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Research Article

Late Bronze Age crops from Çine-Tepecik, western Anatolia: insights into farming and political economy in the lands of Arzawa

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A dearth of published archaeobotanical data from the Late Bronze Age of western Anatolia limits our understanding of agricultural production in this key area. Recent excavations at Çine-Tepecik provide insights into farming and the political economy in the kingdom of Mira within the lands of Arzawa. Archaeobotanical assemblages indicate that farming was structured to meet both domestic and institutional consumption; the former utilising a wide range of crop species while the latter focused on cereals. Plant remains provide further evidence for a 'hybrid' suite of farming practices across western Anatolia and contribute to debate around the spread of broomcorn millet cultivation.

Keywords: South-west Asia, Late Bronze Age, archaeobotany, compositional analysis, millet, domestic and institutional consumption

Introduction

The Late Bronze Age (*c.* 1600–1100 BC) is a period of major political developments across Anatolia and the Aegean. A growing body of scholarship is transforming our understanding of central Anatolia and the southern Aegean during this period, but the region between them—western Anatolia—has received less attention. Research in this region has primarily focused on historical evidence for the configurations of Arzawa, an enigmatic geographic and political

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entity that existed in various forms for more than 200 years. Arzawa appears in several Hittite records as a confederacy of kingdoms in conflict with Hatti (home of the Hittites in central Anatolia) that notably invaded a territory subject to the empire in the early to mid-fourteenth century BC (Bryce 2005: 146–57). The Arzawa confederacy was ultimately quashed and split into vassal kingdoms under the Hittite king Mursili II (Beckman 1999: 63–93), after which one of these kingdoms, Mira, re-emerged as a major power in the thirteenth century BC (Bryce 2005: 306–8).

While ceramic studies are providing insights into regionalism and exchange across western Anatolia (e.g. Pavúk & Horejs 2018), the limited number of well-excavated settlements means that evidence for social, political and economic structures is limited. Systems of agricultural production, in particular, are poorly understood, with archaeobotanical reports available for only four sites: Troy (Riehl 1999); Kaymakçı (Shin *et al.* 2021); Beycesultan (Helbaek 1961); and Perge (Kroll 2017). This represents a crucial gap in research given the importance of farming in understanding prehistoric lifeways and the major roles that the production and mobilisation of agricultural resources played in the neighbouring political economies of Late Bronze Age central Anatolia and the Aegean (Jakar 2000: 266; Halstead 2001).

Here, we begin to address this lacuna through the analysis of archaeobotanical remains recovered from the citadel of Çine-Tepecik, western Anatolia. This first in-depth analysis of plant remains from central storage contexts in the region provides unique insights into the role of farming within the political economy of the lands of Arzawa. In addition, we assess the range of crops cultivated at the site and the implications of this diversity for the existence of a regional suite of agricultural practices. We also assess the significance of the presence of broomcorn millet for our understanding of the spread of the species across Anatolia.

Çine-Tepecik

Çine-Tepecik lies at the centre of a fertile alluvial plain, south of the Büyük Menderes River (ancient Meander) in western Anatolia (Figure 1). Occupation of the site spanned from the Chalcolithic (*c.* 5450 BC) until the end of the Late Bronze Age (Günel 2017). During the Late Bronze Age the site included a citadel surrounded by a robust fortification wall (Figure 2). Within this, a storage magazine, measuring 16.5 × 4.5m, contained large numbers of pithos vessels (storage containers), both complete and fragmented (Günel 2017). Two large pithoi were also built into a stone-paved platform constructed next to a section of the fortification system that has since been destroyed (Figures 2 & 3). Imported and locally produced Mycenaean pottery date the use of these structures to the Late Helladic III B2 and III C (*c.* 1350/1300–1240/1100 BC; Günel 2017), while radiocarbon dates obtained from charred wheat found among the pithos fragments (sample 7, see below) date to 1415–1125 BC (Günel 2020: 36). Two seal impressions were recovered from the magazine, one identifying the owner of the seal as a Hittite prince called 'Tamipiya' and the other bearing a name similar in form to Tarkasnawa, the thirteenth-century king of Mira (Günel & Herbodt 2010, 2014). These finds align Çine-Tepecik with the vassal kingdom of Mira, thought to have had its capital at Ephesus and to have spanned the Küçük and Büyük Menderes River valleys (Hawkins 1998: 23–25, 31).

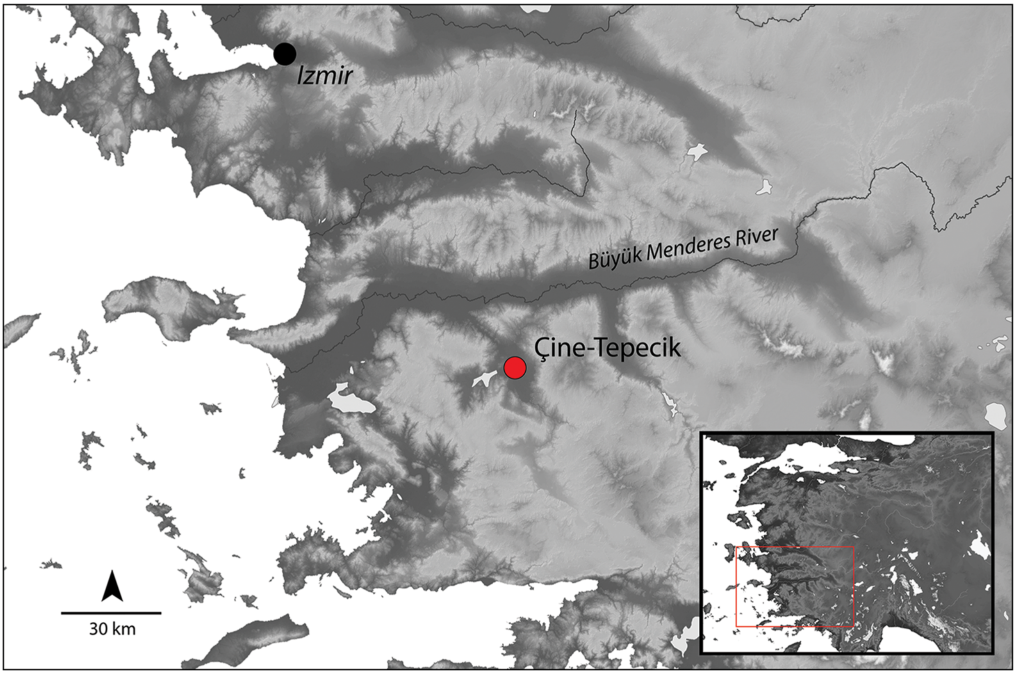

Figure 1. The location of Çine-Tepecik (figure by authors).

The presence of large pithoi and a dedicated storage magazine in the excavated area of the citadel attest to concerns with the storage of farming products within institutional contexts, likely under some form of central authority. Archaeobotanical remains recovered from these contexts therefore provide the rare opportunity to investigate the political economy of farming within a Late Bronze Age settlement in western Anatolia.

Methods

Detailed methods for the recovery and analysis of archaeobotanical remains are reported in the online supplementary material (OSM). Sediment was sampled from visibly burnt contexts and from inside pithoi and other ceramic vessels (i.e. using a 'judgemental' sampling strategy; Figueiral & Willcox 1999). In some cases, archaeobotanical remains were hand-picked from sediment during excavation. Soil samples were processed by water flotation using an Ankara-type flotation tank (French 1971). Remains that floated were collected in a 300μm mesh and the remaining material was retained in a 1mm mesh. Archaeobotanical samples were assessed using a low-power stereo microscope (7–45× magnification). Plant taxa were identified through comparison with modern seeds from a personal reference collection and published sources (e.g. Nesbitt 2017). Thirty Late Bronze Age sediment samples were found to contain crop remains and were included in this study.

Figure 2. Late Bronze Age architecture from Çine-Tepecik (Çine-Tepecik excavation archive).

Figure 3. Pithoi built into the stone paved platform. The left pithos (sample 4) has an approximate height of 0.9m and maximum width of 0.7m. The right pithos (sample 5) has an approximate height of 1.45m and maximum width of 1.1m (Çine-Tepecik excavation archive).

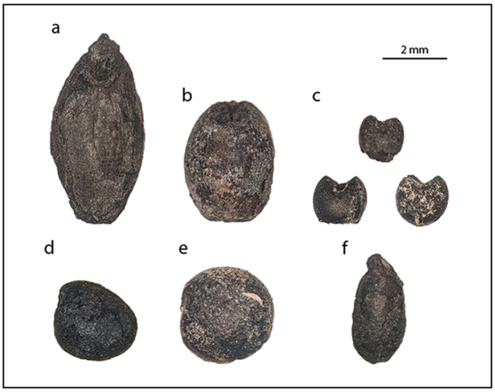

Figure 4. Late Bronze Age crop seeds from Çine-Tepecik: a) barley; b) free-threshing wheat; c) broomcorn millet; d) bitter vetch; e) lentil; f) flax. (figure by authors).

Archaeobotanical results

Crops and economic taxa

A broad range of potential crop taxa were identified (Figure 4; Table 1). Shown in Table 1, free-threshing wheat (*Triticum turgidum/durum*) and hulled barley (*Hordeum vulgare* L.) dominated the assemblage by counts. Hulled barley was by far the most ubiquitous taxa, present in 21 of 30 samples. Cereal species recovered in smaller quantities from fewer samples were broomcorn millet (*Panicum miliaceum* L.), emmer wheat (*Triticum turgidum* L. subsp. *dicoccum* (Schrank) Thell.) and einkorn wheat (*Triticum monococcum* L. subsp. *monococcum*).

Pulses were relatively poorly represented in the assemblage. A significant number of seeds were also heavily fragmented, preventing further taxonomic identification. The pulse assemblage was dominated by lentil (*Lens culinaris* Medik. subsp. *culinaris*) and bitter vetch (*Vicia*

Table 1. The counts and ubiquity of key taxa present within the samples. Counts are of seeds unless shown otherwise. Nomenclature follows Zohary *et al.* (2012).

Taxon	Common name	Count	Ubiquity (/30 samples)
Triticum turgidum/durum	Free-threshing wheat	387	3
T. turgidum L. subsp. *dicoccum* (Schrank) Thell.	Emmer wheat	17	5
Triticum monococcum L. subsp. *monococcum*	Einkorn wheat	9	3
Hordeum vulgare L.	Hulled barley	399	21
Panicum miliaceum L.	Broomcorn millet	41	7
Panicum/Setaria sp.	Millet	16	4
Lens culinaris Medik. subsp. *culinaris*	Lentil	23	9
Vicia ervilia (L.) Willd.	Bitter vetch	19	9
Vicia/Lathyrus sp.	Vetch/grass pea	18	8
Cicer arietinum L. subsp. *arietinum*	Chickpea	3	2
Lathyrus sativus/cicera L.	Grass pea	2	1
Linum usitatissimum L.	Flax	4	2
Vitis sp.	Grape	46	6
Ficus carica L.	Fig	10	2

ervilia (L.) Willd.). Small quantities of flax (*Linum usitatissimum* L.), grape (*Vitis* sp.) and fig (*Ficus carica* L.) seeds were also recovered.

Compositional and contextual analysis

While the overall density of archaeobotanical remains within the 30 sediment samples was low (approximately one item per litre), 10 samples were rich enough to warrant further analysis. Figure 5 shows the proportions of different crops and arable weed/wild taxa of different size categories within samples that contained 20 or more crop seeds. The contexts from which the samples were recovered are listed in Table 2 and their locations shown in Figure 6.

The size of weed/wild seeds can be used to make basic inferences about the processes by which they became deposited in the archaeological record. By sampling the residues of free-threshing cereal processing conducted by modern farmers on the island of Amorgos, Greece, Jones (1983) found that the by-products of various processing stages (e.g. winnowing and sieving) tended to be dominated by small-seeded arable weeds. Large-seeded weeds were able to pass through processing and remained abundant contaminants of semi-clean grain. These seeds are often removed by hand piecemeal prior to consumption and are therefore found in semi-clean crop stores (Hillman 1984: 132–33). Seeds of weed/wild taxa may also enter the archaeological record within animal dung burnt as fuel. Experimental work conducted by Wallace and Charles (2013) found a bias towards the presence of small and hard-seeded taxa within animal dung due to their greater likelihood of surviving digestion.

Figure 5 shows that samples 3–6, 9 and 10 contained significant quantities of small-seeded weed/wild taxa (such as small grasses and legumes, see Table S1) and are therefore likely to contain material derived from crop processing waste and/or animal dung burnt as fuel. This suggests that they are unlikely to represent the original stored contents of the pithoi and rather

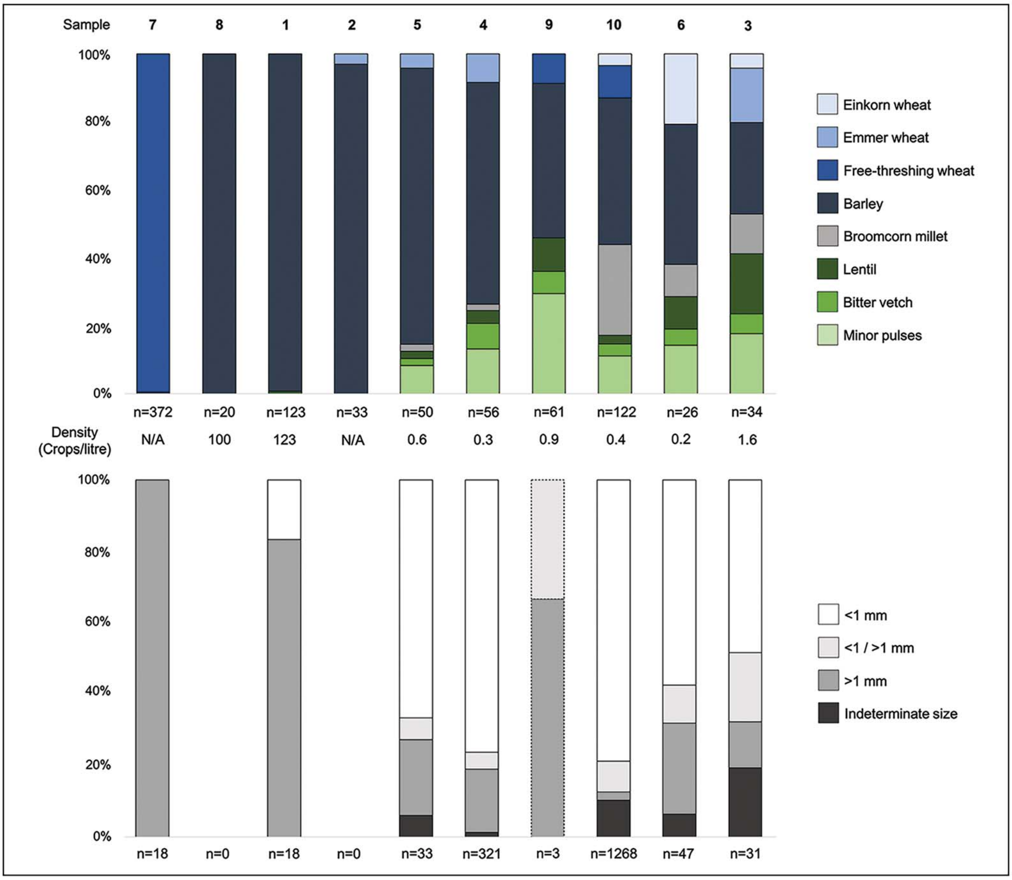

*Figure 5. Proportions of different crop taxa (above) and weed/wild seeds of different size categories (below) within the archaeobotanical samples, ordered by sample purity. n = number of crop or weed/wild seeds in the sample. Minor pulses are chickpea (*Cicer arietinum *L.), grass pea (*Lathyrus sativus *L.), cf. broad bean (cf.* Vicia fava *L.) and those with indeterminate identifications (see Table S1). <1 / >1 denotes seeds with one dimension >1mm and one dimension <1mm. Dashed lines denote samples containing fewer than 10 weed/wild seeds and therefore treated with caution (figure by authors).*

Table 2. Contexts of the archaeobotanical samples selected for further analysis.

Sample	Context
1	Inside pithos in the storage magazine (area J/12)
2	Inside pithos in the storage magazine (area J/12)
3	Inside pithos in the storage magazine (area K/12)
4	Inside pithos built into the pebble surface (area K/11)
5	Inside pithos built into the pebble surface (area K/11)
6	Inside pithos (area N/10)
7	Burnt soil among pithos fragments (area N/10)
8	Burnt soil among pithos fragments (area H/13)
9	Burnt soil (area Ö/13)
10	Inside pithos (area P/12)

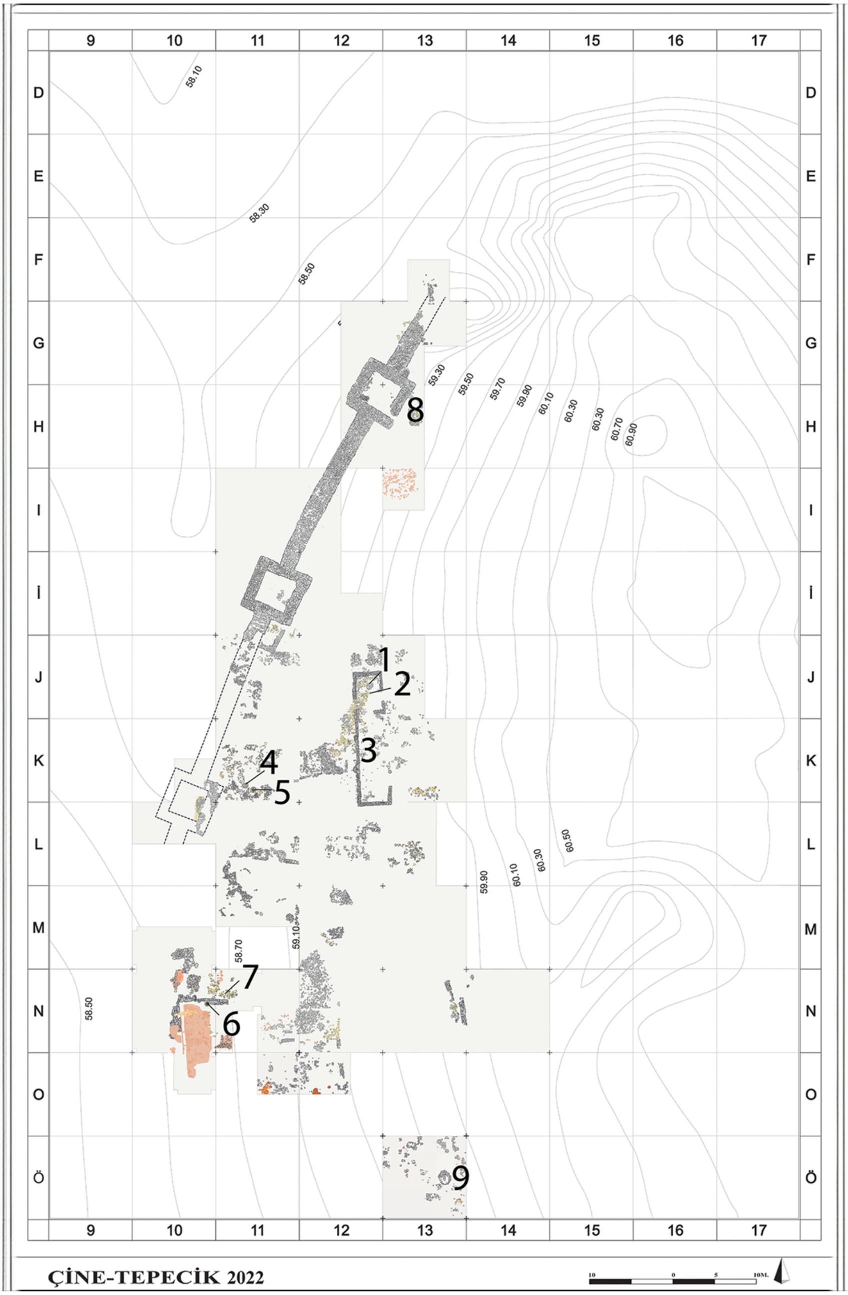

Figure 6. The locations of archaeobotanical samples 1–9. Sample 10 was recovered in 2023 in an area (P/12) that has not yet been drawn up and incorporated into the overall site plan (figure by authors).

derive from refuse material disposed of in fires and then dumped in the vessels after they fell out of use. While no dung fragments were visible, dung itself may not survive charring or may become highly fragmented, hindering its recognition in the archaeological record (Charles

1998). In contrast, samples that contained near pure concentrations of free-threshing wheat or barley (samples 1, 2, 7 and 8) contained no weed/wild seeds or were dominated by those over 1mm in size (such as darnel ryegrass (*Lolium temulentum*) type). This suggests that these samples derive from semi-clean crop stores. A caveat to this interpretation, in the case of samples 2 and 7, is that recovery by hand during excavation, as opposed to processing by water flotation, may have influenced sample composition. It is possible that hand recovery created a bias against small seeds, mimicking the composition of semi-clean crop stores, but this caveat does not apply to the remaining near pure samples, suggesting sampling methods are unlikely to be responsible for the overall patterning within the dataset.

While recovered from pithoi and likely derived from semi-clean crop stores, a lack of evidence for burning *in situ* suggests that samples 1 and 2 may also represent secondary deposits of refuse rather than the original stored contents of the vessels. Samples 7 and 8 were recovered from burnt sediment among pithos fragments that may represent *in situ* destruction and burning, but this cannot be said with certainty. Despite this, the exclusive association of semi-clean crop stores with cereals, and their overall dominance within the archaeobotanical assemblage from this part of the settlement, points to a link between cereals and institutional contexts of storage.

Regional farming systems in Late Bronze Age western Anatolia

Crop choice

While the small size of the archaeobotanical assemblage from Çine-Tepecik means that the presence/absence of individual crops must be treated with caution, several notable patterns emerge when it is compared with those from other Late Bronze Age sites in western Anatolia. The comparable abundance of barley and free-threshing wheat at Çine-Tepecik is primarily due to a single rich sample that contained 370 grains of free-threshing wheat (sample 7, see Table S1). The much greater ubiquity of barley reflects its more consistent presence within the overall assemblage. This is consistent with the dominance of barley within cereal assemblages at both Kaymakçı (Shin *et al.* 2021) and Troy (Riehl 1999), although free-threshing wheat was also recovered in significant quantities from Kaymakçı. Broomcorn millet was also recovered from Troy (Riehl 1999: 46) and Perge (Kroll 2017). The pulse assemblage from Çine-Tepecik diverges from Kaymakçı, Troy and Perge, where bitter vetch was recovered in greater quantities than lentil. Numerous finds of chickpea are also known from Kaymakçı and Troy but very few were found at Çine-Tepecik and they are absent from Perge. The absence of olive at Çine-Tepecik is comparable with Kaymakçı but contrasts with Troy and Perge. Elsewhere in western Anatolia, remains of barley, free-threshing wheat, glume wheats, lentil and bitter vetch were recovered from Late Bronze Age Beycesultan (Helbaek 1961). This variability attests to the absence of a singular farming tradition across western Anatolia, aligning with historical and archaeological evidence for distinct local identities across the region (Mac Sweeney 2010).

Despite differences in the relative abundance of taxa, the spectrum of crops at Çine-Tepecik does correspond with evidence from Kaymakçı reflecting a hybrid suite of farming practices that combines elements from central Anatolia and the Aegean (Marston *et al.* 2021;

Shin *et al.* 2021). As at Çine-Tepecik and Kaymakçı, free-threshing wheat was recovered in significant quantities at Kuşaklı (Pasternak 1998), Kaman-Kalehöyük (Fairbairn & Omura 2005) and Oymaağaç Höyük (Czichon *et al.* 2016) in central Anatolia. Riehl and Nesbitt (2003) suggest that the use of free-threshing wheats in central Anatolia distinguishes crop spectra in this region from those in the Aegean, where glume wheats were more important. More recent finds of free-threshing wheat from Midea (Margaritis *et al.* 2014), Ayios Vassileios (Karathanou 2019) and Ourania (Sarpaki 2009) in the southern Aegean and large deposits of glume wheats from Hattusha (Diffey *et al.* 2020) and Kuşaklı (Pasternak 1998) in central Anatolia suggest that this distinction may be less divisive than previously thought. Clearer regional differences are visible in the ubiquity of olive in the Aegean and its absence from central Anatolia, where winter frost hinders its cultivation, as well as in the more limited presence of millet in central Anatolia than the Aegean in the Late Bronze Age. As noted by Shin and colleagues (2021), olive grows wild in the environs of Kaymakçı and Çine-Tepecik today, suggesting that its absence from Late Bronze Age assemblages at the sites reflects a regional practice that links communities of inland western Anatolia to the traditions of central Anatolia. In contrast, the presence of millet at Çine-Tepecik, Troy and Perge provides a link with the Late Bronze Age Aegean. Again, this is consistent with evidence from historical and archaeological records, with Hittite texts attesting to both Hittite and Mycenaean political influence in western Anatolia (Bryce 2005: 193) and locally produced artefacts combining traditions from both neighbouring regions (Günel 2017; Roosevelt & Luke 2017).

Farming and the political economy

Archaeobotanical remains from refuse deposits at Çine-Tepecik attest to a broad range of crops that may have been grown at the site. The cultivation of diverse suites of cereals and pulses was common practice for recent pre-mechanised farmers in the Mediterranean engaged in domestic production (Halstead 2014: 283) and characterises archaeobotanical assemblages from domestic contexts at Late Bronze Age Troy (Riehl 1999: 33–36) and Beycesultan (Helbaek 1961). The refuse deposits from Çine-Tepecik may therefore represent household waste and the by-products of crops processed within the context of domestic production and/or consumption. In contrast, residues of barley and free-threshing wheat stores associated with central storage contexts suggests that institutional involvement with the staple economy may have focused on cereals.

A similar contrast in crop species between domestic and institutional contexts is apparent in both central Anatolia and the southern Aegean. Cereals dominate samples taken from large stores of taxed grain in the Hittite capital of Hattusha and the provincial capital of Kuşaklı (Pasternak 1998; Diffey *et al.* 2020). At the smaller settlement of Kaman-Kalehöyük, large storage pits were found to contain staining in the shape of charred wheat grains, contrasting with the diverse range of crops recovered from refuse deposits (Fairbairn & Omura 2005). In the southern Aegean, Linear B texts reveal a palatial focus on a narrow range of cereals—wheat and barley—(Halstead 1995), while domestic and refuse contexts from Tiryns (Kroll 1982), Tsoungiza (Allen & Forste 2020), Mycenae (Hillman 2011) and Midea (Margaritis *et al.* 2014) contained a diversity of cereals and pulses.

These contrasts plausibly reflect the different aims of arable farming within domestic and institutional contexts. Recent farmers in the Mediterranean producing for domestic consumption cultivated a wide range of crops to spread the risk of failure across species with differing ecological requirements and the labour requirements of harvesting across the season (Halstead 2014: 283–84). In contrast, the difficulty of reaping scrambling pulses on a large scale meant that farmers aiming at overproduction relied on a narrow range of cereals that were easier to harvest and transport. This facilitated the use of 'extensive' farming systems in which draught animals enabled cultivation on scales sufficient to produce significant arable surplus (Halstead 2014: 36, 104–5). Such systems would be consistent with the large scales of storage within institutional contexts in both the southern Aegean (Christakis 2008: 120–21) and central Anatolia (Pasternak 1998; Diffey *et al.* 2020), reflecting top-down concerns with the mass production and mobilisation of farming products.

While more evidence is needed, our proposed link between cereals and institutional storage at Çine-Tepecik therefore suggests that the production and mobilisation of arable surplus may have formed a major part of the regional political economy. Elsewhere in western Anatolia, large storage pithoi were also found within dedicated magazines in the citadel of Troy, the proposed capital of the kingdom of Wilusha (Jablonka 2011), similarly indicating the centralisation of farming products within institutional contexts (Thumm-Doğrayan *et al.* 2019). In contrast, storage in the inner citadel of Kaymakçı, thought to have been the capital of the Seha River Land (Roosevelt & Luke 2017), was dominated by semi-subterranean circular features associated with routine residential activities (Roosevelt *et al.* 2018). This points to limited top-down integration of agricultural production within the political economy, although further excavations may reveal institutional contexts of storage. As with farming strategies themselves, therefore, the political economy of farming also varied across Late Bronze Age western Anatolia, hinting at diverse forms of political organisation across the region. Once more, the archaeobotanical evidence aligns with historical records.

The spread of millet in Anatolia and Europe

The timing and direction of the spread of broomcorn millet following its domestication in northern China has been a major focus of recent archaeobotanical research. The grains from Çine-Tepecik contribute to a growing number of finds from prehistoric Anatolia. Despite its potential role as a conduit between Asia and Europe, however, the distribution of millet across the region has received little attention. Here, we synthesise reports of millet from Bronze and Iron Age Anatolia and assess their implications for its spread. The locations of the sites discussed are shown in Figure 7.

By radiocarbon dating early finds of millet across Europe, Filipović and colleagues (2020) found that cultivation began on the continent as early as the sixteenth century BC. The earliest finds are from modern-day Ukraine, consistent with the spread of millet into Europe through central Asia (Miller *et al.* 2016; Martin *et al.* 2021), but Filipović and colleagues also highlight a possible route into the Aegean from Anatolia. Large deposits of millet grain have been recovered from Late Bronze Age contexts at sites in the northern Aegean (Valamoti 2016). While finds have also been reported from Neolithic and Early Bronze Age contexts, significant quantities of grain have been recovered from only one site and these have not been directly dated. Earlier

Figure 7. Locations of sites discussed in the text. 1) Ayios Vassileios; 2) Tsoungiza; 3) Mycenae; 4) Midea; 5) Tiryns; 6) Ourania; 7) Troy; 8) Kaymakçı; 9) Çine-Tepecik; 10) Beycesultan; 11) Gordion; 12) Kilise Tepe; 13) Kaman-Kalehöyük; 14) Hattusha; 15) Oymaağaç Höyük; 16) Kültepe; 17) Kuşaklı; 18) Ziyaret Tepe; 19) Sos Höyük (figure by authors, basemap adapted from ArcGIS Online).

finds may therefore represent later intrusions. The earliest directly dated grains from the northern Aegean belong to the first half of the fifteenth century BC (Valamoti 2023: 54). Finds from the southern Aegean are more limited and are largely restricted to Late Bronze Age contexts (Kroll 1982; Livarda & Kotzamani 2013).

The only directly dated millet grains from Anatolia are from the east, with grains from Sos Höyük, Erzurum, dated to 1270–1040 cal BC (Longford *et al*. 2009; Martin *et al*. 2021). Elsewhere in eastern Anatolia, millet was recovered from Middle Bronze Age (*c*. 2000–1600 BC) contexts at Ziyaret Tepe in Diyarbakır (Rosenzweig 2014: 160, tab. 5). Four grains were also recovered from Late Bronze Age levels from this site. On the eastern central plateau, six grains of foxtail millet (*Setaria italica* (L.) P. Beauvois) are reported from Late Bronze Age and Early Iron Age contexts at Kuşaklı, Sivas (Pasternak 1998). These finds point to the expansion of millet into eastern Anatolia from north-east Mesopotamia/Iran and/or the Caucasus, where grains have been directly dated to the sixteenth century BC (Martin *et al*. 2021).

In central Anatolia, broomcorn millet was recovered in large quantities from Middle Bronze Age Kültepe and as sporadic single grains from Late Bronze Age Kaman-Kalehöyük (Fairbairn *pers. comm.*). Further north, a small number of grains identified as belonging to the grass subfamily Panicoideae (which contains numerous species including broomcorn millet) have been recovered from contexts dating to the mid-thirteenth to the early twelfth centuries BC at Oymaağaç Höyük (C. Rössner *pers. comm.*). Grains of broomcorn millet were also found in significant quantities in contexts dating to the twelfth century BC at Kınık Höyük, southern Cappadocia (Castellano *et al.* 2023) and in smaller quantities at Kilise Tepe, Mersin (Bending & Colledge 2007: 588, tab. 34, 593). Nine grains of foxtail millet are reported from Early Iron Age (*c.* twelfth century–950 BC) Gordion, Ankara, in addition to 161 grains from Late Phrygian (540–330 BC) levels (Miller 2010: 57, tab. 5.13). In western Anatolia, in addition to Çine-Tepecik, grains of broomcorn millet have been recovered from Troy, Çanakkale, from an occupation phase dating to the eighteenth to fourteenth centuries BC (Riehl 1999: 46), alongside two grains from Late Bronze Age Perge, Antalya (Kroll 2017).

Recent redating projects have revealed numerous instances where directly dated millet grains belong to significantly later periods than the archaeological contexts in which they were found (Filipović *et al.* 2020; Martin *et al.* 2021). This highlights the tendency of millet to intrude into earlier contexts and, therefore, the limitations in interpreting the temporal distribution of finds that have not been directly dated. Despite this, the finds of millet from Anatolia offer some interesting possibilities. It is likely that the crop first entered the region from the east, with the direct dating of grains from neighbouring regions broadly consistent with the Bronze Age contexts of grains from eastern Anatolia. Broadly contemporary and later finds from central Anatolia suggest that the crop spread west and could have entered the Aegean from western Anatolia. In the absence of direct dating, the lack of Iron Age occupation at Çine-Tepecik provides relatively strong evidence for the presence of millet in western Anatolia during the Late Bronze Age, aligning the site with directly dated finds from the northern Aegean. Current evidence suggests that, in this scenario, millet would have spread from Anatolia to Greece only after it had entered Europe from central Asia (as the Ukrainian finds pre-date grains from the Aegean). Alternatively, however, it is notable that the earliest contexts containing millet across west-central and western Anatolia come from Troy on the western coast. The broad contemporaneity of these contexts with those elsewhere in the Aegean could point to the eastward spread of millet into western Anatolia, potentially as part of an influx of Aegean imports during the Late Bronze Age (cf. Pieniążek *et al.* 2018). Both more finds and the direct dating of millet grains from Anatolia are needed to clarify this picture further.

Conclusion

Archaeobotanical remains from Çine-Tepecik have provided insights into the nature and political economy of arable farming within Late Bronze Age western Anatolia. Grains of millet provide strong evidence for the presence of this crop in the Late Bronze Age which, with further finds and analysis, may shed light on the timing and direction of the spread of millet between Anatolia and the Aegean. The range of crops at Çine-Tepecik contributes to a variable picture of crop choice across western Anatolia, but, while based on a small dataset, the discovery also supports the suggestion that farming practices within the region constituted a hybrid between those of central Anatolia and the Aegean. Compositional analysis of archaeobotanical remains suggests that domestic consumption utilised a range of cereal and pulse crops but that institutional involvement in agriculture may have focused on cereals. This resembles the elite agro-economies of Late Bronze Age central Anatolia and the southern Aegean and suggests that arable farming may also have played a key role in the political economy of Çine-Tepecik. Variability in the political economies of farming across western Anatolia aligns with textual and archaeological evidence suggesting that Arzawa constituted a loose alliance of autonomous kingdoms with distinct regional identities.

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Online supplementary material (OSM)

To view supplementary material for this article, please visit https://doi.org/10.15184/aqy.2024.142 and select the supplementary materials tab.

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