise, the archaeobotanical record available for the pre-Roman periods is also fragmentary, thus affecting the comparison between the two periods and the evaluation of changes over time.

Archaeobotanical evidence, when a site presents the right conditions, can reveal what types of cultivation took place in a given area in antiquity, but this type of evidence is fragmentary due to multiple reasons. To begin with, in the past environmental studies have not always been routinely included in archaeological excavation projects; when they were, often a considerable gap elapsed between the collection of the archaeobotanical taxa, their processing and study, and the final publication of the data. In some cases, final studies of the archaeobotany for a given site have never appeared; only preliminary short reports were published. Comparison of different datasets is also an issue, since different projects may have followed different sampling and recovery strategies. Then we need to contend with the bias inherent in the type of deposit available.[21] Certain types of vegetal remains are much better preserved in waterlogged conditions. This applies to fruits, vegetables, herbs, and oil-rich seeds. Waterlogged remains are the

[19] E.g., Wiethold 2003, 277 identified the adoption/continuation by the Romans of earlier Celtic agricultural practices as far as the cultivation of cereals and pulses was concerned, with diversification/ new practices manifesting themselves in the case of horticulture and arboriculture.

[20] See, for example, Bakels and Jacomet 2003, 552: this study shows that most of the ('luxury') plant foods were present from the early Roman period only in military contexts. Civilians adopted these new introductions shortly after, initially in the towns in which military supply was handled or traded; local farms/villas soon made efforts to produce some of the products.

[21] For an overview of plants remains in archaeological contexts, see Celant, Magri, and Stasolla 2015.

best in terms of carpological preservation (i.e., preservation of fruits and seeds).[22] Cereals, on the contrary, are not well represented in waterlogged deposits, but are best identified in charred contexts, while nut shells can occur both as charred and as waterlogged.[23] Desiccation, occurring in very arid environments, allows preservation of all types of plants, including delicate vegetative attributes, but it is rare and is not relevant for Italy and the other geographic areas I examine in the book, although reference will be made, when appropriate, to the desiccated archaeobotanical finds from Roman sites in the Egyptian Eastern desert. Some fruits, herbs, and vegetables can also be found in mineralized form, i.e., foods that have passed through the human digestive tract before deposition, for instance in latrine deposits. These finds relate to consumption of these plant foods, and tell us what was available in the local diet, but do not necessarily indicate local production. Macro-archaeobotanical remains can be complemented by pollen studies, which reconstruct the past vegetation of an area. Given that the pollen of different plants is airborne to a higher or lesser degree, palynology usually offers a reconstruction of past vegetation at regional level and is not able, by itself, to securely identify cultivation of given plants at a specific site.

While archaeobotany can morphologically identify diverse fruits, the specific identification of different cultivars from, say, apple or plum seeds on the basis of morphological groupings is not always possible. Morphological studies comparing a set of seeds can suggest, from key differences identified, that they represent different cultivars, but cannot always tell how many cultivars and the relationship these may have to one another. And, unfortunately, it is not possible to map archaeobotanical remains of Roman fruit to the named varieties recorded in the ancient sources. However, the analysis of ancient DNA (= aDNA) could answer questions about propagation of species and cultivar diversity in antiquity, and a study carried out on waterlogged *Prunus* fruit stones excavated at the Vicus Tasgetium in Eschenz, Switzerland, has indicated the viability of aDNA analysis of waterlogged macro-remains, confuting the idea that waterlogged preservation is not very suitable for aDNA extraction.[24]

[22] See Jacomet 2013 for an overview of preservation issues and methodology in relation to waterlogged remains.

[23] Willerding 1991; van der Veen 2008, 84 and fig. 2. Charring of cereals occurred also during their processing, e.g., drying in ovens before threshing, as was common in Roman Britain (see Lodwick 2017b).

[24] Pollmann, Jacomet, and Schlumbaum 2005.

In addition to the bias inherent to each mode of preservation and the type of botanical remains, another problem fragmenting the picture is the difference often existing between settlement types and preservation contexts. To give an example, for Roman Britain, a region for which considerable palaeo-environmental data has been collected and analysed, waterlogged preservation is skewed, both regionally and according to site type, with half of the waterlogged contexts coming from urban and military sites and little attestation at rural sites (1/5 of total) and small farmsteads (17 per cent of total).[25] Since arboriculture and horticulture would have mostly taken place at these last two types of sites, we have much better information, as far as fruit and vegetables are concerned, for their consumption rather than their context of production. This is an issue not limited to Roman Britain, but present also in other regions. Many archaeobotanical studies of macro-remains have been published for ancient northern Italy, but in almost all cases they pertain to consumption contexts (urban excavations or charred deposits from funerary offerings), not to production sites. The only exception I have encountered for this geographic area is a Roman rural villa with chronological phases spanning from the second half of the first century BC to the late third century AD, excavated at Sant'Agata Bolognese, *c.*50 km northwest of Bologna. A rural villa was a place of production *and* a place of consumption at the same time, and not all that was eaten by its inhabitants necessarily came from the estate. Nevertheless, if together with fruit stones, one also finds leaves and wood from those plants, the likelihood that the finds represent local cultivation is high. The site, which is described as '*un grande complesso produttivo*' ('a large producing site'),[26] had a well-preserved well, which contained many waterlogged plant remains. From preliminary information released on occasion of an exhibition that took place in 2015,[27] it appears that hazelnuts, walnuts, grape, acorns, plums, melon, and 'flowers' were grown on this estate in the early imperial period, whereas later in the empire cultivation of cereals became predominant.

A city's growth in population and new pressure on land for building (not simply for housing, but also for display architecture and for burials) could alter the location of the vegetable/orchard belt around a city. As we shall see in Chapter 1, in the case of the metropolis of Rome, from the late

[25] Van der Veen 2008, 86.
[26] See www.archeobo.arti.beniculturali.it/bo_sant_agata_bolognese/mostra_2014.htm (last access 6 June 2018).
[27] Casi 2015; www.archeobo.arti.beniculturali.it/bo_sant_agata_bolognese/mostra_2014.htm.

Republic onwards, locations just outside the Servian city walls were increasingly sought after for the construction of the suburban *horti* of the elite – luxurious residences with large gardens/parks – presumably, in some cases, displacing earlier commercial cultivations of fruit and vegetables.[28]

Vegetable patches, as any amateur gardener will know, require rational use and sizing of planting beds interspersed with 'paths', so that the care of the plants (watering, weeding, etc.) can take place from the border of the beds, with no need to step inside it.[29] Vegetable planting could also simply occur in furrows, especially when the soil is relatively light (not clayish or alluvial), as is still done in the Vesuvian area in modern Campania. Therefore, just like ornamental gardens, vegetable patches too require some kind of 'design' and planning, although we are talking of a very different type of design.

Archaeologically, preparation for the garden surface and planting beds can be identified when the right conditions exist and appropriate excavation procedures are followed.[30] Often, these are 'ornamental' plantings in domestic or public settings, as revealed by the seminal work conducted in Pompeii by Wilhelmina Jashemski,[31] or by the more recent excavations of ancient gardens, such as at the temple of Heliogabalus in Rome and at 'Villa Arianna' in Stabiae,[32] but sometimes proper cultivation surfaces have been investigated archaeologically. The field with furrows discovered in Scafati, near Pompeii, in 1964 in proximity of a tomb garden predating the eruption of AD 79 is such an example, or, more recently, the vineyard also discovered in the Scafati area.[33] At this last site, careful study of the soil layers was able to reconstruct how the soil was prepared before planting the rows of vines: the field was ploughed, then trenches for the vines were cut along the later ridges, and 'Subsequently the trenches were filled and additional soil material was taken from the sides to pile up ridges of about 20 cm along the rows of plants.'[34] The vines were planted in groups of two to three, arranged around a supporting stake. The careful study of this site involving many different specialists has allowed also the identification on the ground of the use of two different systems of vine propagation.[35]

[28] On Rome's suburban area as being subject to constant changes in use, see Purcell 2007.
[29] Cf. Columella, *Rust.* 2.10.26.
[30] For garden archaeology in general, see Miller and Gleason 1994; for the construction of Roman gardens: Gleason and Palmer 2018; Jashemski 2018b for garden techniques.
[31] Jashemski 1979–93. [32] Villedieu 2001, 84–100; 2007, 346–72; Howe *et al.* 2016.
[33] Jashemski 1979–93, vol. 1, figs. 230–1; Bodel 2018, 199–200. [34] Vogel *et al.* 2016, 176.
[35] Mark Robinson, pers. comm., November 2018.

As mentioned above, it is not possible to fully understand how plants and arboriculture came to be invested with symbolic meanings without first understanding the fertile substratum on which this symbolic discourse of nature-taming and wonder-grafting developed. We need to consider the place gardens and their design (both vegetal and sculptural) acquired during the course of the first century BC as representations of the qualities, tastes, and ultimately public persona of the owner, a development that ultimately led to the grand garden projects of the late Republic. These themes are explored in Chapter 1, which sets the stage for the discussion about elite interest – symbolic and factual – in arboriculture. Chapter 1 investigates how private gardens came to symbolize the qualities and cultural aspirations of their owners, and then focuses on two grand examples of garden planning that brought the symbolic use of green spaces into the political discourse and political competition: Lucullus' *Horti* and Pompey's Porticus. While these projects are not directly related to arboriculture, they are, in my opinion, an essential step in understanding why the acquisition of new plants from overseas territory and the naming of new fruit varieties were of interest to the elite for both ideological and practical reasons.

Chapter 2 explores what I have termed 'botanical imperialism', namely the transplantation of plants into Italy by generals while on military campaigns, as well as the display of economically important live plants that could not be grown in Italy (e.g., the balsam shrub from Judaea) to symbolize conquered regions in the context of the triumphal celebrations. Evidence pointing at the role the military seems to have had in bringing and cultivating new plants in the provinces is also addressed in this chapter.

Chapter 3 concentrates on the Augustan period, a time when a number of literary works on horticulture specifically or on viticulture were composed. Although most of these works do not survive, they do indicate the interest many intellectuals of that era had in horticulture and, more generally, in agriculture. This phenomenon, I suggest, was in part triggered by the increased demands for fresh horticultural produce generated by Rome and also by Caesar's and Augustus' programme of provincial colonization: identifying what varieties were most suitable to be grown in a given territory was a matter of current interest. These elements are, however, not the only indications that the Augustan era witnessed a considerable intensification in horticultural production, and other evidence is examined in subsequent chapters. Chapter 3 also discusses the evidence for quality, large vegetables, whose high prices on the Roman

market attracted the criticism of moralist writers, but which suggest a systematic use of irrigation and manuring which improved horticultural productivity. Such practical techniques in the fields and orchards of ordinary farmers and estate owners were paralleled by an ideological component: anything having to do with agriculture had a potent presence in Roman self-conception emotionally and intellectually.

Chapter 4 considers grafting, a technique of vegetative propagation that is fundamental in fruit cultivation when it is desirable to reproduce a plant with exactly the same characteristics as its parent plant (e.g., taste of the fruit, size, colour, shape, time of ripening, hardiness). The chapter investigates how the literary sources talk about grafting, presenting it as a metaphor for human ingenuity and control over nature, but also as a possible source of hubris. However, the emphasis literary texts give to the involvement of prominent Roman families in the development *and* naming of new fruit varieties suggests, in between the lines, that this symbolic discourse was rooted in practical considerations about the economic implications of running agricultural estates for market-oriented arboriculture and in the desire to ameliorate and distinguish productions destined for the market.

In Chapter 5, a shorter chapter than the others, I focus on the *malum persicum*, the peach. This exotic fruit tree which had reached the Greek world in the Hellenistic period from Persia, arrived late to Roman Italy, sometime between the end of the first century BC and the early first century AD. Unlike the apricot, also a first-century AD arrival, the taste for, and the cultivation of, the peach seems to have picked up quickly, in specific areas of Roman Italy and shortly after in some provinces too. As a case study, the second part of the chapter discusses the relatively recent discovery, in Rome, of an early first-century AD large commercial orchard equipped with complex irrigation infrastructure where archaeobotanical evidence suggesting the cultivation of the peach was discovered. This commercial orchard displays a notable financial investment in infrastructure aimed at ameliorating productivity and, by 'investing' in the novel peach trees, a quick response to market opportunities.

In Chapter 6, I examine two regions of Roman Italy, Campania and Cisalpine Gaul (in particular the eastern portion, largely corresponding to the modern region of Emilia Romagna and part of Veneto), which appear to have had a particularly developed horticultural sector. Combining textual sources with archaeobotanical data suggests that these two regions were in all likelihood key regions for developments in Roman horticulture. They may have also been the entry routes into Italy for the arrival of new

fruit trees from the eastern Mediterranean like the citron/lemon and the peach. Both regions had major ports (Puteoli and Aquileia) through which notable volumes of trade to and from the rest of Mediterranean passed. Campania, with its exceptional archaeological record, offers much information on planting practices followed in orchards, which can inform our evaluation of other geographic areas. The archaeobotanical record of Gallia Cisalpina also clearly shows that, from the Augustan era throughout the whole first century AD, the frequency and diversity of recovered remains of fruit greatly increased.

Chapter 7 looks at colonization and provincial agriculture. It focuses on two provincial territories, the Iberian Peninsula and Transalpine Gaul. These two regions were primarily chosen because they were incorporated relatively early into the Roman world, had, in some parts, high urbanization rates, and became large producers and exporters of two of the major agricultural crops in antiquity: wine and oil. They were also the object of colonization programmes organized by Caesar and Augustus in order to settle military veterans, and the geographic mobility of these colonial settlers and other military personnel stationed in the provinces seems to have contributed to the botanical dispersal of a range of plants, either used as food or for other practical uses. Although the available archaeobotanical data for these regions, especially the Iberian Peninsula, is uneven, it is possible to detect also in these provincial territories similar trends to those observed for Italy: an increase, in the late first century BC, in the number and variety of horticultural produce available, with notable peaks in the early first century AD. Zooming in on the archaeobotanical evidence gathered in recent years from northern and northeastern France and the western Netherlands, the chapter suggests a connection between the presence of the army and the import of new plant foods first, and the local cultivation of some of these new plants later. Such evidence offers a compelling picture for the diffusion of cultivation techniques, plant foods, and dietary changes that took place throughout the first century AD.

In Chapter 8 I look at the archaeological evidence for cultivation choices made on provincial estates, trying to establish when large-scale commercial arboriculture was a viable and appealing choice for growers. The case study offered by two farms in southern France suggests that viticulture was always preferred, even by modest colonial famers. The fact that these farmers cultivated a combination of wild and cultivated vines might be indicative of the limited opportunities they had in accessing plant cuttings and young vines from nurseries, but cultivating the grape vine and making wine for the market were attractive commercial choices. The chapter concludes by

comparing the Iberian and Gallic evidence with that available for Roman Britain, a region for which rich archaeobotanical datasets exist. The Roman era increased the range of plant foods consumed and allowed the acclimatization of certain plants into Britain. Here, large-scale fruit cultivation seems to have occurred on larger estates, whose proprietors had access to capital, technical knowledge, and markets with sufficient aggregate demand, whereas the cultivation of vegetables seem to have been more prevalent in the case of small-scale farmers. Whilst it is not possible to draw firm conclusions about the existence of this type of dichotomy also in the cases of Gaul and Hispania, the evidence presented in the chapter tentatively suggests that also in these cases large-scale arboriculture was a choice for larger, wealthier estates. This overall pattern emerging from the distant provinces was not so different from the heartland of Roman agriculture: the available evidence for Italy and Rome's *suburbium* points to large-scale commercial fruit cultivation and technical advances in arboriculture as occurring on large estates. Even humble vegetables and simple fruit indicate a culturally and commercially interconnected Roman world.