A COMPANION TO ANCIENT AGRICULTURE

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CHAPTER SEVENTEEN

Adapting to a Diverse Landscape: Agriculture in Hellenistic and Roman Anatolia

Turan Takaoğlu

Agriculture has always been the mainstay of the land that we regard today as Anatolia, the territory of present-day Turkey, excluding Thrace. With its fertile arable land, ample water resources, and diverse species of plants and animals that have made agriculture the main economic pursuit, Anatolia has often been seen as one of nature's most generously endowed lands, one that has maintained a remarkable degree of self-sufficiency throughout its history.

Etymologically speaking, Anatolia derived its name from the ancient Greek word Ἀνατολή, meaning "east" or "sunrise." This name is a relatively late construction that first began to be used in the Middle Byzantine period, since the region up to that time was called "Asia" or "Asia Minor," mainly due the fact that it forms the westernmost extension of the continent of Asia. The only difference between the names Anatolia and Asia Minor is that the latter has not often been considered to include the eastern part of Turkey, as the former does. This is the main reason why the name of Anatolia is preferred in this modest essay instead of Asia Minor, because the Greek and Roman presence was felt far beyond the Euphrates River Basin in eastern parts of Turkey as early as the Hellenistic era.

In a land like Anatolia, which has an extraordinarily complex and varied landscape, one needs to take into account a wide range of information to form a coherent picture of agriculture in the Roman period. It may be beneficial in this sense to examine aspects of agriculture in Anatolia in relation to issues such as the geography of the land, patterns of agrarian land use, types of crops and fruits cultivated, implements used during the various stages production, changes observed in agricultural strategies, and land ownership for a proper understanding of Anatolian agriculture during the Hellenistic and Roman eras. The role of local deities serving as patrons of farming should also be considered in this context, because a broad range of knowledge exists regarding the behavioral patterns of farmers, who frequently sought divine protection for their crops and livelihood in Anatolia.

The study of agriculture is also a relatively nascent field of research within the discipline of classical archaeology in Turkey, due in part to the diversity of evidence that has made scholars

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reluctant to draw a full picture of this topic (Mitchell and Katsari 2005). The initiation of an interdisciplinary project at the Pisidian site of Sagalassos in southwest Anatolia by Marc Waelkens in 1990 was certainly a turning point, because it included environmental, zooarchaeological, archaeobotanical, and ethnoarchaeological objectives into its research agenda (Poblome 2013). This new approach, allowing classical archaeologists to view the Greek and Roman cities as places mutually interacting with their surroundings, was evidently an important step toward answering questions about the natural environment around cities, what plants were grown, and what animals were raised. Besides Sagalassos, the Phrygian capital of Gordion has been another exceptional site known for its interdisciplinary environmental and ethnoarchaeological approaches (Gürsan-Salzmann 2005; Miller et al. 2009; Miller 2010; Marston and Miller 2015). Recent interdisciplinary studies have helped us picture agriculture and land-use strategies adopted by people there throughout the city's occupation, an endeavor that has rarely borne fruit before in classical archaeology of Anatolia, apart from the above-mentioned Sagalassos project. Furthermore, numerous surface investigations carried out in the rugged rural areas between Lycia and Cilicia in southern Anatolia, with special emphasis on agricultural production, including olive and grape growing, has radically transformed our knowledge of the countryside (Rauh et al. 2006; Bulut 2005, 2007; Diler 2010; Aydınoğlu 2010). This is not the case in all locations. It should be mentioned that the manner in which land in the Pontic range along the Black Sea coastline and in mountainous eastern Anatolia was used for agrarian needs still requires archaeological research, although ethnoarchaeological data point to a nomadic and/or semi-nomadic lifestyle there. In this context, I present here a synthesis of the extant sources for agriculture in Anatolia belonging mainly to the Hellenistic and Roman eras.

The Geography of Anatolia

Because agricultural patterns cannot clearly be understood if they are not seen as mutually interacting with their physical environment, Anatolian agriculture in the Roman period must be assessed in the context of its highly complex and varied landscape, dominated by mountains, plateaus, and river valleys. Broadly speaking, Anatolia can be regarded as a rectangle, with the distance from the eastern boundary to the Aegean coast being more than 1600 km, and that from the Black Sea coast to the Mediterranean shoreline measuring about 800 km at its widest extremity. Its geography is dominated by the contrast between the high central plateau at an elevation of 1000 m above sea level and two major mountain ranges that lie parallel with the coasts, namely, the Pontic range running along the Black Sea coast to the north and the Taurus Mountains alongside the Mediterranean to the south. These two mountain ranges, reaching their highest altitudes in the east, gradually decrease in height toward the Aegean coast. Such topography is characterized by highly contrasting relief features derived from geological movements, resulting in dramatic climatic differences and making communication difficult between the coastal zones and inner regions.

Consequently, this dichotomy between the central Anatolian plateau and the peripheral mountain ranges gave rise to the emergence of considerably diverse agricultural pursuits and lifestyles. The Anatolian peninsula overall is bordered by the Black Sea (Pontus Euxinus) to the north, the Aegean Sea on the west, and the Mediterranean Sea to the south. Being one of the world's great crossroads, the Sea of Marmara (Propontis) is the only sea passage from the Black Sea to the Aegean, through the narrow straits of the Bosphorus and Dardanelles, and thus separates Anatolia from Thrace on the European mainland. In its proximity to both

Asia and Europe, Anatolia has traditionally been seen as a land bridge or contact zone between these two continents (Dewdney 1971, p. 2).

The Pontic mountain ranges in the north runs parallel to the coast, and its peaks rise steeply to heights of 1000 m or more a few kilometers inland, while short streams flow swiftly northward perpendicular to the Black Sea. The mouths of these streams in narrow valleys form small deltas and coastal basins around which settlements were able to grow. Such formations, along with the lower slopes of hills flanking the streams, proved highly productive for arable farming. The eastern part of northern Anatolia or the Black Sea region receives the greatest amount of precipitation in Anatolia with an annual average of 2500 millimeters. This area as a consequence has a fairly mild and moist climate (the average temperature in summer 23 °C and in winter 7 °C) that differentiates it considerably from other parts of the country. The contrast between high temperature and heavy rainfall pattern results in dense vegetation cover, making archaeological sites, consisting mainly of ephemeral materials, extremely difficult to identify. Ethnographic investigations carried out in the eastern Black Sea region demonstrate that the settlers of the region preferred the wooden dwellings with thatched roofs, a part of long-inherited knowledge, until several decades ago (Tunçel et al. 2004). Well-watered high altitudes rich in pastures provide contemporary farmers with the opportunity to pursue a transhumance-based lifestyle that mainly involves cattle rearing. Almost all the farmers of villages situated at low altitudes migrate seasonally to summer encampments in the uplands during the late spring. The first-hand examination of ethnographic data related to agricultural pursuits in this area also demonstrate that the farmers of this region are busy with sowing crops such as barley, beans, and maize on their steep lands around their houses in the villages before moving to the summer encampments. Such agricultural production, which fulfills only the needs of a given house, has not been geared toward exchange due to the small size of the lands each family owns (Takaoğlu in press). The subsistence pattern prevailing in this area since the medieval period may well have its roots in the Roman period. One exception is probably the eastern coastal strip, where tea plantations and hazel-nut growing took over traditional agricultural pursuits nearly a century ago.

The middle part of the Black Sea region is at present among the most densely cultivated land of Anatolia. The River Halys (Kızılırmak), emerging from the mountains in eastern Anatolia, joins the Black Sea after passing through the lands of central Anatolia. The fertile plains and surrounding lands provided optimal conditions for both arable farming and animal husbandry. Precipitation amounts decrease in the middle part of the Black Sea region dominated by the gentle relief features that make wheat, barley, rice, and maize cultivation preferable, although this region has been noted for its high-quality tobacco products, which were introduced into the region in the nineteenth century.

In the western part of the Black Sea region, where the height of the Pontic mountains drops somewhat, the Sangarius (Sakarya), running in various directions, offered river basins and large deltas with arable land favorable for intensive cereal cultivation. The area between and around these major rivers was home to the Phrygians from the Early Iron Age until the Late Roman era. The River Sangarius, which rises near the city of Pessinus, runs northward through the regions of Galatia, Phrygia, and Bithynia, then flows into the Black Sea.

The south of Anatolia is dominated by the Taurus Mountains, which rise abruptly from the sea at an average of 2000 meters above sea level and extend westward parallel to the coastline, maintaining more or less the same altitude. The climate here is truly of a Mediterranean nature, often marked by summer drought and precipitation varying from year to year. The annual precipitation in this region ranges between 600 and 1000 millimeters, though this ratio declines toward the east. This southern Anatolian region as a consequence has a hot and dry climate (average temperature in summer 26–28 °C and in winter 8–10 °C). The most

fertile plain is in Cilicia, reached from the interior only via a natural pass called the "Cilician Gates." This plain, watered by the Sarus (Seyhan) and Pyramus (Ceyhan) rivers, is now mainly devoted to cotton production and wheat cultivation. The Pamphylian Plain, on the other hand, was reached from the interior plateau either through the pass located at Termessus or the one at Ariassus. The rest of the Taurus Mountains exhibit a quite rugged topography, with several plateaus located at high altitudes. Cereal cultivation is at present practiced only in a series of isolated uplands, while coastal basins to the western part of southern Anatolia are devoted to the production of citrus fruits. The ancient regions of Lycia, Pamphylia, Isauria, Pisidia, and Cilicia are consequently well suited for olive and grape growing, as well as for a nomadic pastoral economy. The geography probably led the populations of the region to develop a pattern of transhumance based on the movement of flocks of sheep or goats between lowland villages and summer pastures located at high elevations. The preponderance of transhumance-based strategies might have been common particularly in arid areas characterized by a relatively small amount of annual rainfall.

Between the Pontic and Taurus ranges and the mountainous eastern Anatolian zone is the central Anatolian plateau, which has a diverse landscape with an altitude ranging between 600 and 1200 m above sea level from west to east. However, the plateau is by no means a homogeneous landscape characterized by flat ground, as the name would imply. The vast and bare landscape contains contrasting geographic features such as uplifted blocks and sunken basins. Temperatures vary considerably between the summer and winter seasons, with rather dry summers and autumn but very cold winters. Despite the mostly steppe-like terrain accompanied by harsh climatic conditions, agriculture has always been the dominant activity on the central Anatolian plateau, where the majority of the population depends on crop cultivation for their livelihood. Comprising more or less the eastern half of the central Anatolian plateau, the ancient region of Cappadocia is dominated by two high volcanic mountains, Mount Argaeus (Erciyes) to the east and Mount Hasan to the west. Volcanic soils have made agriculture a popular pursuit in Cappadocia, although the relief factor limits the amount of land that can be cultivated. The fertile arable lands of central Anatolia (250–500 millimeters rainfall zone) are at present devoted to the production of wheat, barley, oat, rye, legumes, lentils, chickpea, and common beet. In addition, animal husbandry based on sheep and goats has long been a common subsistence pursuit in central Anatolia.

In western Anatolia, four major east-west oriented river valleys separated by mountain chains dominate the landscape. The broad deltaic plains and the valley slopes formed by these four major rivers, namely, the Hermus (Gediz), Caicus (Bakırçay), Cayster (Küçük Menderes), and Meander (Büyük Menderes), are the most fertile cultivable lands in western Anatolia. Due to alternation of mountains and valleys stretching perpendicular to the Aegean coastline, the links between the littoral zones and the Anatolian hinterland were sought along land-based routes that followed these four major river valleys for ages, as the clustering of settlements around them indicate. Major Greek and Roman cities located in extremely productive lands around these major river systems all had extensive and fertile rural territories. The regions of Bithynia, Lydia, and Caria from the north to the south all constituted a transitional zone between the western Anatolian littoral dominated by the coastal alluvial plains of these four major river systems and the central Anatolian plateau. Western Anatolia has a mild Mediterranean climate with average temperatures of 9 °C in winter and 29 °C in summer. Olive and olive oil production is particularly important throughout the western Anatolian littoral, since olive trees do not often thrive above 900 m elevation. Over 70% of olive trees in all of Turkey are now located in western Anatolian littoral zones. At present, grape growing is widespread only in the gently sloping lands around the Hermus River basin, where grapes were grown for either wine or its raisins. But this was not so prior to the 1920s, when grape

cultivation for wine production was an important component of the agricultural economy of the societies of the western Anatolian littoral. Vineyards dominated certain parts of the landscape of this region for millennia until a gradual decline started to occur in the intensity of grape cultivation following the population exchange that took place between Turkey and Greece in 1923 under the Treaty of Lausanne. Joined by incoming Turks from the Balkans, the local Turkish populations of this region gradually began to replace most vineyards with olive groves because of religious prohibitions against alcoholic beverages and the high taxes levied on wine producers (Kaplan 2007). Thus, one needs to be cautious when studying the past patterns of olive and grape growing in western Anatolia based on merely the current distribution of vineyards and olive groves.

The well-watered fertile arable lands around the Meander and Caicus river basins, on the other hand, are at present intensively cultivated for cotton, though cereal cultivation and olive and fig growing are also of great importance for the present-day inhabitants of the region. Tobacco production, which was the main commercial product for the inhabitants living in villages around the Hermus River basin until two decades ago has almost completely ended, due to quota limits, and olive trees have replaced tobacco fields.

Mountainous eastern Anatolia is, on the other hand, characterized by three major river systems around which settlements developed. The Euphrates and Tigris rivers, emerging from eastern Anatolian sources, flow southward through Syria and Iraq into the Persian Gulf; while the River Araxes rises in northeastern Anatolia and flows eastward to the Caspian Sea after passing through the Caucasus. The eastern fringe of Anatolia is clearly marked by the region's highest peak, Mount Ararat (Ağrı), best known as the final resting place of Noah's Ark after the Great Flood, as related in the Old Testament (Genesis 8:4). Being the second highest mountain, situated on the northeastern shore of Lake Van, Mount Nemrut is another geographical feature that delineates the eastern border of Anatolia. Beyond the Euphrates to the east, a Greek and Roman presence has been documented as far as the Araxes River in eastern Anatolia. At one time, thinly settled eastern Anatolia was largely nomadic or semi-nomadic in character, whereby herding sheep and goats in large numbers in grazing lands should have been the predominant activity mainly during the summers. This is because the winter is very long, and snow remains on the ground almost from November until the end of April (the average temperature in summer is 17 °C and in winter is –13 °C) in most parts of eastern Anatolia, making animal husbandry an unavoidable choice for survival in such a harsh environment. Due to the large-scale clearance of tree cover derived from anthropogenic factors, the high-altitude areas are at present largely devoid of forests. The open pastures resulting from the clearance of forests make traditional nomadism an unavoidable subsistence pursuit in the eastern highlands of Anatolia. As a consequence, the secondary products of animals play an important commercial role for the present inhabitants of eastern Anatolia, supplemented by cereal cultivation that is limited to the basins surrounding the major river systems of this region (Zimansky 1985; Yakar 2000, p. 381).

Agrarian Land Use

Because rural areas supplied the main agricultural needs of urban centers, the economy of any ancient city cannot properly be understood without seeing it in the context of its relationship with its surroundings (Whittaker 1990). Archaeological evidence for agrarian land use is notoriously thin regarding the Achaemenid dominion between c. 540 to 330 BCE. The famous Mnesimachus inscription carved on a wall of the Temple of Artemis at Sardis, dating to the earliest stages of the Hellenistic era, provides some information regarding Achaemenid

land management strategies (Dusinberre 2013, p. 39). This inscription shows that the estates located in Lydia during this period were centered on large houses, surrounded by vineyards, orchards, gardens, and fields as well as outbuildings for field laborers and livestock.

Increasingly, archaeological evidence, particularly from western and southern Anatolia, indicates that the immediate vicinity or countryside of cities was exploited through evenly spaced inter-visible farmhouses or isolated field houses dispersed in the open countryside from as early as the late Classical period. There has recently been a growing emphasis on the study of field houses and mixed farming centered on the production of cash crops, as well as grapes and olives in the immediate vicinity and countryside of cities in western and southern Anatolia. Such agrarian structures of varying functions and sizes, used either permanently or seasonally, began to appear following the beginning of the Hellenistic period and were evidently related to grape and olive growing for wine and olive oil, respectively, in addition to cereal cultivation. They are ubiquitous in surface surveys, either with architectural remains or only by artifact scatters in most regions of Anatolia, as also observed in most parts of the Mediterranean. Intensive surveys carried out in the territory of Sagalassos, for instance, identified numerous rural settlements such as farms and villages that point to intensification in the exploitation of the land following the Romanization of the region in the late first century BCE. These surveys also demonstrate that a dramatic rise began to occur in the number of such rural settlements in the territory of a city in this period (Donners et al. 2000; Waelkens 2002; Vanhaverbeke and Waelkens 2003).

Recent salvage excavations conducted in the immediate vicinity of the major Aeolian city of Cyme in western Anatolia revealed archaeological evidence showing one way in which Hellenistic and Roman cities maintained their land through isolated field houses or country houses dispersed over the fields optimal for olive and grape growing outside the city centers (Korkmaz and Gürman 2015). Among three Cymean field houses excavated, Field House I deserves a special mention because it is associated with olive oil production. During excavations, the topmost layer covering the architectural remains was remarkable for its high density of terracotta roof tiles, which probably resulted from a sudden collapse. Below the roof tiles, excavations unearthed the remains of a quadrangular farmhouse measuring 20 × 21 m in size, in which a total of 11 large pottery containers for storing olive oil, according to residue analyses, were found along with a stone-paved floor with remains of a screw press attached to the southeastern corner from the outside. Besides large vessels to store the olive oil and implements used to extract oil from the olives, the rooms inside the field house yielded several farming implements such as iron hoes. Three of the excavated small field houses from Cyme lie only one kilometer from the city, indicating that they could have easily been worked by the inhabitants of the city. The Cymean farmers probably moved back and forth between their field houses and the cities during the cycles of agricultural production. There is certainly a pressing need for such field houses or field houses of modest size in close proximity to other major ancient Anatolian cities to be excavated in order to demonstrate how such structures functioned and how the cities interacted with their immediate environs.

The rural parts of the ancient regions of Lycia, Pamphylia, Pisidia, and Isauria in southern Anatolia have also lately witnessed intensive research with agricultural-related questions in mind. In particular, archaeological surveys conducted in the territories of Trabenna, Lyrboton Kome, Neapolis, and Kelbessos, all optimal for olive and grape growing, identified a large number of Late Roman farmhouses with olive oil and wine-making installations attached to them, as well as olive oil workshops located in groves or orchards around the field houses (e.g. Çevik et al. 2005; Bulut 2005, 2007). Isolated olive oil and wine workshops with features such as press beds/crushing basins, stone weights, collecting vats, and storage basins (sometimes enclosed by walls) with no clear association with field houses have also been

frequently encountered in the olive groves and vineyards situated in the countryside in the course of these surface investigations.

Another important contribution of archaeological surveys conducted in southeastern Anatolia's rugged rural landscape is the discovery of farmhouses with towers, a tradition that goes back to as early as the Classical period (Çevik and Bulut 2007). It is believed that towers were added to these farmhouses for security against bandits and looters who threatened the livelihood of the inhabitants. These farmhouses located outside the settlements on available fertile ground or near artificially made terraces possessed features such as wine and olive oil workshops, dwelling units, barns and water wells. In addition to Lycia, Pamphylia, and Pisidia, this pattern of exploitation of land for olive oil and wine production by building various types of agricultural buildings outside cities also existed in Cilicia in southern Anatolia in the Roman era (Aydınoğlu 2010).

The manner in which land was used during Hellenistic and Roman periods can also be archaeologically demonstrated by examining land terracing in southern Anatolia (Höhfeld 1998; Şenol and Walts 2015). As a land-use strategy, terracing was an important and ubiquitous feature of the countryside around Ionian, Carian, and Lycian cities as early as the beginning of the Hellenistic period. The work carried out in the countryside at sites such as Termera and Pedasa shows that the use of terracing in the steep, sloping, and hilly landscapes of the Halicarnassus Peninsula for the purpose of expanding the productive areas of the land surface was a tradition long predating the Hellenistic period in Caria (Diler 2010, 2015). As an adaptive strategy of food production, terrace walls associated with agrarian buildings and related wine-making installations were constructed on sloping ground to create additional cultivable lands particularly suitable for viticulture and olive growing. Archaeologists are able to separate ancient and modern terracing features through fieldwork and analysis of the wall-making techniques, since they are still a conspicuous feature of the present-day terrain in most parts of southwest Anatolia. Ethnographic data from southwestern Anatolia show that dry stone walling was the most common technique employed by the modern farmers, in which natural stone boulders used as the building material were collected from the hillsides in their lands. Modern farmers fill the area behind the constructed terrace wall with earth they gather from elsewhere through ox-drawn carts before planting olive trees or grapevines on these newly created fertile pockets, if they will not be used in cereal cultivation or vegetable growing.

A detailed study of Greek agricultural terracing has already demonstrated that the ancient Greek word *haimasia* could refer to an area of land bounded by dry stones (Price and Nixon 2005). This study also reveals, on the basis of textual evidence, the presence of terraces at several western Anatolian sites, including Miletus, Ephesus, Didyma, Olymos, and Mylasa. Among these, one inscription from Olymos in Caria, reading "in those places, on the one side up to the long *haimasia*, which is entirely beside […with all its] trees, olives and figs and the adjacent reeds, and on the other side up to the whole mountainous area above," clearly helps us picture what these agricultural terraces might have looked like, at least in the western Anatolian littoral during the second century BCE (Blümel 1987–1988, 814, ll. 8–9; Price and Nixon 2005, p. 689).

Regarding the central Anatolian plateau, which has a different landscape and climate from western and southern Anatolia, cereal production and pastoralism provided the livelihood for most of region's population in the Hellenistic and Roman periods. Herodotus's comment (5.49) on Phrygians to the east of Lydia being the richest in flocks and in the fruits of the earth clearly shows that central Anatolia had plentiful natural sources in his day and even in earlier periods. Agricultural patterns involving animal husbandry and farming had probably not changed much in Phrygia even during the Roman era. Very recent research conducted at the Phrygian city of Gordion in the heart of Anatolia demonstrates that significant changes

may have occurred mainly in the way farmers exploited the land outside their settlements from the Hellenistic period to the Roman era. These changes included an increase in crop diversity and expansion into previously uncultivated marginal land. Basing their argument on two distinct activities, namely, intensive irrigation farming of free-threshing wheat and extensive pasturing of herd animals, researchers were able to reconstruct a Roman land-use practice that permitted large rural populations to develop in both lowland and upland areas around the settlement compared to earlier levels of occupation and to maximize agropastoral production (Marston and Miller 2014). Indeed, ethnoarchaeological studies conducted around Gordion demonstrated that animal husbandry was a common subsistence pursuit of those villages located in uplands where there are limited lands suitable for traditional wheat and barley cultivation (low-rainfall zone with annual 300–350 millimeters) (Gürsan-Salzmann 2002, 2005). In contrast, animal husbandry is of secondary importance among villages located in the plains around Gordion, where cereal cultivation supplemented by small-scale animal keeping is more advantageous.

The use of the plow and draft animals clearly helped crop cultivation expand into previously unexploited areas to increase the quantity of crops harvested. Artistic representations appearing on numerous gravestones dating mainly from the second and third centuries CE in Anatolia indicate that plowing the land with draft animals such as a pair of oxen was a common method of loosening the soil before sowing. The most common agricultural scene, depicting a man plowing with two oxen, has frequently been attested on Roman gravestones from the second and third centuries CE. Animal remains from archaeological sites that could be used to ascertain the presence of draft animals used in plowing in rural Roman Anatolia is unfortunately limited. This is important because certain pathologies observed in cattle bones are often thought to be resulted from the pulling or plowing action. Located in the western Taurus Mountains at Pisidia, Sagalassos is probably the only site where a zooarchaeological study was conducted to determine whether or not animals were used in plowing, as well as hauling agricultural commodities and non-agricultural products such as pots (De Cupere et al. 2000). Analyses of foot elements such as the phalanges and tibiae of cattle from Sagalassos hint that both oxen and cows may have been used in draft-related activities. Analyses of faunal remains from Sagalassos also demonstrated that the Roman settlers of the city raised sheep and goats, along with some cattle and pigs for their meat and milk products (Van Neer and De Cupere 2013).

Based on archaeological and zooarchaeological data, combined with data derived from geochemical analyses of trace elements in animal bones, a study of urban-rural integration conducted at Sagalassos demonstrated that the subsistence requirements of the city's populations were derived mainly from the immediate region of the city, and they little relied on the countryside in the Early and Middle Imperial period (c. 35 BCE–300 CE) (Vanhaverbeke et al. 2011). This conclusion was derived from an archaeometric study of cattle bones from the site. The identification of the Pb and Cu contents in cattle bones, believed to have resulted from a polluted habitat, shows that animals may have been grazed in the immediate vicinity of the city. Another important result of this valuable study is that sheep and goats may have also been grazed in this same polluted habitat around the city. According to this study, it was only after 300 CE that the population of Sagalassos began to go beyond the immediate region of the city and strengthen the ties with the countryside.

In a similar way, archaeobotanical studies conducted at the Roman levels of Gordion demonstrated what effect the agriculture practices had on the local environment in rural areas around this important site (Marston and Miller 2014). The results of this study show that a notable intensification occurred in the cultivation of bread wheat, although other plants were also grown for food such as two-row and six-row types of barley, as well as lentils and grapes

(Marston and Miller 2014, p. 766). Barley and bitter vetch may have been grown for animal fodder. Gordion therefore remains an important source of information from which we can draw general inferences regarding the crop varieties cultivated in central Anatolia in the Roman era.

In Anatolia, pastoralism based on transhumance was another factor that led to the exploitation of marginal lands outside cities that were not used for crop cultivation, growing olives and grapes, and planting of vegetables and other fruits from almost as early as the sixth century BCE to the end of the Roman era. It is most likely that farmers keeping small flocks could have fed them by grazing in fields other than those left for crop cultivation, including scrubland and woodland in the immediate environs of their cities. In cases where grazing fields might not fulfill the needs of farmers keeping large flocks, they had to develop a transhumance-based strategy involving movements of these large stocks to seasonal pastures to support their subsistence base. Here, the grazing fields were used as pasture for herds of cattle, sheep, and goats for their secondary products such as cheese, butter, and wool. A zooarchaeological study of animal bones at Sagalassos in this context has demonstrated that goat herding could have been a common practice during the Roman Imperial period. Because the goat bones that were analyzed displayed a pattern of slaughtering at an old age, the Sagalassians might have depended on goats for their milk and wool (De Cupere 2001, p. 87).

Land Management

Epigraphic evidence regarding land management for agricultural purposes is fragmentary during the Achaemenid period. There are hints in epigraphic sources that agricultural lands belonged to royal individuals who could have passed the right to use them to others in return for annual tribute (Dusinberre 2013, p. 39). Because a steady flow of revenues and acceptance of Achaemenid authority was essential, the needs of the local people were fulfilled by adopting such a mutually beneficial land tenure system.

Under Seleucid control of Anatolia following the conquest of Alexander the Great, however, the settlements of non-urban character such as villages of various sizes were the main centers of agricultural production. These villages belonged either to royal estates, temples, cities, or tribes during the hegemony of the Seleucid kingdom (Broughton 1938, p. 637). Royal estates were probably operated by serfs who either worked for the royal landowner or worked the fields for themselves by paying rents or tributes. This efficient administrative control of royal agricultural land had probably been inherited from the Achaemenids, who dominated Anatolia for over two centuries before the Hellenistic kingdoms. The best-known royal land from Seleucid epigraphic sources is surely that which belonged to Laodice I, an Anatolian noblewoman and the first wife of the Seleucid King Antiochus II Theos. Mysia was just one of the regions where Laodice I owned estates in western Anatolia. A record dating to this period from Sardis records her lands that were titled royal (Aperghis 2009, p. 102). The staple cereal crops of this Seleucid land management system included wheat and barley, while olives and grapes were limited to the Aegean and Mediterranean regions of Anatolia. Animal husbandry was also practiced alongside crop cultivation. This Seleucid pattern of land management apparently gradually disappeared from Anatolia with the beginning of the Romanization process (Mitchell 1993; Waelkens 2002; Dmitriev 2005).

Agricultural villages belonging to the temple lands might have also been a common feature of the Seleucid land management strategy in Anatolia. Each temple landholding, which comprised a central village and the considerable territory attached to it, was managed by a priest and had large numbers of both male and female servants responsible for working of land (Aperghis 2009).

It can also be deduced from the Hellenistic epigraphic sources that settlements consisting of Macedonian newcomers were introduced into the already existing agrarian population of Anatolia during the Seleucid period. These newcomers, including soldiers and veterans being rewarded for their services, received small allotments, usually by means of the division of the royal land (Broughton 1938, p. 632). Such was also the case for Jewish soldiers who played a role in Seleucid military affairs. The letter of the Seleucid King Antiochus III to his governor, Zeuxis, regarding the establishment of 2000 Babylonian Jewish settlers in Lydia and Phrygia around the end of the third century BCE shows that such colonies were founded in important locations in western Anatolia. Josephus (*Ant.* 12.148–12.153) helps us visualize what the newcomers encountered when they arrived: "When you have brought them to the aforementioned places, you will give to each of them a place for building a home as well as a plot of land for farming and viticulture and you will grant a tax exemption for ten years on the produce of the earth" (Cohen 1995, p. 212).

Significant changes occurred in Anatolia in the early Roman Imperial period with the disappearance of existing land management strategies resting upon an immensely long tradition. The Romanization process attracted and created an upper class that had the will to invest in the agricultural economy. There is rich primary data regarding the management of land for agricultural purposes in the territory of cities located in certain parts of Anatolia in this period (Broughton 1934; Mitchell 1993; Corsten 2005). These epigraphic sources provide useful insight on issues such as land ownership and the ways in which the right to use the land for agrarian purposes was transferred by its owners to the persons who worked it. These sources, however, do not provide much information regarding the actual agricultural products. The evidence overall points to lands owned by emperors, Roman citizens coming from abroad, native Anatolians, and temples after the Augustan period.

In terms of land management, one of the best-documented areas controlled by large estates lies in the territory of the city of Kibyra, interestingly situated in a liminal zone of the regions of Lycia, Caria, Phrygia, and Pisidia in southwestern Anatolia. A valuable study undertaken there identified two large private estates (Corsten 2005). According to this study, one of these estates, located near the city belonged to the family of the Claudii Polemones in the second century CE. The second estate, however, located in the land of a native Anatolian people called the Ormeleis near the village of Alassos to the north of Kibyra, was the property first of the Calpurnii (mid-second century CE) and subsequently the Ummidii, both elite Roman families (late second century–late third century CE). The estate of the Claudii played a major role in the economic life of Kibyra, whereas the estate of the Ummidii had no major economic role in the city. The estate of the Ummidii relied on the market of Alassos rather than the more distant city of Kibyra. Rich landowners apparently lived in villas located in rural areas. Over thirty inscriptions from Kibyra and its territory relevant to these private estates help us sketch the patterns of land management. For instance, the inscriptions related to the estate of the Ummidii show that the management of the estate was transferred to an administrator (Corsten 2005, p. 11). This estate was divided into three parts, each of which was rented to a tenant who was often a member of the indigenous farming population, who in turned rented single plots to smaller farmers. The epigraphic evidence overall also show that the rich landowners relied mainly on freedmen and slaves to manage their lands, and that the farmers renting the land paid their rent in cash by selling their products in local markets. As the inscriptions show, the land of the native Anatolian people of the so-called Ormeleis, where the Ummidii had their estate, was characterized by agricultural settlements of various sizes, including small villages, hamlets, and single farms. The evidence from Kibyra and its territory overall clearly represents the best extant evidence for land management in Anatolia.

The pattern of organization and exploitation found in Kibyra and its territory has also been attested in other parts of Anatolia in the Roman era. The epigraphic data proves that there might have been prosperous but modest estates within easy reach of the cities of Galatia in the heart of Anatolia (Mitchel 1995, p. 150). Some of these estates, located in the immediate environs of cities such as Ancyra, Neapolis, and Iconium, were owned by Roman citizens. Epigraphic evidence from remote parts of Galatia reveals a different land management pattern that involved large estates such as the non-Anatolian Roman senatorial family of the Sergii Paulli, who might not have had close relationships with nearby cities (Mitchell 1993, p. 151). It seems that Roman families first began to establish estates in Galatia following the Augustan period. Native central Anatolian aristocratic families from cities such as Ancyra also benefited from this process by establishing estates in the region. Many of these estates evidently passed into the hands of Roman emperors in the second century CE.

Agricultural Tools and Equipment

Actual archaeological evidence regarding the equipment used in cereal cultivation is rather thin in Anatolia, although indirect evidence derived from artistic representations help us picture them. For instance, the gravestones, dedications, and altars erected by farmers, particularly from Phrygia, Bithynia and Mysia, often bear artistic representations of mundane farming implements and activities (Cook 1925, p. 836; Cox and Cameron 1937, p. 29; Waelkens 1977; Pfuhl and Möbius 1977, p. 283; Cremer 1992, p. 84). These scenes include plows, a pair of oxen, two ox-heads (often yoked), a single ox-head, farming equipment used in tillage and harvesting, and the crops that were cultivated in the form of ears of wheat, a bunch of grapes, and wine leaves. Perhaps these figures on gravestones, dedications, and altars were intended to reflect their dedicators' occupations, which local deities were asked to protect. The artistic representations show that the tending of the land was accomplished by a simple wooden plow (ard), the tip of which was often strengthened with a metal point in order to break up the ground, which was essential for sowing the seeds. The most common scene depicts a man standing behind a plow holding a long stick with which he steers two yoked oxen. This scene was often accompanied by other farming tools such as pruning hooks, reaping sickles, and pickaxes (Figure 17.1).

Plows also occur frequently on coins minted by the cities of Roman Anatolia. The scene depicting a priest or a founder plowing a pair of yoked oxen appears on coins from the Troad city of Parium. In the case of coins of Ninika-Klaudiopolis in Cilicia, either a colonist or the emperor as founder appears plowing a pair of oxen. Trajanic coins from the same city occasionally depict yoked oxen unattended. The use of a plow as a symbol on coins clearly had its roots in the early Hellenistic period, as the coins of Alexander the Great from Tarsus in Cilicia suggest (Mørkholm et al. 1991, p. 49).

Artistic representations also provide us with useful insights regarding farming implements, since manpower might also have been required by poor farmers or those who possessed sloping land unsuited for animal traction. Hand cultivation by agricultural implements such as hoes and pickaxes might also have been common since their representations frequently appear on gravestones. These simple implements were probably utilized in tasks such as tillage, and smoothing out the field after plowing, and weeding. Another agricultural implement common among artistic representations on gravestones is the curved sickle used to reap cereals.

The pattern of working is quite different in the Pontic region of the Black Sea. The first-hand examination of ethnographic data in this environment dominated by steep sloping fields shows that the farmers had to depended on muscle power and inherited practical knowledge



Figure 17.1 Gravestone erected by Paulinus in memory of his father Trophimus. The lower scene depicts double oxen dragging a plow. Note the pruning hook to the left and a pickaxe and a reaping sickle on the right. Courtesy of Çanakkale Archaeology Museum.

that had been passed down from generation to generation. For spring sowing of crops such as barley, beans, and maize, many open fields were created through the clearance of the grasslands in the steep terrain of the Black Sea region and tilled by farmers using a two-pronged digging fork, which was forced into the ground by one foot. Another person followed behind with a mattock in order to both loosen the soil and dislodge roots that the two-pronged digging forks were not able to dislodge.

Although not yet attested among artistic representations, the threshing process might often have taken place on carefully paved stone floors encircled by a low rim of stones. Recent surface investigation conducted in Cilicia identified archaeological remains of such carefully constructed threshing floors (Aşkın 2010a, p. 242, note 3). Over such floors, horse- or ox-drawn threshing sledges with chipped-stone flakes attached to their lower surfaces operated, usually in an anticlockwise direction. This was followed by the winnowing process conducted with a winnowing basket and a wooden shovel. The grain and chaff left over from threshing were separated from each other by throwing them upward with the help of a wooden shovel against a soft breeze, and subsequently the heavier grain was caught when it fell down with a basket as the lighter chaff blew away. Available archaeological data, supplemented by ethnographic evidence, indicate that farmers often had to thresh their wheat on floors deliberately placed near the fields where the crop was grown it in order to prevent the grain falling out during transportation.

Apart from artistic representations, archaeological excavations and surveys conducted in Anatolia also yielded evidence related to farming equipment used in the processing of olives and grapes for olive oil and wine, respectively, carried out both at domestic and industrial levels. These installations attesting to industrial production were commonly found in or near the outskirts of cities. The sixth century BCE olive oil workshop containing a lever and weights press as well as related features identified at the western sector of the Ionian city of Klazomenai has so far offered the earliest surviving example of such structures related to industrial production in Greek cities (Koparal and İplikçi 2004). This workshop, represented by two architectural phases and preserving features related to crushing, pressing, and separating the olive oil, provides nearly a complete picture of olive oil production. The first phase of the workshop is particularly significant as it reportedly contained an early form of a crusher operating with rotary motion and a small wooden lever press.

A similar picture emerges from excavations conducted at Old Cnidus at the tip of the Datça Peninsula in Caria, where numerous isolated structures related to wine-making have been found in the outskirts of the city near the harbor (Tuna et al. 2010; Koparal et al. 2014). One of them is a Hellenistic winery containing traces of a weight press, stone basins with collecting vats, a room for treading grapes, and related storage facilities. This area was highly suitable for viticulture, and the city of Cnidus successfully took advantage of it. The rise in the level of trade in wine, particularly during the Late Classical and Hellenistic period, evidently increased the prosperity of Cnidus. Archaeological surveys conducted in other parts of Caria yielded significant amounts of crushing and pressing equipment used in wine-making.

In the Hellenistic period, field houses or country houses of modest size containing installations related to olive oil and wine-making were also constructed in the immediate vicinity of cities in western and southern Anatolia. Finds related to crushing and pressing installations such as the lever and weights presses were often found along with such features as collecting vats, stone weights, and storage vessels. In contrast to specialized workshops producing on the industrial level, smaller-scale domestic installations related to olive oil and wine making casually turn up in the archaeological record of the countryside in the Hellenistic period. For instance, a recent systematic survey conducted in western rough Cilicia identified numerous press complexes, implying that large-scale demand already existed for Cilician wine before the Roman period (Rauh et al. 2006). A similar pattern has also been attested in eastern rough Cilicia, where small rural sites with features related to olive oil and wine production dating to the Hellenistic period were identified in the territory of Corycus during the surface investigations (Aşkın 2010b).

In the Roman period, nevertheless, isolated installations related to small-scale olive oil production and wine making with or without any association with a field house or farmhouse are ubiquitous in the agricultural landscape. Installations such as the *trapetum, mola olearia,* and *solea et canalis* cut from natural boulders or hewn into the bedrock frequently appear in the fields devoted to olive and grape cultivation in the countryside of most cities in western and southern Anatolia. Crushing beds were predominantly identified in association with press beds, press weights, and collecting vats. There are also cases in which small buildings were specifically built to house the equipment. The rationale for processing olives and grapes in fields was probably based on reducing the cost of production. In contrast, the paucity of information with regard to installations for large-scale industrial production on the outskirts of cities in the Roman period might be due to the nature of urban-centered excavations being conducted in Anatolia. It is also difficult to know with certainty whether these isolated places with olive-oil-making and wine-making equipment belonged to small landowners, tenant farmers, or wealthy large property owners who used them for domestic consumption needs or exchange. We get a glimpse of what these installations, located in small rural sites, may

have been used for from a survey conducted in eastern Rough Cilicia (Aydınoğlu 2010). This study demonstrates that new isolated rural sites were established around the major urban centers near the main land-based routes that link the interiors with the coasts. Some of these rural sites with facilities for wine and olive oil production probably served as regional processing centers before the export of products.

Ethnographic studies also demonstrate that installations and implements used in wine making by small-scale producers could be found near the seasonal field houses located in the vineyards, though there are cases in which the grapes were taken to special press rooms located at villages or towns in the Troad (Kaplan 2007). This is because when wine production is geared toward the fulfillment of local, often household, consumption with only infrequent instances of exchange, processing of grapes for wine could take place in traditional installations located in the vineyards. Such a pattern can also be demonstrated for small-scale domestic olive oil production through ethnographic data in Caria. Here, traditional olive processing installations are encountered near the rural field houses that are located in the olive groves far from the settlements (Diler 2004).

Divine Protection

The rural inhabitants exploiting the land around their settlements for agrarian purposes in certain parts of the Anatolian hinterland in the Roman period often wanted to put themselves under the divine protection of gods that served as patrons of farming. An increasing number of sepulchral-dedicatory inscriptions recovered from archaeological surveys in a large area encompassing Phrygia and Bithynia indicate that Zeus Bronton was the most prominent local deity, whose wrath was much feared by farmers in the second and third centuries CE. Examination of over three hundred dedications with Greek inscriptions set up by farmers from such sites as Dorylaeion, Nakoleia, Cotyaeum, Aezanoi, and many other sites suggest that Zeus Bronton was believed to protect crops and livestock in this period (Cox and Cameroon 1937, p. 34; Cook 1940, p. 1160; Drew-Bear and Naour 1990; Akyürek-Şahin 2006a). Farmers also wanted to avoid his displeasure lest he devastate their means of livelihood through drought or storms. Zeus Bronton probably had chthonic aspects as well (Figure 17.2), since peasants often purposefully included his name on graves to claim his protection in death, thus also rendering the graves inviolable against robbers.

The nature of the powers bestowed upon Zeus Bronton by farmers can readily be seen in the prayers offered on sepulchral-dedicatory inscriptions and votive altars. This is best observed on an example from northern Phrygia, which reads: "Manes, son of Apollonios, (dedicated) to Zeus Bronton for the health of his cattle and produce (in fulfillment of) a vow" (Akyürek-Şahin 2006b, p. 90). Besides Zeus Bronton, there were numerous other local deities that could have been revered as the patrons of farmers in Phrygia. For instance, farmers in central Phrygia dedicated votive reliefs and inscriptions at a rural sanctuary near the town of Phyteia, southwest of Amorium, to honor their local deities Zeus Alsenos and Zeus Petarenos. Similarly, rural sanctuaries have also been documented in the territory of Appia in northern Phrygia, this time honoring Zeus Ampeleites and Zeus Thallos (Drew-Bear et al. 1999). The farmers probably asked for the protection of their local deities throughout the agricultural cycle, including the plowing of fields, the sowing of seeds, and the harvesting of crops. They likely gathered in small rural sanctuaries or sacred spaces scattered across the countryside or in close proximity to urban centers to honor these agrarian divinities (e.g. Akyürek-Şahin 2006a). A general assessment of these gravestones, altars, and dedications suggests that these peasants or farmers seeking divine protection could have well been either



Figure 17.2 View of four sides of a Roman gravestone of possibly a landholder named Publius from the Lydian countryside mentioning chthonic deities. Note a pair of oxen on each side of the gravestone. Source: Courtesy of Manisa Archaeology Museum.

small private landowners or tenant farmers who worked the lands of rich Roman estate owners as sharecroppers.

The recovery of gravestones, altars, and dedications with agricultural scenes in Lydia shows that such a tradition was not peculiar to neighboring Phrygia, Bithynia, and Mysia (Figure 17.2). It is clear from the inscriptions that the Lydian peasants or farmers also believed in agrarian divinities similar to their eastern neighbors and sought their protection for the safety of their crops (Ricl 2003, p. 78, note 4). This may have also been true in the Troad, where gravestones depicting a farmer plowing with a pair of oxen were also common. One good example is part of a gravestone found in the inner regions of the Troad near Mount Ida (Tanrıver 1999, no. 4; Takaoğlu 2017, figure 20) (Figure 17.3). Such gravestones, already carved with agricultural scenes in relief, were probably manufactured in one of the workshops near Cyzicus in Mysia. The inscriptions were added later, since near-identical gravestones with different inscriptions are commonly attested.

The farmers of Anatolia also invoked gods and made vows to certain local deities to protect their agricultural fields and livestock against the threats of field mice, pests, and locust swarms (Nollé 2005). The sanctuary of Apollo Smintheus ("lord of mice") at Chryse on the west coast of the Troad was a notable sacred place frequented by both village communities and individual farmers who sought protection against rodent-borne plagues. The cult of Apollo Smintheus mentioned here probably had its roots in pre-Classical times since it plays an important role in the opening lines of the *Iliad*. Such was also the case with Apollo Parnopius ("expeller of locusts"), who was worshipped as a tutelary god and protector of crops from swarms of locusts in Aeolia (Strabo, XIII.I.64). Another local deity to be mentioned is Apollo Lykeios, who was a protector of flocks against wolves (Nollé 2005, p. 65, note 97).

The idea of venerating such local deities was apparently to keep peace with the gods in order to protect family and produce from misfortune and increase the yields from agricultural lands and livestock. The notion of Zeus being the most prominent deity of Roman farmers in Anatolia in this context probably had its roots in the Late Bronze Age, when the Hittite god Telipinu served as the patron god of farming a similar fashion. Telipinu, with the



Figure 17.3 Lower part of a broken Roman gravestone of Metrodorus erected by his son. The scene depicts a man standing behind a plow holding a stick with which he steers two yoked oxen. Surface find from the Troad interior, near Mount Ida. Source: Courtesy of Çanakkale Archaeology Museum.

power to stop havoc and devastation, may also have been a storm god (Beckman 2012). It is possible that this deity continued to be worshipped in the Anatolia hinterland throughout the Roman period.

Concluding Comments

Our understanding of Anatolian agriculture during the Hellenistic and Roman periods began to change after the discipline of classical archaeology in Turkey gradually started to move away from its classificatory-historical phase with a descriptive preoccupation toward an explanatory phase with an anthropological orientation. This new approach first appeared in projects conducted at sites such as Sagalassos and Gordion, where explaining agriculture became a major part of their archaeological agendas. This new orientation was also deeply felt in various field surveys designed specifically with agricultural questions in mind, particularly in southern Anatolia during the last decade or so. These studies dealing with human and land interaction demonstrated that the Roman period is marked by the intensification of agriculture, though Roman agriculture in Anatolia rested upon a long-lasting tradition going back to the times of Persian hegemony and the Hellenistic kingdoms. The Romanization process represented basically an upheaval in terms of finding better ways to adapt to the diverse topography and climate of Anatolia. In the Roman period, the lands surrounding cities began to be filled with various sizes of agricultural buildings such as seasonal and/or permanent field houses, farmsteads, hamlets, and agricultural villages. The preponderance of local deities serving as the patrons of farming particularly during the second and third centuries CE, on the other hand, demonstrate that the Anatolian farmers of the Roman period also sought divine protection for the safety of their crops and livestock. This led Roman Anatolian farmers to build rural regional sanctuaries devoted to these local farming gods.

GUIDE TO FURTHER READING

A thorough account of Roman rule as well as the Hellenistic period in Anatolia can be found in Magie (1950). Another general work for anyone dealing with questions from the time of Alexander the Great to the beginning of the Byzantine period is the valuable and comprehensive study of Mitchell (1993). A detailed overview of the theoretical approaches to the study of the Roman economy in Anatolia appears in Mitchell and Katsari (2005). Information regarding the agricultural resources of Anatolia in ancient literary sources is to be found in Broughton (1938). In particular, the role of olive growing in the economy of Roman Anatolia is to be found in Mitchell (2005). For useful information regarding how anxieties about crops and livestock were reflected in epigraphic forms and terminology, see Schuler (2012). Issues related to the society and economy of rural sanctuaries were presented in a regional study by Ricl (2003). Artistic representations of agricultural life and equipment on gravestones, altars, and dedications can be found in Cox and Cameron (1937), Cumont (1942), Pfuhl and Möbius (1977), Waelkens (1977), and Cremer (1992).

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