

The Management of Agricultural Taxes in the Valley of Arad as Reflected by Arad Ostraca

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Abstract

Although research of the Arad Ostraca often focuses on the victuals supplied to military squads passing through the fortress, where these products originate from is rarely asked. This study examines the Arad Ostraca for evidence of agricultural products raised as taxes from the inhabitants of the Beer Sheva-Arad Valley. It aims to enhance our understanding of how the agricultural tax collection system was used to supply the army with victuals. Seven ostraca exemplify the collection and administration system of tax-in-kind in the valley. This conclusion arises from the registration of large quantities of unprocessed agricultural products in these ostraca and their connection to clans or even towns in the area.

Keywords: Arad Valley; Judah; agriculture; chickpea; wheat

1. Introduction

Over the years, the uniquely rich corpus of the Arad Ostraca has been a primary source of information about the system distributing supplies to the military squads passing through the fortress, and it played a prominent role in all the proposed reconstructions of the administration of the Kingdom of Judah. This study aims to analyze the counterpart of the abovementioned distributive system, namely the collection of these products as taxes-in-kind imposed on crops grown by the local farmers, their management, and their processing. In this regard, the Arad Ostraca provide information not found in any other source. I argue that seven



ostraca offer insights into the collection and administration of these unprocessed agricultural products and analyze them below. Although some were found in unclear stratigraphic contexts, they are all paleographically consistent with late 8th–6th-century BCE Judahite writing, and three were found with seals of the last commander of Arad, 'Elyāšib son of 'Iššyāhū.

2. Setting and Plan

The Arad Ostraca constitute an unparalleled source of information on the bidirectional transfer of products at the site and, thus, offer a singular opportunity to trace, albeit partially, the operations of the system supplying food to the administrative-military network of the Kingdom of Judah. As Arad is located in a very particular geographic area, we cannot know to what extent the conclusions reached here apply to other administrative centers, whether situated in more fertile regions or the arid Negev Highlands (see Garfinkel and Mendel-Geberovich 2016).

The site of Arad is located at the eastern edge of the Arad Valley, near the drainage divide separating the Mediterranean and Dead Sea basins. From here, the valley stretches west and joins the Beer Sheva Valley, with which it forms a continuous topographic unit that extends to the Mediterranean (Figs. 1, 2). This extensive strip of land composed of the Arad and Beer Sheva Valleys formed the southern boundary of arable land capable of supporting agricultural towns (Herzog 2002: 8–10). It is cited in the emblematic biblical expression “from Dan until Beer Sheva,”¹ which, in fact, refers to “until the Beer Sheva-Arad Valley (see Cogan 2008: 214)² and differs from the ideal southern boundary of נַחַל מִצְרַיִם, “the brook of Egypt.” South of the Beer Sheva-Arad Valley, in the arid zones of the Negev Highlands and the Arava Desert, only fortresses and strongholds were established, which most probably received grain provisions from other sites.

1 The expression “from Dan until Beer Sheva” appears nine times in the Bible (Judg 20:1; 1 Sam 3:20; 2 Sam 3:9, 17:11, 24:1,14; 1 Kgs 5:5; 1 Chr 21:2 [in reverse order]; 2 Chr 30:5 [in reverse order]). In 2 Kgs 23:8, it occurs in its reduced (Judahite) version “from Geba until Beer Sheva.” Furthermore, the expression “from Beer Sheva until the Ephraimite mountain” in 2 Chr 19:4 conveys that the Beer Sheva-Arad Valley was the southern limit of the populated area.

2 This was also the southern limit of sites of worship (Kaufmann 1972: 242).

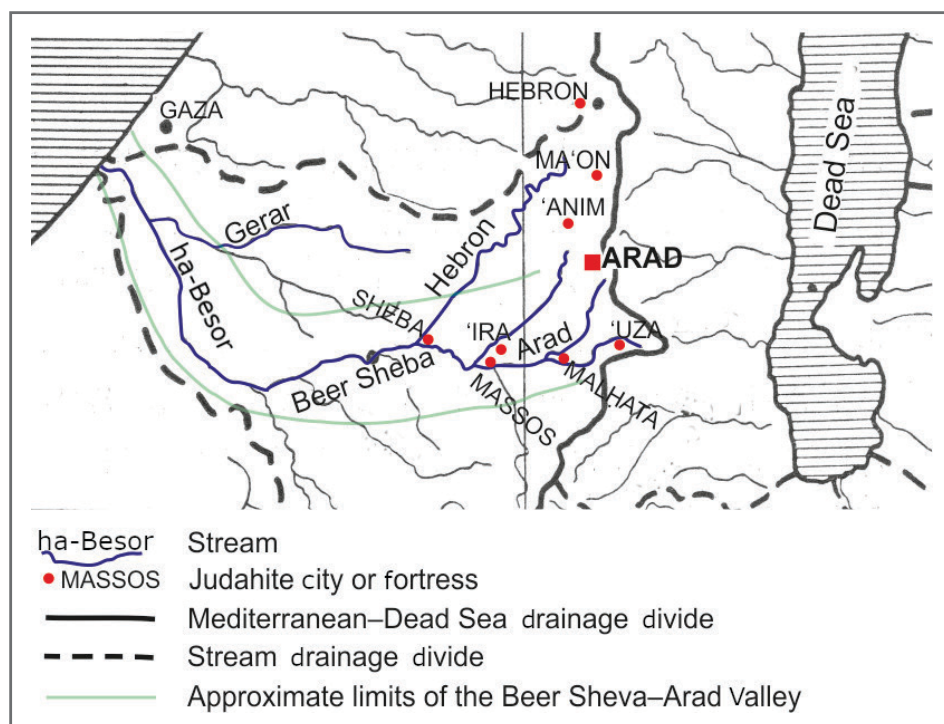


Fig. 1. The Northern Negev in the late 7th–6th century BCE.

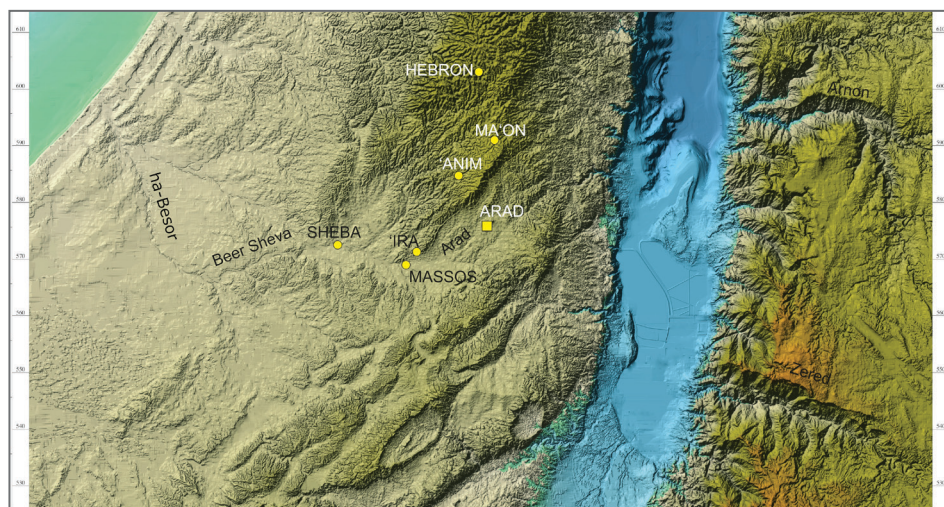


Fig. 2. Topographic map of the Northern Negev (after Geological Survey of Israel, <https://www.gov.il/en/Departments/General/israel-and-regions-aerial-photo-map>).

The 200 mm isohyet marks the boundary between the arable and desert parts of the region in antiquity. However, its position shifted frequently and could oscillate in the Northern Negev by more than 35 km (Eph'al 2023: 85–90, especially the map on p. 88). Today, on average, the annual rainfall in the valley is about 200 mm, the humidity in the summer is 50%, and the annual amount of dew, a very important factor in the region, is 50 mm. While not ideal, these quantities are sufficient to support dryland cultivation of grain and other seasonal crops, and they could be augmented with wells thanks to the valley's high groundwater level. Additionally, many cisterns and reservoirs were constructed or dug to collect the runoff of the winter rains (Katz 2008: 29–30). Significantly, the Beer Sheva-Arad Valley is most arid in the east, where agricultural yields are the most modest. The products the local farmers delivered to the Arad Fortress were probably all they could afford. The climatic conditions described above, which enabled agricultural activity in the Beer Sheva-Arad Valley in this period, have been confirmed by paleoclimatic studies of faunal remains (Herzog 2002: 89), pollen diagrams, and radiocarbon dates conducted over the last two decades (Langgut, Finkelstein, and Litt 2013: 161–162; Finkelstein and Langgut 2018: 163–165).

Arad's uniqueness lies not only in its preservation of an unparalleled set of administrative documents but also in its location and plan, which is unlike a Judahite "city." The site's layout is typical of the Judahite Negev Highland fortresses, although much larger (see Cohen and Cohen-Amin 2004: 145–147), and lacks an inner gateway, a characteristic element of the Judahite cities for hosting commercial activities. Obviously, it served as an important administrative hub at the edge of the arable land, facing the Negev, Edom, and major commercial routes.³

The site was excavated in 1962–1967 by Y. Aharoni (1981: 4–8), who found a series of six Judahite fortresses. The earliest is assigned to Stratum XI and dated by the excavator to the second half of the 10th century BCE, whereas the latest is assigned to Stratum VI, which was erected in the second half of the 7th century BCE and destroyed by the Babylonians in 586 BCE (Aharoni 1981: 9; Herzog 2002: 11, 14). Excavations at the site produced 88 Hebrew ostraca, most of which were found *in situ* in the last two Judahite strata. Although no final report of the excavations has been published to this day, Herzog (2002) revisited the data and the stratigraphy, drawing conclusions that differ from those provided by Aharoni.

3 As expressed in Ostrakon 2, where the Kittiyim are provided with provisions for four days of travel. According to Aharoni (1981: 15), this possibly refers to a journey to Kadesh-Barnea in northern Sinai.

3. The Collection of Agricultural Taxes

As stated above, while this study aims to trace as far as possible the system that collected agricultural products in Arad, much information can still be garnered from the supplies provided to squads passing through the fortress. Thus, for example, Arad commander, 'Elyāšib son of 'Iššyāhū, ordered to supply the Kittiyim with bread or flour “to make bread for themselves” on their way, wine, and once, in Ostracon 2, זמח. This word is generally connected with זמח in Ruth 2:14 and interpreted in both places as wine vinegar (Ahituv 2008: 96–98; Rosen and Ayalon 2021). זמח is the Hebrew term for vinegar, widely used in Biblical Hebrew and to this day, rendering this interpretation quite plausible. Other interpretations of זמח included a cheap type of fermented wine (Lemaire 1977: 162–163) and the passive participle זמח, “sour” (Naʾaman 2022: 30; see also Dobbs-Allsopp et al. 2005: 14–15; Rosen and Ayalon 2021: 239–240).

However, considering Arad's function as a collection and redistribution center of locally produced foods, the product mentioned may not be vinegar but chickpeas (*Cicer arietinum*). This possibility is a better fit for both the administrative documentation at Arad and the story of Ruth. The chickpea was domesticated as early as the Neolithic period, and its wild species grow today in southeast Turkey (Zohary, Hopf, and Weiss 2012: 87–89; Lucas and Fuller 2014: 1386). Domesticated chickpeas have been found in Neolithic sites in south Turkey and Syria, as well as Jericho and 'Ain Ghazal in the southern Levant (Zohary, Hopf, and Weiss 2012: 89). Later, in the Early Bronze Age, chickpeas were found in higher frequencies throughout the land, including Arad (Amiran 1978: 71, Pl. 129:11). In Egypt, chickpea seeds were found in the tomb of Tutankhamun (14th century BCE; Zohary, Hopf, and Weiss 2012: 89, with references therein).

Although by the Iron Age, the chickpea was cultivated throughout the entire region, its name in Hebrew and related contemporary languages is disputed. Semitic terms for *chickpea* built on the root *ḥms* are well known in Arabic (حمص, حمص) and eastern dialects of Aramaic (see CAL, s.v. “ḥmsyn,” “ḥmsy”), including Jewish Babylonian Aramaic (Sokoloff 2002: 457). According to researchers such as Löw (1928: 428), Felix (1968: 162–163), and Zohary (1982: 83), this is also the case in Biblical Hebrew, in which the word זמח in Isa 30:24 means *chickpea*.

Additionally, three Rabbinic literary sources from the Land of Israel seem to use the word חמץ in the sense of *chickpea*:

1. In the Jerusalem Talmud (y. 'Abod. Zar. 5:4, 33b) it is said that R. Jeremiah ate חמץ with the Samaritans. The word clearly points to a solid food and has the plural suffix, which in Hebrew and Aramaic is characteristic for grains like wheat (חטים) or barley (שעורים).⁴
2. In a Rabbinic Hebrew midrash on Ruth 2:14 (Lev. Rab. 34:8; Ruth Rab. 5:6), explaining how Ruth ate on the threshing floor, it is said that it was common for the reapers to dip their bread in חמץ during the dry heat, and R. Jonathan added that, on those occasions, it was usual to take out various kinds of חמצים to the threshing floors. If the word meant *vinegar*, one would expect it to be in the singular form. In this text, חמצים (in some manuscripts חמצנין) is generally interpreted as dishes prepared with vinegar, but it can also refer to cooked and mashed chickpeas.
3. A discussion on the tithing of legumes in the Jerusalem Talmud (y. Ma'as. 1:6, 49a) cites Isa 30:24 and interprets חמץ as *chickpea* (Löw 1928: 428; Felix 1968: 162, n. 1; Zohary 1982: 83; Felix 2005: 80; see also Jaffee 1987: 65–66).

The soldiers sometimes received olive oil, not as part of their rations but for transporting elsewhere (Aharoni 1981: 144). All the items provided by Arad were processed products ready for consumption. Hence, mentioning unprocessed agricultural products such as wheat in the Arad Ostraca should most logically be considered taxes-in-kind received in the administrative center of Arad for processing and redistribution (see also Aharoni 1981: 143, 146). To assert the contrary implies that a town received wheat and other agricultural products from the administrative center of Arad, which seems unlikely to me.

⁴ The source is written in Jewish Palestinian Aramaic. Moses Margolies (1710–1781), in his commentary *Pnei Moshe*, interpreted it as “a type of legume.” This is also the opinion of Löw (1928: 431–432), Bar-Lev (2007: 66), and Schorr (2020: 30b3). Neusner (1982: 199) and Sokoloff (1990: 207) interpret it as leavened bread.

4. The Ostraca⁵

4.1. Arad Ostracon 31, Stratum VII, late 7th century BCE (Fig. 3)

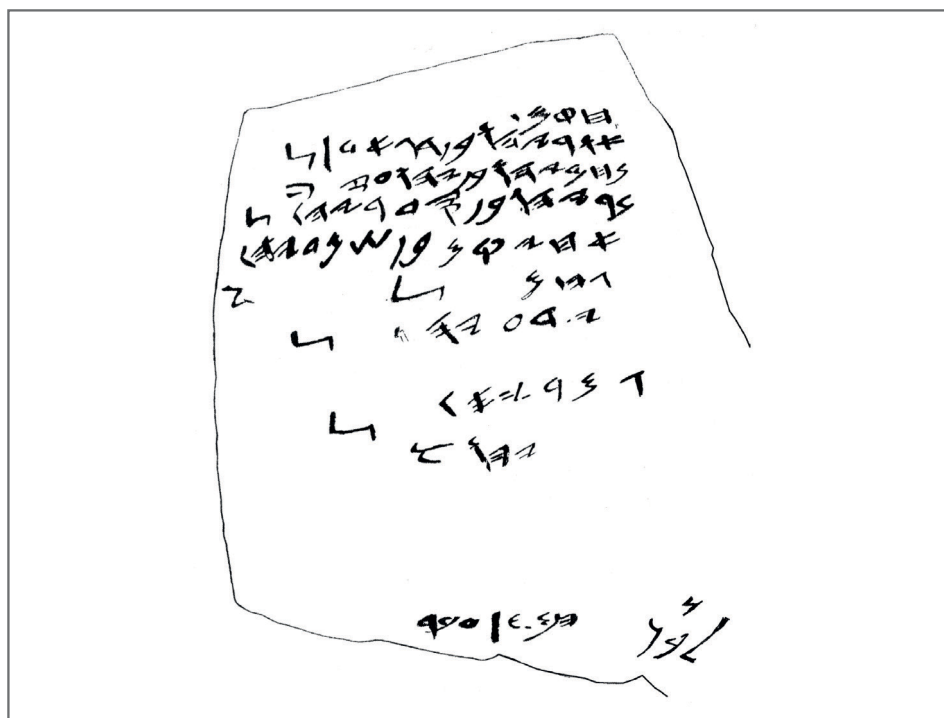


Fig. 3. Arad Ostracon 31.

1.	חטם.	Wheat.
2.	אוריהו בן רגא ל/א	'Uriyāhū son of Raggā' ל/א
3.	נחמיהו בן יהועז כ	Neḥemyāhū son of Yehō'āz כ
4.	נריהו בן סעריהו ל	Nēriyāhū son of Se'aryāhū ל
5.	אחיקם בן שמעיהו <	'Aḥīqām son of Šema'yāhū <
6.	גחם ז ל	Gaḥam ז ל
7.	ידעיהו ל	Yeda'yāhū ל
8.	גמריהו ל	Gemaryāhū ל
9.	[יהו] ז	[...]yāhū ז
10.	עבר ל/א	Produce ל/א
11.	לבן []	To Ben [...]

⁵ The English translations of the ostraca generally follow Ahituv (2008).

Ostrakon 31 is the document most explicitly related to the collection of agricultural products in Arad, as its first line titles the document חטם, “wheat,” and is followed by a list of eight men and a total. The ostrakon was found in a small room abutting the southern wall together with Ostrakon 32, Hieratic Ostrakon 34, and three seals of the commander, ’Elyāšīb son of ’Iššyāhū. Moreover, Ostraca 31 and 32 were written on sherds of the same vessel. The men listed in the ostrakon bear typical Judahite names: four in the format of “X son of Y” and four comprising forenames only. Each name is followed by one, two, or three Hieratic signs representing numerals and measures of volume (Aharoni 1981: 56–59; Wimmer 2008: 39).

The ostrakon’s last line is located at the bottom of the sherd and is separated from the names by an empty space wide enough to host three rows. This line may have been added by a second scribe (Aharoni 1981: 58), summing the registered quantities of wheat. It begins with three or four Hieratic signs and ends with the Hebrew word עבר. While the interpretation of the Hieratic signs is difficult, Wimmer suggests that the unit of volume at issue is *homer*, a large measure of ca. 220 liters (Wimmer 2008: 39–41). עבר is obviously the biblical עֲבוּר. The term occurs twice in the Bible in Josh 5:11–12 in the expression עֲבוּר הָאָרֶץ, “the yield of the land,” which parallels the very common term תְּבוּאָה, “produce, harvest, yield (of the land).” The equivalent Akkadian term *ebūru* has associations with the summer season (see Kaddari 2007: 770; CAD, s.v. “ebūru,” “*ebūrû,” and “ebūrû”).⁶ Crucially, as wheat was not among the provisions issued to soldiers, the men listed in the ostrakon are best understood as taxpaying farmers. They could be heads or representatives of clans, probably associated with a specific town or region. Thus, Arad Ostrakon 31 seems to summarize the wheat levied from the eight clans of a certain town after the harvest.

⁶ עֲבוּר might point to a second, final phase of the wheat harvest, as the Bible sometimes employs the word עֵשׂ, “summer,” to mean “harvest” (Prov 6:8, 10:5, 20:4; Isa 16:9). Compare also the term שִׁילֵי קָצִיר in the Talmud (b. Yebamot 116b).

4.2. Arad Ostracon 32, Stratum VII, late 7th century BCE (Fig. 4)

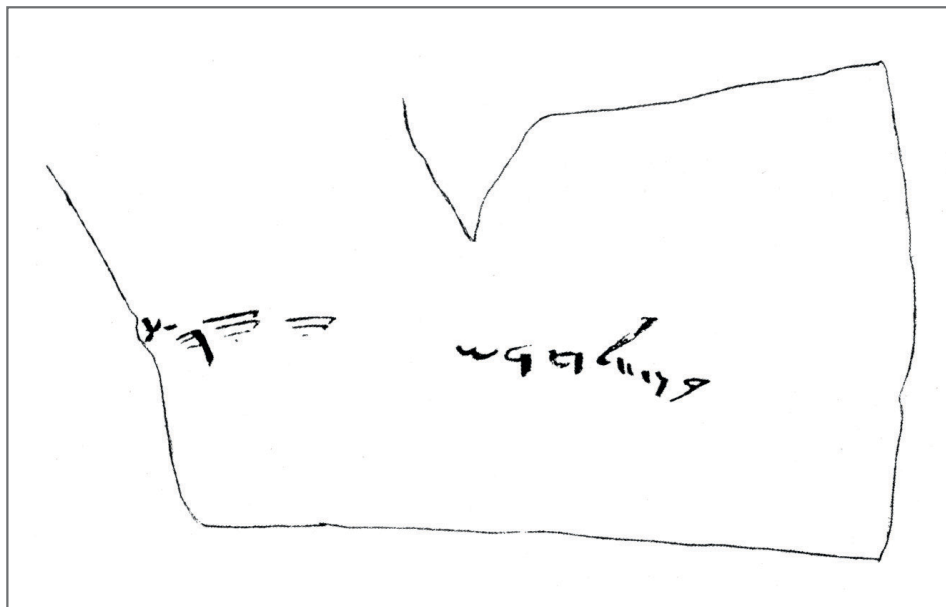


Fig. 4. Arad Ostracon 32.

This ostracon preserves faded remains of written lines followed by a seeming closing or concluding line. This last line was most probably written by another person with a different ink, which facilitated its preservation.⁷ It reads, ב 8 לחדש [חצר], “On the 8th (day) of the month. [Ḥaṣar]-Sūsāh.” Aharoni (1981: 60) completed the text according to the name of the Simeonite town recorded as חצר סוסה (Josh 19:5) and חצר סוסים (1 Chr 4:31); this reconstruction is widely accepted.

As in Ostracon 31, it seems most appropriate to interpret the document as a list of clans of Ḥaṣar-Sūsāh, specifying the amounts of an agricultural product paid as tax-in-kind. The ostracon’s missing concluding line indicated the total amount received from the town. The name of the month was not stated because it was obvious. According to Arad’s monthly registration system, summary lists were made at the end of each month, and the preliminary monthly lists were discarded (see Lemaire 1977: 230–231; Aharoni 1981: 22, 144).

⁷ A similar phenomenon can possibly be observed in a recently found ostracon from Lachish (personal observation).

4.3. Arad Ostracon 34, Stratum VII, late 7th century BCE (Fig. 5)

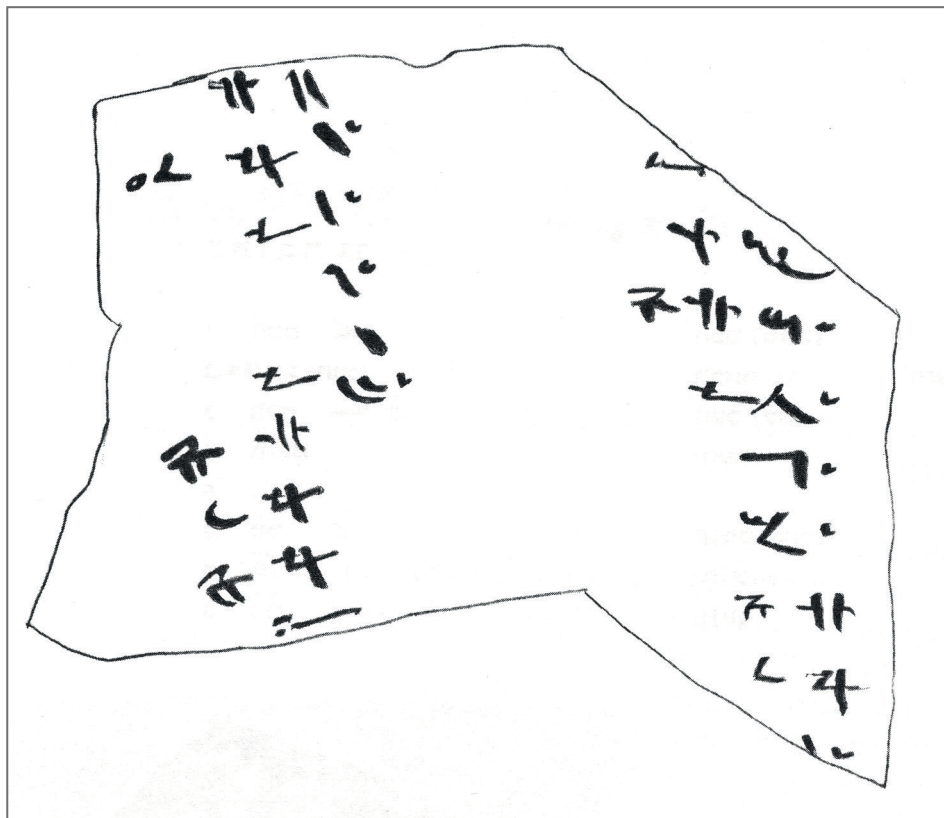


Fig. 5. Arad Ostracon 34.

This is the only Arad Ostracon consisting entirely of Hieratic signs and characters arranged in two columns (Aharoni 1981: 62–64; Wimmer 2008: 42–46). Its use and meaning remain controversial (Herzog 2002: 81; Wimmer 2008: 42). The opinions offered include a list performed by an Egyptian scribe (Aharoni 1981: 63), a partial document that originally included a third column with Hebrew names (Yeivin 1966: 153–154), and a student's exercise (Lemaire 1981: 16–18).

Considering these difficulties, this ostracon is not reliable enough for the present purposes. Nevertheless, two observations that suggest that the ostracon reflects the registration of agricultural products received in Arad are noteworthy. First, it was found together with Ostraca 31 and 32. Second, according to Wimmer (2008: 45), the volumes recorded in it are noticeably large and expressed in units of *homer* (ca. 220 liters) and *khar* (*h'r*) (ca. 80 liters), obviously expressing the receipt rather than the dispensation of grain.

4.4. Arad Ostracon 33, Stratum VII, late 7th century BCE (Fig. 6)

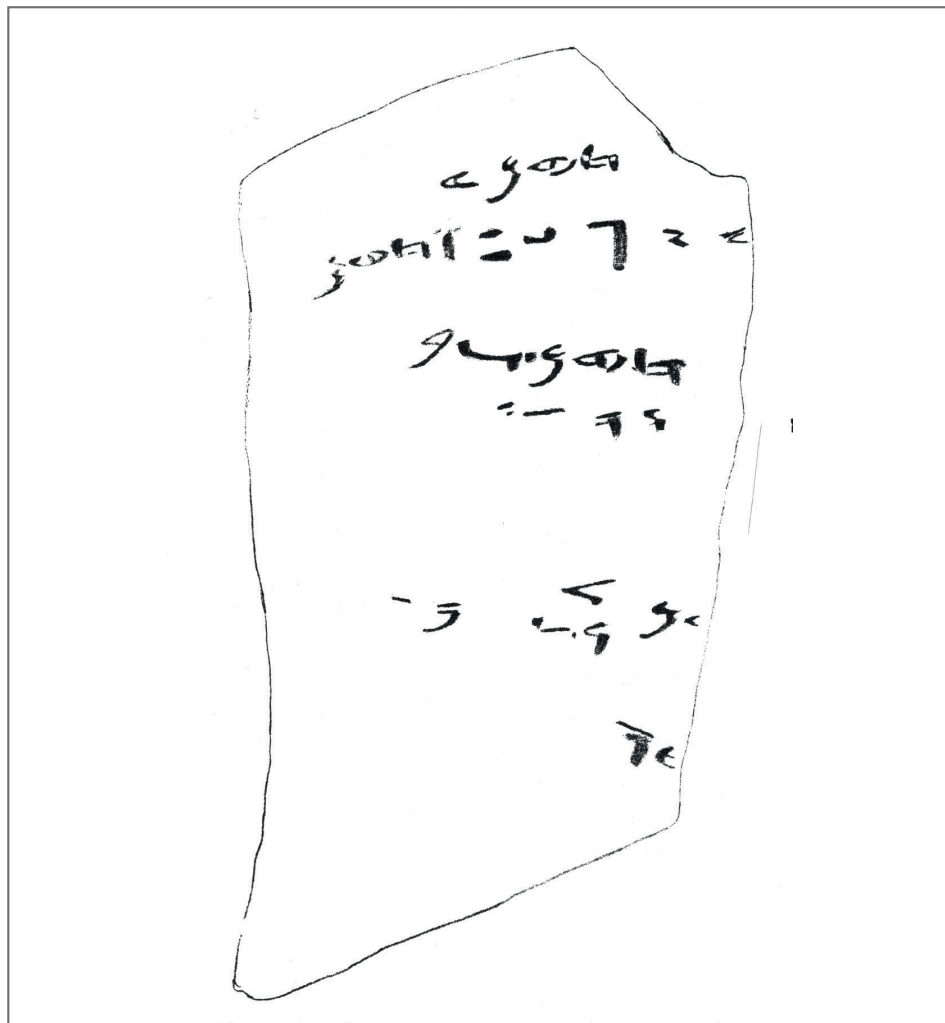


Fig. 6. Arad Ostracon 33.

This ostracon was found inside the storehouse building in Stratum VII (Aharoni 1981: 61). It is a list of different quantities of חט, “wheat.” Each line consists of the word “wheat” and Hieratic characters. Aharoni interpreted it as an inventory of the storehouse, which, according to Ostracon 3, would have been produced by the commander of Arad from time to time.

4.5. Arad Ostracon 38, out of context, epigraphically late 7th century BCE (Fig. 7)

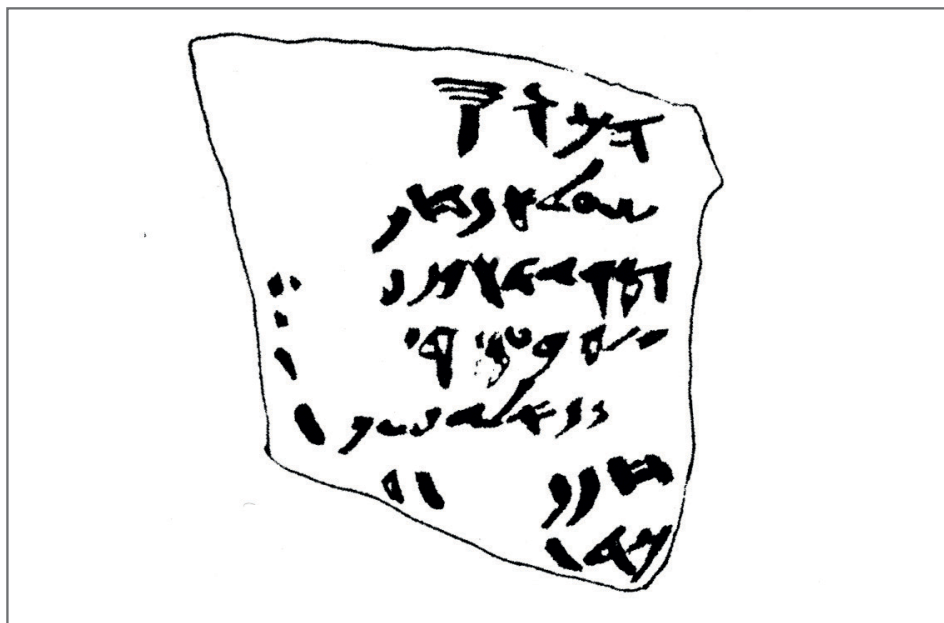


Fig. 7. Arad Ostracon 38.

1.	הכוס	Hakkōs
2.	שעל אֵין חנן	Šū‘āl son of Hānā[n x]
3.	גמריהו בן ש []	Gemaryāhū son of Š[x]
4.	שבע בן [] ר	Šeba‘ son of []r 1
5.	[] בן אלישב	[] son of ‘Elyāšib 1
6.	חנן	Hānān 2
7.	[ז]כר	[Za]kkūr 1

This ostracon is very likely a record of products received in Arad. It features the name הכוס at the top, followed by a list of personal names with quantities attached to them. הכוס literally means “the little owl,” and the definite article *he* suggests that it does not designate a person but a clan (Ahituv 2008: 140). As such, the ostracon probably records quantities of an agricultural product received from the heads of families that made up the הכוס clan.

8 The *aleph* is probably a scribal error and should be read as a *bet*, thus reading בן, “son.”

4.6. Arad Ostracon 49, Stratum VIII (Fig. 8)

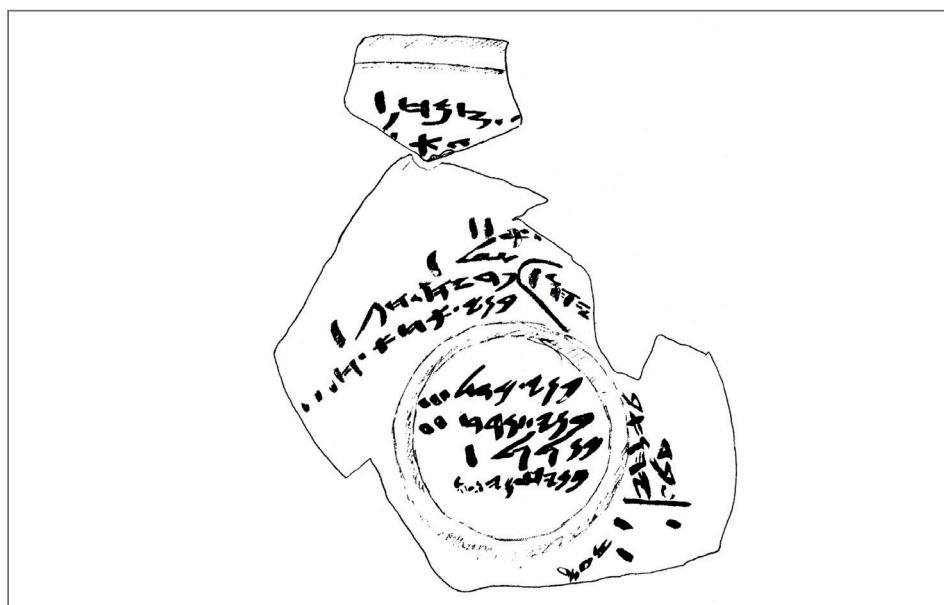


Fig. 8. Arad Ostracon 49.

On the base

1.	בנל	The sons of Bāṣāl 3
2.	קרח	The sons of Qōrah/Qārēah 2
3.	גלגל	The son of Gilgāl 1
4.	[] בני כנ'הו	The sons of Kōnyāhū [x]

Column 1

5.	[]	[] 1
6.	[]	[] 1
7.	יה'ועז	[Yeh]ō'āz 1

Column 2

8.	עבד'יהו	'Öbad[yāhū x]
9.	יהואב	Yehō'āb [x]

Column 3

10.	יה' []	[]yāhū 1
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Column 4

11.	.ן צמה []	[The so]n of Ṣemah 1
12.	דאל []	[The son of 'Ab]dī'el [x]
13.	א []	[]ā' 2
14.	שעל	Šū'al 1
15.	^ פדיהו. ח	Pedāyāhū ḥ 11
16.	אהא. ח	The sons of 'Āhā' ḥ 3

This ostrakon makes a special contribution to our study. It lists not only individuals but also clans, using the formula “sons of X.” The individuals named were most probably heads of subclans, and each is associated with a numeral: 1, 2, or 3.

The ostrakon was found in Stratum VIII in a room adjoining the dismantled temple of the previous stratum.⁹ Aharoni argued that the temple was abolished in two stages: in Stratum IX under the cult reform of King Hezekiah and in Stratum VIII under the cult reform of King Josiah. Accordingly, he linked the ostrakon with cultic activities from before Josiah’s reform, placed it in the early stages of Stratum VIII, and interpreted it as a list of people who made offerings to the temple (Aharoni 1981: 80–84; Ahituv 2008: 147–148). However, as demonstrated by Herzog’s (2002) revised stratigraphy, the Arad temple was completely abolished in Stratum IX and no longer existed in Strata VIII–VI (Herzog 2002: 35–40, 50, 65–67; 2010: 169–175).¹⁰

As Aharoni (1981: 82) explicitly stated, he considered the ostrakon residual and associated with a partly dismantled temple because he perceived the text as containing cultic indications. These alleged indications, however, are weak:

Aharoni reads בני גלגל in line 3 as people connected to Gilgal, the famous sacred site near Jericho, or another sacred site with the same name. Nevertheless, nothing prevents us from interpreting גלגל as the name of a clan like the other names on the list.

In lines 15 and 16, the letter *het* was interposed between the name and the number. Aharoni suggested this could be an abbreviation of חטאת, a type of sacrifice, although, as he himself states, it could also be an abbreviation of חטם, “wheat,” the most widely accepted interpretation.¹¹ Incidentally, the *het* could also express חצי “half.”

Aharoni (1982: 82) concluded that four of the names on the list—בצל, גלגל, קרח, and צמח—are related to cultic activities: “We get the impression that some of the names are not regular personal names, but names connected to the priesthood.” However, none of these names belongs to a known priestly family. Contra Aharoni, the “sons of בצל” should not be connected with Bezalel, the builder of the menorah. Although a family called “the sons of בְּצֻלִית/בְּצֻלִיִּם” (Ezra 2:52; Neh 7:54) is mentioned among the secondary cultic personal *netinim* returning in the Persian period, nothing indicates a connection between them. קרח in the Bible is the name of a Levite (not a priestly) family in Jerusalem and

9 The ostrakon fragments were found in two loci, 786 and 1010. Prof. Zeev Herzog (personal communication) confirmed to me that both belong to Stratum VIII.

10 For other opinions, see Herzog (2002: 69–72; 2010: 179).

11 Other interpretations offered for this abbreviation are חג, “feast” (Lemaire 1977: 211), and the measure of volume חקר (see Dobbs-Allsopp et al. 2005: 79).

has been attributed (as קָרָה and קָרָה) to at least six more persons or clans, Levites, Edomites, and Calebites from the Hebron area (1 Chr 2:43),¹² which seem more relevant to the ostrakon.

All this considered, Arad Ostrakon 49 likely records quantities of agricultural products collected from the listed clans during the short lifetime of Stratum VIII, spanning the dismantling of the temple in Stratum IX and the site's destruction in 701 BCE. The fact that agricultural products were sometimes received from individuals, most probably clan heads, and sometimes from towns (see Arad Ostrakon 25 below) is reminiscent of the Samaria Ostraca, which indubitably registered taxpayers.

4.7. Arad Ostrakon 25, out of context, epigraphically late 7th–6th century BCE (Fig. 9)

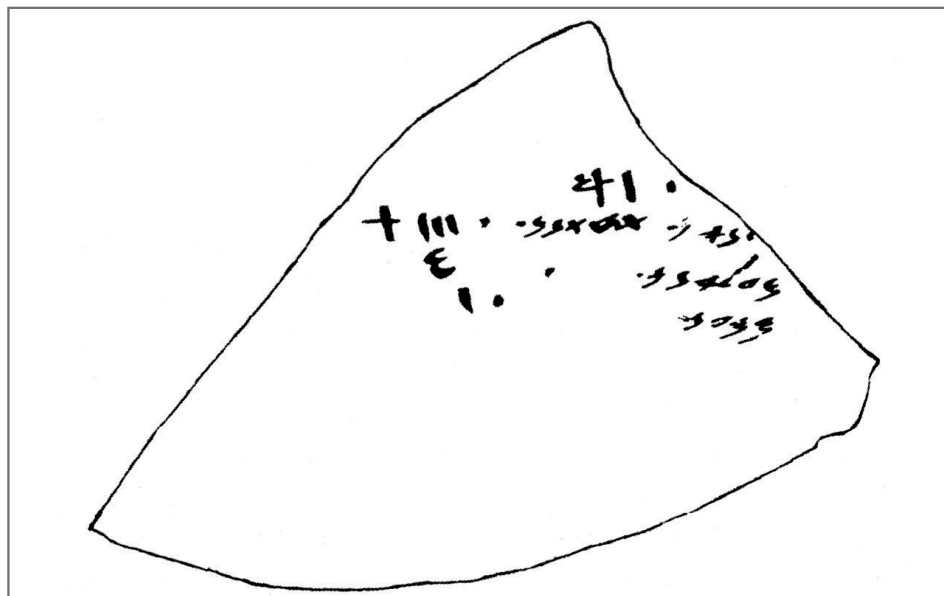


Fig. 9. Arad Ostrakon 25.

- | | | |
|----|----------------|---------------------------|
| 1. | כָּרָה [] | [From ...] כָּרָה |
| 2. | כָּרָה, תחתנים | [From] Lower 'Ānīm כָּרָה |
| 3. | ממלכים | From Upper ('Ānīm) ממלכים |
| 4. | ממלך | From Mā'ōn ממלך |

12 On the antiquity of this list of names in the Book of Chronicles, going back to the First Temple period, see Vainstub (2017: 325–327, references therein).

This ostrakon is probably the most relevant document to the topic discussed here. It was found outside the city wall and, like the 'Elyāšīb archive, is dated epigraphically to the site's latest Judahite stratum. It is a palimpsest and was found near another fragment of the same vessel, suggesting it was written in Arad while registering the supplies received. The beginning of the first line is broken off and missing. The missing *mem* and partially preserved 'ayin at the start of the second line demonstrate this. The lost part of the first line most probably contained the name of a town in the vicinity of those listed in the following rows.

In lines 3 and 4, a town name is introduced with the preposition *m*, "from," and is associated with Hieratic signs. This led Rainey (1971: 27) to conclude that the ostrakon represents a list of goods *received* at Arad, an opinion accepted by Aharoni (1981) and Herzog (2002: 79). Undoubtedly, this document records quantities of products delivered to the fortress from those towns, either by clans or as communal shipments from towns. Interestingly, the three towns named in the ostrakon are located outside and to the north of the Beer Sheva-Arad Valley, on the southern slopes of the Hebron Hills overlooking the valley: Lower 'Anim, Upper 'Anim, and Ma'on (see Ahituv 2008: 134).¹³

The Hieratic signs following the town names are even more significant for our study. After Yeivin (1966), Rainey (1971), Aharoni (1981: 50–51), and others, Wimmer (2008: 36–37) studied these signs closely. He also carried out a new critical revision of the previous research and the currently available data on these signs in Hebrew ostraca in general. Concerning the first line, he concluded, on graphic grounds, that the signs comprise the numeral "6" and the volume measure *kor* (ca. 200 liters; Wimmer 2008: 256), resulting in an impressive total of about 1,200 liters. Considering this quantity exaggerated, Wimmer preferred an alternative interpretation that reads the sign as one quadruple of *ḥq't* (19.2 liters) instead of a *kor* (Wimmer 2008: 257). In the second line, pertaining to produce received from Lower 'Anim, he observes the Hieratic symbol for the volume measure *khar* (*ḥ'r*) (ca. 80 liters; Wimmer 2008: 264). However, he argues that it expresses here "three quadruples of *ḥq't*" (ca. 58 liters). By the same token, Wimmer reads the amount of produce received from Upper 'Anim as six quadruples of *ḥq't* (ca. 115 liters) and that from Ma'on as one quadruple of *ḥq't* (ca. 19 liters).

All of the above seems to indicate that this singular document is a record of the annual taxes-in-kind that four towns paid and delivered to Arad. Hence, the interpretation of the quantities in their maximal sense is perfectly possible and indeed preferable.

¹³ Rainey (1971: 28) considered the possibility that the names stand for tribal or ethnic elements rather than for towns.

5. Discussion and Conclusions

The seven ostraca discussed above exemplify the administrative system collecting and redistributing tax-in-kind in the Beer Sheva-Arad Valley.¹⁴ This conclusion arises from the characteristics of these ostraca—registering large quantities of unprocessed agricultural products and linking them to clans or towns—and explains where the agricultural products stored in Arad and later redistributed as processed victuals came from. These characteristics are at odds with the standard scholarly opinion that almost all ostraca speak of supplies dispensed *from* Arad. Ostrakon 25 is the only generally agreed case of a document reflecting supplies delivered *to* Arad. If Ostrakon 25 is a standard annual summary of the taxes-in-kind levied from four towns, then Arad's jurisdiction extended beyond the valley and included the southeastern slopes of the Hebron Hills. On the other hand, Ostrakon 25 could reflect a one-time delivery sent during a drought in the Arad Valley.

The following scheme of Arad's tax collection and administrative system can be hypothesized:

- (1) Farmers living in the Beer Sheva-Arad Valley would pay their taxes to the kingdom indirectly by delivering a portion of their harvests and crops to the fortresses.
- (2) The fortresses' commanders received the goods and stored them in the storehouses (see Herzog 2002: 77–79). Their men would then ground the wheat, process chickpeas, and bake bread; they might also have produced wine and olive oil.¹⁵
- (3) Flour, bread, chickpeas and wine were provided throughout the year to soldiers passing through the fortress according to vouchers issued to them by a higher authority.

If this was indeed the system, it means that the valley functioned as an independent tax-collection unit. This way, the kingdom could maintain a military and governmental presence in the valley, provision military units passing through, and perhaps dispense supplies to distant, smaller strongholds in the central Negev Highlands and the Arava, which do not enjoy the benefits of an agricultural hinterland.

This traffic of goods in the valley was strictly supervised from above by higher authorities, possibly based in Jerusalem, as can be learned from Ostrakon

14 We may add that ostraca simply listing personal names with or without Hieratic signs (Ostraca 22, 23, 27, 35, 36, 39, 41–43, 58, 59, 60, 67, 68) might have also been registers of taxpayers.

15 The current epigraphic and archaeological data does not allow us to determine if these products were delivered to the fortress processed or raw. The wine was probably produced near the vineyards and brought to the fortresses as a finished product (Rosen and Ayalon 2021: 238).

18. We can assume that summaries of the collected products were sent to these authorities. In fact, Ostracon 3 states that the commander of the Arad fortress was due to perform a stocktaking and send a detailed inventory. Moreover, the supply orders reflect detailed knowledge of the products remaining in stock based on the monthly reports.¹⁶

As proposed above, if my hypothesis is correct, the valley, or at least its eastern edge, functioned as an administrative unit that collected agricultural products as taxes. However, instead of forwarding them to the capital, it used them to supply the area's stronghold and patrol network. This does not imply, however, that the same system was used in other regions of the kingdom.

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¹⁶ Ostraca 5, 7, 8, 17, and 32 demonstrate that management reports, most probably to Jerusalem, were issued monthly. Ostraca 37, 43, 59, 66, 75, 90, and 97, which were found in several strata inside the storehouse, attest to administrative activities related to received and stored products. However, their fragmentation is too severe, and their preservation is too poor to provide detailed data.

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