

Qubūr el-Walēyide and the Archaeology of Bedouin Dry Farming

Benjamin Adam Saidel

Department of Anthropology, East Carolina University, Greenville, N.C., U.S.A
saidelb@ecu.edu

Abstract

This study integrates excavation reports, aerial photography, and ethnohistorical sources to document ephemeral Bedouin farming practices at Qubūr el-Walēyide in southwestern Israel. Reanalysis of the site's stratigraphy identifies and redates two distinct phases of agricultural activity. The early phase, dubbed the *fossil plow zone* (Strata 1-2, 1a-2, 2-2), is now dated to the late 16th–late 19th centuries CE. The late phase, identified as the *Mandate plow zone*, is demarcated by tilled topsoil (Strata 1-1, 1a-1, 2-1). Based on aerial photography, this phase of cultivation is assigned to the late 1940s. This study also highlights a chronological break and a loss of spatial memory at Qubūr el-Walēyide, a phenomenon observed at other sites in the Negev, such as Tell el-Hesi. Finally, this research contributes to broader debates about the visibility of mobile communities in the archaeological record and the persistence of traditional land use in the Negev during the Ottoman and Mandate periods.

Keywords: aerial photography; *ard* cultivation; Bedouin; dry farming; ethnohistory; Negev



1. Introduction

This study analyzes the stratigraphy of Qubūr el-Walēyide in southwestern Israel (Neumeier-Potashnik et al. 2024; Fig. 1). The purpose is fourfold. First, it strives to redate the fossil plow zone (Strata 1-2, 1a-2, 2-2) to the late 16th–late 19th centuries CE. Second, it demonstrates that the plowed topsoil in Fields 1 and 2 (Strata 1-1, 1a-1, 2-1) is evidence of a later phase of cultivation. This layer, identified as the *Mandate plow zone*, is dated to the late 1940s based on aerial photography. Third, the study seeks to identify those most likely responsible for tilling these agricultural fields, and fourth, revisits the criteria used to date the cemetery beneath the fossil plow zone (Strata 1-2, 1a-2, 2-2).



Fig. 1. Sites mentioned in the text. The following seasonal watercourses are demarcated with their Hebrew and Arabic names: (1) Nahal Gerar / Wadi esh-Sheri'a, (2) Nahal Be'er Sheva / Wadi as-Sab'a, (3) Nahal Besor / Wadi Ghazza, and (4) Nahal Shiqma / Wadi Hesi. The inset on the left depicts Aqaba and Biqa't 'Uvda (both maps are based on Google Earth imagery and have been modified by the author).

The findings here provide insights into the agricultural practices and land use of the Negev Bedouin. I argue that these tribespeople, perhaps with the help of *fellahin*, intermittently cultivated the fields of Qubūr el-Walēyide over a period of several centuries, though patterns of occupation varied. The presence of the fossil plow zone (Strata 1-2, 1a-2, 2-2) above the cemetery (Strata 1-3, 2-3), I suggest, indicates a discontinuity in memory or occupation. Those who tilled the soil were unaware that a burial ground lay beneath their fields. A similar disjuncture occurred at Tell el-Hesi, where cultivation in the late nineteenth century disturbed the soil above a Bedouin burial ground (e.g., Petrie 1890: 221, 234; Bliss 1891a: 291; 1891b: 282; 1892: 195; 1898: 122).

Methodologically, the discovery of the fossil plow zone at Qubūr el-Walēyide is notable because archaeological evidence for Bedouin field systems north of the central Negev is scarce. Its identification and preservation are due to skilled and diligent excavation and the absence of modern development. Beyond the site itself, Bedouin agricultural field systems are more readily identifiable in the southern and central Negev than in the north (e.g., Mayerson 1960; Avner 2007: 32–33). This difference in visibility reflects environmental conditions, limited modern development, and the reuse of ancient field systems.

2. Qubūr el-Walēyide and the Fossil Plow Zone

Qubūr el-Walēyide is approximately 6.8 km south of Tell Jemmah and 5.7 km north of Tell el-Far‘ah (South) (Lehmann et al. 2010: 148). The site lies on the east bank of the Wadi Ghazza (Nahal Besor) and covers about 2 hectares (Lehmann et al. 2010: 137; Fig. 1:3). To the east, it is bordered by modern agricultural fields; to the west, the landscape slopes down into Wadi Ghazza through an eroded area. Within the wadi, a spring lies roughly 500 m from the site (Cohen 1978: 194). Concerning annual precipitation, Qubūr el-Walēyide lies between the 200 mm and 300 mm isohyets (Schmitt and Sindlinger 1992), sufficient for cultivating barley and wheat (e.g., Bruins 2012: 29).

In 1977, Cohen conducted rescue excavations at Qubūr el-Walēyide in four areas, exposing a total of 225 m². This fieldwork uncovered architecture, features, and material culture from the Late Bronze Age II and Iron Age II periods (Cohen 1978). His preliminary report does not mention a fossil plow zone (discussed below), leaving it unclear whether this layer was present within his excavation areas.

Lehmann surveyed the site in 2000 and conducted excavations from 2007 to 2021 (Lehmann et al. 2010; Neumeier-Potashnik et al. 2024). His project investigated Late Bronze Age and Iron Age rural settlements on the border of

agricultural and desert or pastoral zones (e.g., Lehmann et al. 2010: 138, 140; Neumeier-Potashnik et al. 2024: 2). The initial 2007–2009 excavations are described in Lehmann et al. (2010), whereas the results of the later seasons are reported in Neumeier-Potashnik et al. (2024).

Excavations beneath the topsoil in Fields 1, 1A, and 2 revealed a fossilized plow zone marked by distinct plow scars (Strata 1-2, 1a-2, 2-2, respectively) (Fig. 2; Lehmann et al. 2010: 140; Neumeier-Potashnik et al. 2024: 5, Table 2, 23). In some areas, particularly Field 1A, the fossil plow zone measured 20 cm in depth (Neumeier-Potashnik et al. 2024: 15). Unfortunately, neither Lehmann et al. (2010) nor Neumeier-Potashnik et al. (2024) published section drawings or photographs of the fossil plow zone (Table 1). Excavations beneath the fossil plow zone in Fields 1 and 2 exposed cemeteries in Strata 1-3 and 2-3, respectively. The precise number of interments is not reported in the preliminary publications (Lehmann et al. 2010; Neumeier-Potashnik et al. 2024).

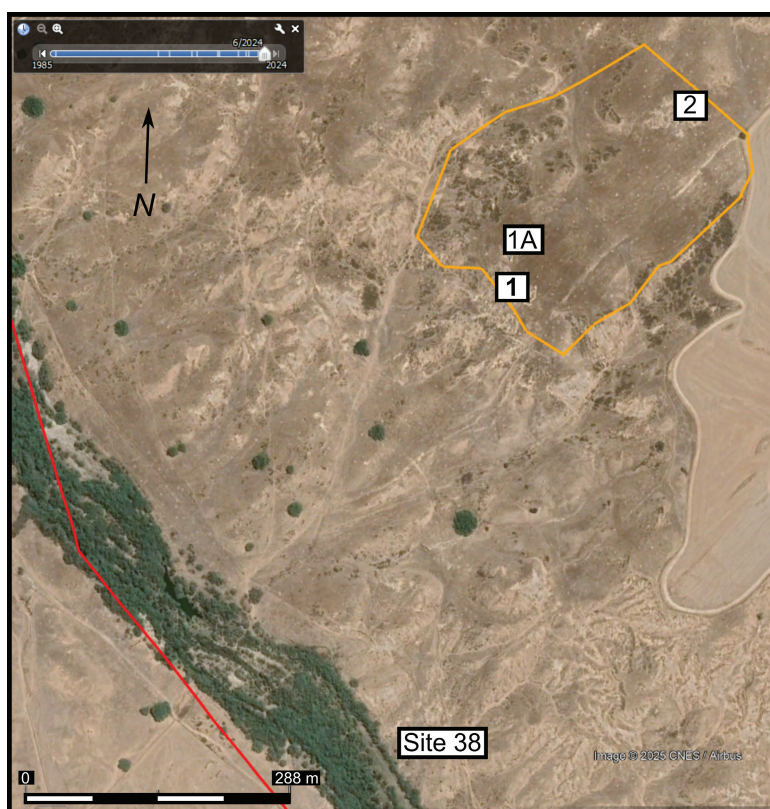


Fig. 2. Aerial view of Qubūr el-Walēyide and its environs: The orange line delineates the approximate boundary of the agricultural fields at Qubūr el-Walēyide, including the locations of Fields 1, 1A, and 2.

Table 1. Summary and comments on the stratigraphic sequence at Qubūr el-Walēyide (after Neumeier-Potashnik et al. 2024: 5).

Site general stratigraphy	Field 1	Field 1A	Field 2	Description provided by Neumeier-Potashnik et al.	Comments	Reference
I	1-1	1a-1	2-1	Topsoil comprised of “loess fill and windblown sheet wash” There is a lime kiln in Field 2.	Portions of Field 1 were tilled. In the same field, the walls and floors of the Iron Age I village are “on the level of the present topsoil.”	Neumeier-Potashnik et al. 2024: 5, 13
Plow zone	1-2	1a-2	2-2	Fossil plow zone with plow marks		
II	1-3	—	2-3	Burials	Burials of subrecent Bedouin	Neumeier-Potashnik et al. 2024: 5, 23
III	No occupation	No occupation	2-4	Iron Age IIC: Field 2, architectural remains, late 7th cent. B.C.E.		

3. Redating the Fossil Plow Zone

Drawing on Levin, Kark, and Galilee’s (2010) descriptions and analyses of historical maps of the Negev, the excavators dated the fossilized plow zone to the 19th or early 20th century CE (Neumeier-Potashnik et al. 2024: 15, Ft. 55). Notably, Levin, Kark, and Galilee mention agriculture only three times (Levin, Kark, Galilee 2010: 12, 15, 18), and on two occasions, it is discussed solely in

relation to historical maps. For example, Levin and colleagues cite Kiepert's 1891 map, which delineates agricultural and pastoral zones in green and yellow, respectively (*ibid.*, 12). On the third occasion, they argue that agriculture and sedentarization were incompatible for the Negev Bedouin (*ibid.*, 15). More importantly, their discussion provides no archaeological or chronological data that could be used to date the fossil plow zone of Qubūr el-Walēyide.

Neumeier-Potashnik and associates (2024: 15) further support their date by pointing out that lead musket balls were unearthed in Field 1A, arguing that these artifacts provide secondary evidence for dating the fossil plow zone to the 19th and early 20th centuries. However, this attribution is problematic for several reasons. They offer no information on the quantities and dimensions of these projectiles (e.g., Arbel 2021), and there is no discussion of how these purported 19th to early 20th-century projectiles differ from those used in earlier periods. The core issue is that muzzle-loading muskets were used in the southern Levant from the late 16th to the late 19th centuries CE (e.g., Van Egmont and Heyman 1759: 156; Heyd 1960: 81, Letter 33; Saidel 2000: 207, Table 3), and presently, no regional typology exists that allows these projectiles to be reliably dated to any specific timeframe within this range. Therefore, the musket balls found in the fossil plow zone should be redated to the late 16th–late 19th centuries CE.

Furthermore, it is unlikely that the musket balls in Field 1A were used in the early twentieth century CE, as many Bedouin had acquired breech-loading rifles after the Anglo-Egyptian War of 1882 (Baldensperger 1925: 86; Barthorp 1984: 7). Contemporary accounts describe widespread use of Remingtons, Martini-Henrys, and other repeating rifles by Bedouin tribes (Jennings-Bramley 1900: 369; 1905: 212; Baldensperger 1905: 116), and following the First World War, they also obtained Mauser and Lee-Enfield rifles, formerly used by Ottoman and British Imperial forces, respectively (e.g., Eisenberg-Degen et al. 2015).

4. A Caveat

Although unlikely, it is conceivable that the lead balls are not musket balls but spherical case shots from World War I era canister shells (e.g., Monnickendam-Givon and Peretz 2013). This possibility is notable because the area around Qubūr el-Walēyide saw significant military activity during the First World War, and several nearby sites have been associated with the conflict (e.g., Fig. 2: Site 38; MacMunn 1928: 279–305; Gazit 1996: Sites 4, 19; Monnickendam-Givon and Peretz 2013: Fig. 10; Gat 2014: Sites 38, 51; Smith 2017: 86–118).

Distinguishing musket balls from spherical case shot remains is methodologically challenging. Peretz argues such distinctions are archaeologically infeasible (Monnickendam-Givon and Peretz 2013), whereas Glick notes that metal balls from Qula exhibited “high-quality tooling,” unlike traditional musket balls (Nadav-Ziv et al. 2022). For the purposes of this study, the excavators’ identification of the projectiles as musket balls is accepted.

5. Stratigraphic Evidence of a Second Plow Zone

I propose that Qubūr el-Walēyide contains a second, poorly preserved agricultural field that postdates the fossil plow zone. Here, I designate this agricultural field as *the Mandate plow zone*. According to preliminary reports, portions of the topsoil in Fields 1 and 2 were cultivated (Strata 1-1, 2-1; Lehmann et al. 2010: 149, 156; Neumeier-Potashnik et al. 2024: 13). These are not extensions of the plow zone, as both layers were designated as distinct stratigraphic units (Lehmann et al. 2010: 140; Neumeier-Potashnik et al. 2024: 5).

The existence of a later agricultural field is also demonstrated by an aerial photograph taken on October 27, 1949 (Photogrammetric Institute Jerusalem, [Flight 051, Photo 6840](#)). This image portrays northeast-southwest furrows over an area of about 7.75 hectares, demonstrating that the site was being actively cultivated (Fig. 2, area within orange line). Captured shortly after the 1948 Arab-Israeli War, the photograph provides a *terminus ante quem* for cultivation and confirms that the fields were in use before 1948. Based on the photograph’s date and the war’s duration, the fields were likely last tilled during the final years of the British Mandate, perhaps earlier.

6. Who Tilled the Fields?

The preliminary reports describe the fossil plow zone but do not attribute it to a specific cultural group or period. Archaeological and ethnohistorical evidence does not indicate the presence of an agricultural village or farmstead at Qubūr el-Walēyide during the Ottoman and British Mandate periods (Kiepert 1891; 512 Field Survey Company 1946; Hütteroth and Abdulfattah 1977: Maps 1, 3; Lehmann et al. 2010: 157; Neumeier-Potashnik et al. 2024: 5), but it does suggest a Bedouin presence. Notably, the site features two Bedouin cemeteries: One is on the site’s surface, attributed to the Bani Walēyide, a subgroup of the Jabarat, while the other is located beneath the fossil plow zone in Fields 1 and 2 (Strata 1-3, 2-3; Table 1). The preliminary reports offer no evidence that the two cemeteries are stratigraphically or chronologically

associated. The interments beneath the fossil plow zone consist of unmarked, shallow burials with no associated grave goods (Neumeier-Potashnik et al. 2024: 5, Table 2, 23). Neumeier-Potashnik et al. (2024: 23) maintain that it is similar to Bedouin burial grounds at Tell el-Hesi and Tell el-Far‘a (South). The former operated between 1550 and 1800 CE (Neumeier-Potashnik et al. 2024: 23), and the latter was still active when Guérin visited it in 1863 (1869: 267).

Ethnohistorical sources demonstrate that many Bedouin tribes inhabited the environs of Qubūr el-Walēyide during the 19th and early 20th centuries CE. By 1799, the Jabarat occupied the area between Wadi esh-Sheri‘a (Nahal Gerar) and the present-day Egypt-Israel border (Bailey 1980: Maps 2, 3; 1985: 47). Sometime around or after 1813, the Jabarat were forcibly displaced to Wadi Hesi (Nahal Shiqma; Bailey 1980: Maps 4, 5; 1985: 23). Between 1816 and 1877, the Gudayrat, Nijmat, and Tarabin tribes inhabited the region. Conder and Kitchener (1883: 389, Sheet XXIII) report that the Azazma inhabited the flat territory around Qubūr el-Walēyide. Following their defeat in the Azazma-Tarabin War (1877–1890), the Azazma were displaced and resettled in the central Negev (Bailey 1980: 74, Map 5). Although Qubūr el-Walēyide does not appear on Kiepert’s (1891) map, the surrounding area was clearly marked as Bedouin territory, suggesting the site fell within their domain. The Tarabin, possibly alongside the Hanjara, controlled the region from 1890 until the 1948 Arab-Israeli War (512 Field Survey Company 1946).

Together, these ethnohistorical accounts and archaeological findings underscore the long-term presence of Bedouin communities at Qubūr el-Walēyide. Despite repeated displacement and intertribal conflicts, the site and its environs remained Bedouin territory from at least the late 16th century until the mid-20th century. Alternating possession of the site by different tribes may help explain why the soil above the cemetery was cultivated.

7. Discussion

There are inconsistencies in Qubūr el-Walēyide’s stratigraphic report (Neumeier-Potashnik et al. 2024). The table provides brief summaries of the features and architecture present in each stratum (*ibid.*, 5). It notes that the topsoil comprises “loess fill and windblown sheet wash” and mentions a lime kiln on the surface of Field 2 (*ibid.*, 5), but it omits two significant observations about the topsoil in Field 1: It does not mention that this layer was tilled (*ibid.*, 13), and it fails to note that architectural remains of the Iron Age I village in Field 1 are “on the level of the present topsoil” (*ibid.*, 13). In contrast, the descriptions of other strata

explicitly mention associated architectural remains (*ibid.*, 5). A fuller discussion of the site's stratigraphy, though warranted, lies beyond the scope of this study.

Aside from these issues, there are also problems with the excavators' interpretation of the cemetery in Strata 1-3 and 2-3. Neumeier-Potashnik and associates (*ibid.*, 23) note that this burial ground is not visible in aerial photographs taken during World War I. From this, they conclude that "the cemetery was already abandoned by the early 20th century CE and its location was already forgotten" (*ibid.*, 15). The issue is that they themselves dated the fossil plough zone (Strata 1-2, 1A-2, 2-2) to the 19th or early 20th century. If their dating is correct, the burials in Strata 1-3 and 2-3 would already have been sealed beneath the fossil plough zone when the photographs were taken, making their invisibility inevitable. The invisibility of these burials in the aerial photographs from World War I is therefore a result of the stratigraphy and offers no independent evidence for abandonment or loss of local knowledge.

Rather, it is the tilling that created the fossil plough zone over the burials in Strata 1-3 and 2-3 that constitutes evidence of abandonment and the loss of local knowledge, not their absence in the aerial photographs. Tilling the soil above the graves reflects both a chronological and a mnemonic break. Lacking headstones or surface markers, the cemetery in Strata 1-3 and 2-3 was likely invisible to later cultivators (Neumeier-Potashnik et al. 2024: 23). This unawareness may have resulted from newcomers being unfamiliar with the site's earlier use or descendants of earlier inhabitants forgetting the burial ground after a prolonged absence.

A comparable phenomenon was documented at Tell el-Hesi, where the Abu Smada family cultivated the tell and lower city between 1890 and 1892 (Petrie 1890: 221, 234; Bliss 1891b: 282; 1892: 195). As at Qubūr el-Walēyide, the burials there lacked headstones or surface markers, and those who plowed the land were likely unaware they were farming atop a Bedouin cemetery that was active between 1550 and 1800 CE (Eakins 1993: 132, Pl. 2).

A more reliable way to date the cemetery (Strata 1-3, 2-3) may be to establish a *terminus ante quem* by dating the overlying fossil plow zone (Strata 1-2, 1a-2, 2-2). Optically stimulated luminescence (OSL) is well suited to this purpose and has been applied to a field system at upper Nahal Besor, where results suggest seasonal Bedouin agriculture between the 14th and 17th centuries CE (Avni, Porat, and Avni 2013: 342). Similarly, applying OSL at Qubūr el-Walēyide could yield a more precise timeline for Bedouin land use and inform broader discussions of historical cultivation in the Negev.

There are two stratigraphically distinct episodes of agricultural activity at Qubūr el-Walēyide: the fossil plow zone and the Mandate plow zone. I

suggest that these were not random events but rather evidence of sustained and intensive cultivation. The cultivation of soil above unmarked cemeteries reflects shifting patterns of land use by various Bedouin tribes. These fields were likely tilled using camel-drawn wooden plows that were incapable of deep tillage and only broke the surface (Fig. 3). Nevertheless, this agricultural activity severely damaged underlying early Iron Age architectural remains (e.g., Lehmann et al. 2010: 149, 155–156; Neumeier-Potashnik et al. 2024: 5, 13). Here, the destruction of ancient architecture is interpreted as evidence of intensive tillage over an extended period.

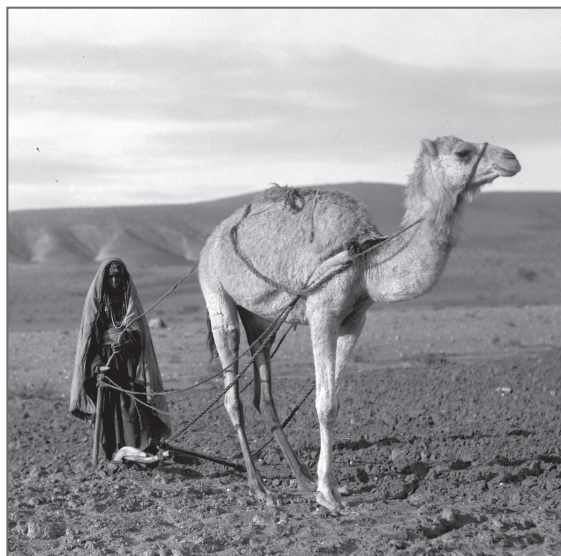


Fig 3. Bedouin woman tilling the soil in the vicinity of Beersheva, sometime between 1920–1933; note the relatively shallow furrows (the American Colony Photography Department, Eric and Edith Matson Photography Collection, LC-M33-3782, <https://www.loc.gov/pictures/item/2019706307/>).

Identifying Bedouin agricultural activity in stratigraphic contexts is particularly challenging in areas north of the central Negev. At Qubūr el-Walēyide, the absence of modern development preserved the fossil plow zone (Strata 1-2, 1a-2, and 2-2). In contrast, modern development has altered much of the northern Negev landscape. At al-Araqib, for example, a noninvasive survey recovered a plowshare that may indicate historical agricultural activity. However, extensive afforestation and land modification now make it unlikely that a plow zone could be confirmed through excavation at al-Araqib (Saidel 2023: 1007). While such impacts are uneven across the northern Negev, modern activities continue to threaten Bedouin archaeological evidence.

By contrast, the archaeological remains of Bedouin agriculture in the central and southern Negev are more easily identified, partly because these areas have seen little modern development. In the central Negev, Bedouin agriculture is more archaeologically visible because these tribespeople reused Byzantine and Early Islamic field systems that cover over 30,000 hectares (Mayerson 1960; Haiman 1986: 24; Avni 1992: 21*; 2022: 265). Mayerson (1960) was among the first to document Bedouin modifications to these ancient agricultural features, and this approach remains central to reconstructing Bedouin land use in the Negev.

In the southern Negev, Avner's fieldwork documented the archaeological remains of Haywat agriculture. In parts of the 'Uvda Valley, plow marks are still visible on the surface (Avner 2007: 32). Avner documented how tribespeople cached plows and sickles in caves and rock shelters (*ibid.*, Figs. 26, 27). He also located their threshing floors and subterranean granaries (*ibid.*, Figs. 28, 29, 30, 31). These granaries occur in four concentrations, each comprising 60–110 silos (*ibid.*, 32–33).

Information provided by Musil underscores a potential difficulty in distinguishing Bedouin and non-Bedouin cultivators in Wadi al-'Okfi (Biq'at 'Uvda). In 1910, Musil visited the area and learned that the Haywat leased agricultural plots to residents of 'Aqaba (Musil 1926: 85), who established seasonal camps in Wadi al-'Okfi during the planting, harvesting, and threshing seasons. If these villagers used Bedouin-style tents, distinguishing their remains from those of Bedouin populations in the archaeological record would be difficult.

8. Conclusion

Collectively, the archaeological and ethnohistorical evidence demonstrate a long-term Bedouin presence at Qubūr el-Walēyide, spanning the late 16th century CE and 1948. There are two Bedouin graveyards at the site: one (Strata 1-3, 2-3) predates the fossil plow zone, and one postdates it. The latter belongs to the Bani Walēyide tribe (Cohen 1978). These two cemeteries may reflect the use of the site as a burial ground by different tribes at different times.

This site was cultivated either by local tribespeople or by *fellahin* employed to work the fields (Bliss 1891a: 293). The fossil plow zone (Strata 1-2, 1a-2, and 2-2) may represent agricultural activity predating the 19th century CE. Alternatively, if this layer dates to the 19th century, it offers archaeological confirmation of Bedouin farming practices recorded in ethnohistorical sources (e.g., Saidel 2025: Table 1). Combined with the proposed Mandate plow zone, the archaeological evidence suggests that cultivation at Qubūr el-Walēyide persisted for more than a century.

This plow agriculture fits within a broader regional trend in the central and southern Negev, where archaeological remains of Bedouin land use are generally more visible than in northern areas (e.g., Mayerson 1960; Avner 2007: 32–33). As one of the few stratified sites with a fossil plow zone linked to Bedouin activity, Qubūr el-Walēyide provides a valuable case study for understanding the archaeological visibility of Bedouin farming. Future research should focus on refining the chronology of the plow zone and expanding regional comparisons to clarify the spatial and temporal variability of Bedouin cultivation across the Negev.

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