



Excavation at Sarcham, A Multi-Period Archaeological Site in Hawraman Region, Kurdistan Province, Iran

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Article Info	Abstract
Pp: 151-181	The archaeological site of Sarcham is situated in the southwestern region (Hawraman Region) of Kurdistan Province in western Iran. It was excavated as part of the Darian Dam Archaeological Salvage Project (DDASP) in 2015, revealing a multi-period site with cultural deposits spanning four distinct archaeological periods. This paper aims to present the findings from the excavation season, highlighting the significance of each period. The cultural sequence of site includes the Middle Chalcolithic (Se Gabi phase), Middle Bronze Age, Late Bronze Age, and the Parthian/Sassanid era. The Middle Chalcolithic pottery discovered at Sarcham bears resemblance to that of the Seh Gabi period in the Central Zagros region. Similarly, the Middle Bronze Age pottery assemblage exhibits similarities with those found in the Central Zagros (late phases of Godin III), Northwestern Iran, and Anatolia. This excavation marks the first discovery of a Middle Bronze Age/Late Bronze Age site in Kurdistan Province. Furthermore, our research indicates that certain grey ware previously attributed to the Iron Age I period actually originated in the Bronze Age. The uppermost layer of the site, albeit somewhat disturbed, yielded pottery fragments dating to the Parthian/Sassanid period. This study sheds new light on the archaeological significance of Sarcham and contributes to the understanding cultural history of the region.
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1. Introduction

Archaeological investigations in Kurdistan Province have a long and extensive history. Notable sites, such as the Karaftou Cave, were studied in the end of the 19th century by De Morgan (1896). At Tepe Ziwiye, Cuyler Young conducted a brief sounding in 1964 (Young, 1965), and in more recent years, Nosratollah Motamedi led several seasons of archaeological excavations (Motamedi, 1997). In 1971, Swiny conducted a comprehensive survey of a large region in the northwest of Iran, including the northeastern parts of Kurdistan Province (Swiny, 1975). Later, the Iranian team excavated Kani Mikail cave, resulted to identifying Chalcolithic remains (Roustaei *et al.*, 2002). The cemetery of Kul Tarike, dating to the Mannaean period, was also excavated (Rezvani and Roustaei, 2007: 139). The most recent prehistoric archaeological project in Kurdistan Province took place at Tepe Kalanan, where remains from the Godin VII period were uncovered (Saed Mucheshi, 2010).

Additionally, various surveys and excavations have been conducted in different areas of the province, including the Marivan plain (Mohammadifar and Motarjem, 2008), Bijar (Sharifi and Motarjem, 2018), and the Zagros graveyard in Sanandaj (Saed Mucheshi, 2012). However, despite these commendable efforts, the field of archaeology in Kurdistan faces significant challenges. The absence of intensive and systematic survey and excavation, coupled with a shortage of consistent publication, remains a critical issue that needs to be addressed.

The archaeological excavation at the Sarcham site in the Kurdistan Province has yielded valuable insights into the prehistoric, proto-historic, and historic eras in the region. The excavation uncovered material culture spanning the Chalcolithic, Bronze Age, and Historical periods, shedding light on the subsistence strategies and cultural practices of past inhabitants. Despite the challenging environment that limited agricultural activities, the excavation at Sarcham has provided a unique perspective on the cultural evolution in this intermediate region. This paper aims to introduce and interpret the findings at Sarcham, exploring the archaeological periods represented, the absolute and relative chronological framework of each period, the cultural interactions with other regions, the architectural features uncovered, and the subsistence strategies of the ancient inhabitants. This paper seeks to enhance our understanding of the prehistoric and proto-historic occupations of the Kurdistan Province and the impact of the challenging environment on human settlement patterns and cultural practices.

2. Geographical landscape

The Sarcham site, situated in the Sarvabad County within the Hawraman region of the Kurdistan Province. Located in the northern part of the Central Zagros region, the site covers approximately one hectare and is located at coordinates 35° 09' 41.75" N, 46° 26' 8.92" E, with an elevation of 885 meters above sea level. Notably, it lies nearly 25 kilometers east of the Iran–Iraq border (Fig. 1). Sarcham lies in the southern foothills of Mount Koosalan and rests along the northern bank of the River Sirwan. The former village of Rowar, now submerged due to the rise of the Darian dam water, was situated just south of the site (Fig. 2). In its place, a new village has been established to the east.

The Sirwan River receives contributions from streams originating in nearby mountains, including Koosalan and Shaho. After traversing various watercourses within Iranian Kurdistan, it enters Iraqi Kurdistan and eventually flows into the Darbandikhan dam lake.

The Hawraman region, which encompasses parts of both the southwestern Kurdistan and northwestern Kermanshah provinces, features rugged mountainous terrain with steep slopes. Consequently, two distinct types of sites have emerged in this area: permanent villages situated at lower altitudes and temporary summer camps perched at higher elevations. Hawraman topography is characterized by steep or sloping mountain ranges, devoid of extensive plains. The vegetation, dominated by oak and pistachio forests, further reflects the unique geographic configuration of this region. Unlike other parts of the Kurdistan province, Hawraman lacks agricultural plains entirely. This challenging environment significantly impacted the subsistence strategies of local inhabitants and influenced the formation processes of archaeological sites. In contrast to the flat or lowland regions, where walls predominantly consist of mud bricks, the architectural remnants in the Hawraman area predominantly employ stone construction. The cultivation of grains within this region is severely restricted, prompting the local inhabitants to source essential grains, particularly wheat, from neighboring areas both historically and in the present day.

3. Research Background and Excavation Methodology

In recent years (2015-2016), the Darian Dam Archaeological Salvage Project (DDASP) has undertaken comprehensive surveys and rescue excavations in the Hawraman region. Among the sites investigated, Sarcham stands out as a significant archaeological site (Biglari *et al.*, 2017). In the autumn of 2015, a rescue excavation was conducted under the direction of Amir Saed Mucheshi (2015). During the archaeological survey at Sarcham, a diverse assemblage of artifacts identified, including mortars, pottery vessels, and ground stone implements. The site, although currently under cultivation, had previously hosted gardens. This historical land use was facilitated by ingenious water management systems that harnessed resources from higher elevations. Notably, the steep topography of the Hawraman region has contributed to the pronounced erosion of ancient sites, a phenomenon clearly observable at Sarcham.

The excavation methodology used adhered to the principles of the single context system. Given that a single stratigraphic layer may encompass diverse contexts, distinct context numbers were assigned to each cultural deposit encountered. The comprehensive recovery process involved the separate collection of finds, artifacts, botanical specimens, and faunal remains. Notably, each archaeological object received a unique Registry Number (RN). Specifically, contexts containing ash deposits underwent careful collection and flotation. All retrieved objects were meticulously preserved for subsequent analyses. The pottery assemblage was documented through drawings, measurements (including rim and base profiles), and detailed descriptions. Following this initial examination, diagnostic potsherds were selectively chosen for further illustration and photography, while non-diagnostic fragments were earmarked for registration and subsequent statistical assessments.

Some samples for laboratory analyses included (XRF, XRD, Thermoluminescence dating, and AMS radiocarbon dating) were selected from each chronological period. Thermoluminescence dating was conducted at the Thermoluminescence Dating Laboratory of the Research Institute of Cultural Heritage and Tourism (RICHT). Additionally, six bone samples underwent C14 analysis at Paleo Labo Co., Ltd. in Japan.

Informed by preliminary assessments and a comprehensive site study, our excavation efforts focused on four distinct trenches within the archaeological site. These trenches were

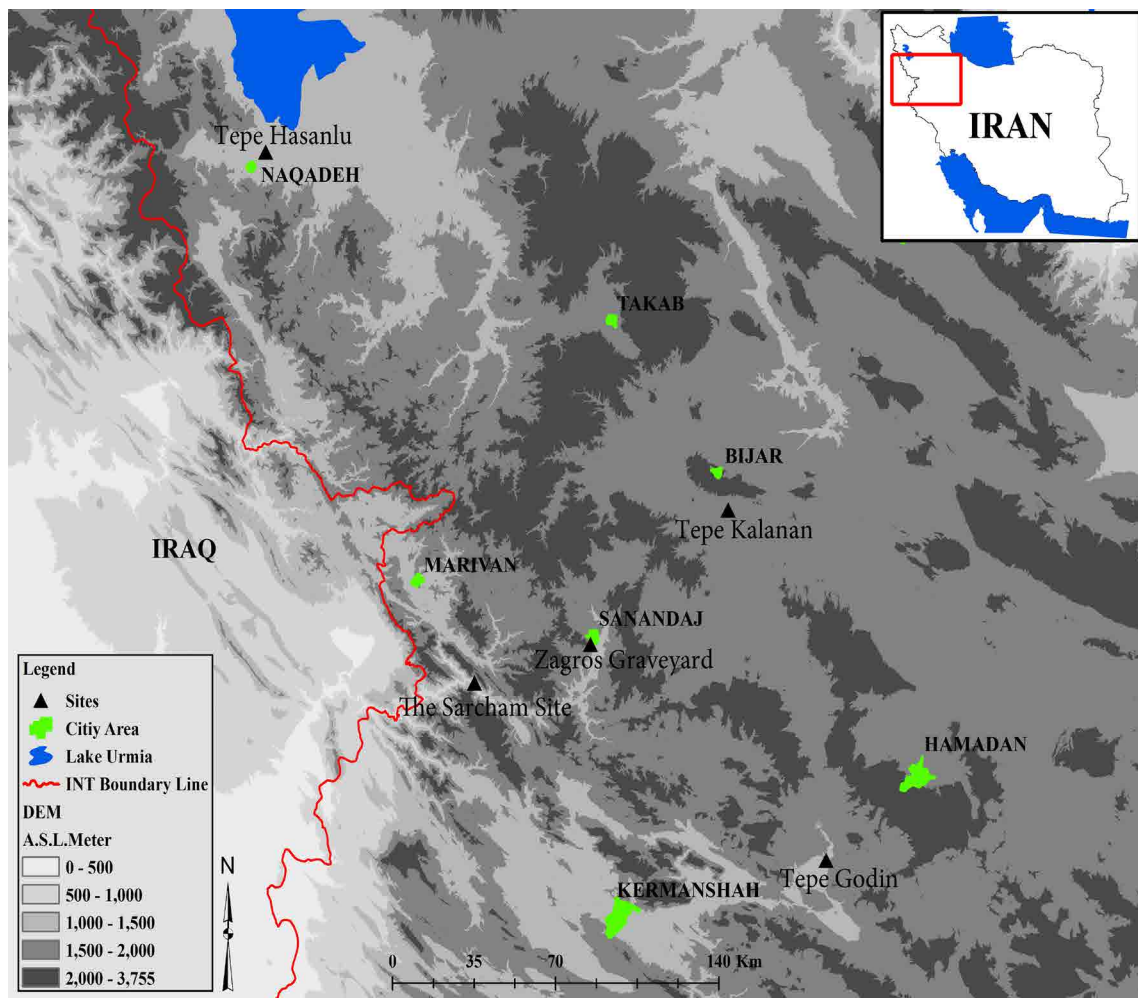


Fig. 1: Location of Sarcham site in western Iran

designated as follows: Trench A (located centrally), Trench B (southern side), Trench C (northeast of Trench B), and Trench D (northern extent) (Fig. 3). While Trenches B (3×2 meters) and C (2×2 meters) were relatively small, Trenches A (5×10 meters) and D (3×12 meters) constituted broader and deeper excavations.

The site, at the time of excavation, was interspersed with pomegranate orchards, which constrained the dimensions of our trenches. The context number of Trench A to D started from 1000 to 4000 respectively. As a result of recent human interference and disturbance like agriculture, gardening, flattening, and fencing, the surface of the site was gradually destroyed. Despite this limitation, we meticulously documented surface data. Our preliminary assessment revealed a multi-period ancient site, with stratified layers yielding valuable insights. The recovered artifacts spanned distinct historical epochs: Parthian/Sassanid Era (Period I), Late Bronze Age (Period II), Middle Bronze Age (Period III), Middle Chalcolithic Period (Period IV). Notably, Trench A yielded evidence of pottery dating back to the end of the second millennium BC and the beginning of the first millennium BC. However, the uppermost layer of this trench suffered disturbance due to agricultural activities. In the upper strata of Trench A, Parthian/Sassanid and Iron Age pottery were found together.



Fig. 2: Environmental setting of the site

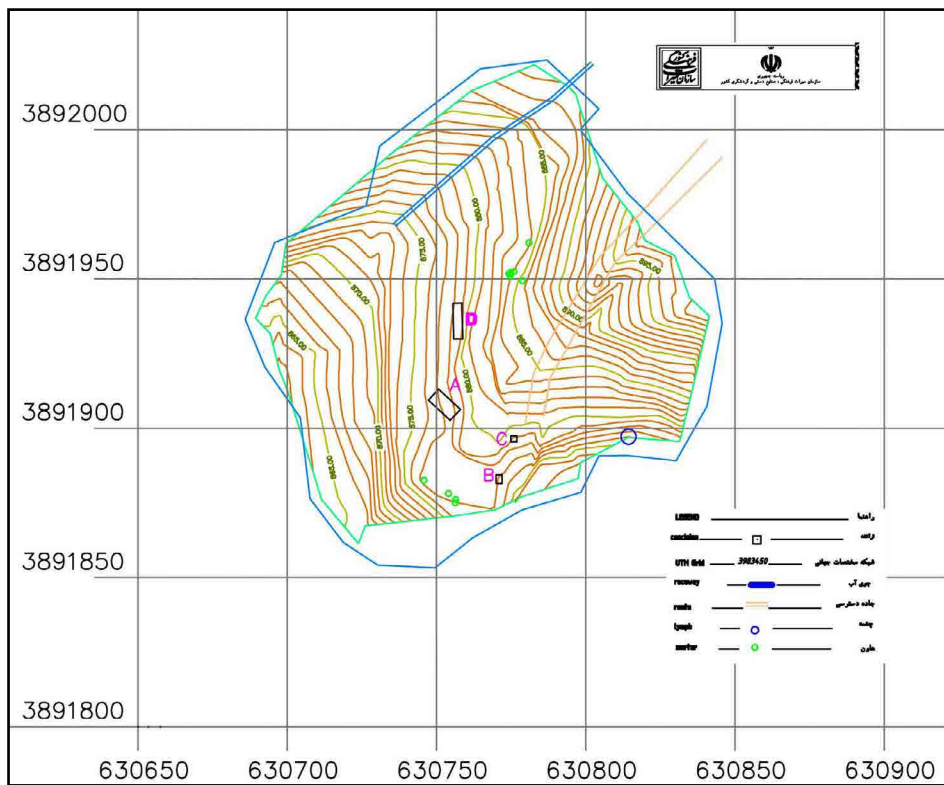


Fig. 3: Location of the trenches on a topographic map of Sarcham site

4. Excavations and Periodization

4.1. Trench A

Trench A, measuring 5×10 meters, was opened in the central part of the site, strategically targeting areas anticipated to yield architectural remains and cultural deposits (Fig. 4a, b). The excavation reached a depth of 230 centimeters. The stratified materials recovered from Trench A span distinct historical epochs, including: Parthian/Sassanid Period (Period I), Early Iron Age (Disturbed), and Middle Bronze Age (Period III) (Fig. 4c, d). Approximately 15 contexts associated with these periods were excavated. Notably, the upper layers of Trench A exhibit a complex mixture of materials. This phenomenon is particularly pronounced in the southern half of the trench, where Parthian/Sassanid, Iron Age, and Bronze Age pottery coexist. Unfortunately, the presence of modern artifacts, such as an iron nail, attests to the disturbance and even destruction of some of these upper layers. Local villagers report that this specific area of the site underwent leveling and infilling in recent years, thus presenting a possible reason for these disturbances.

The uppermost architectural feature encountered in Trench A lies along the eastern side of the trench. Structures from this uppermost level were constructed from substantial rock slabs (Fig. 4b). A subsequent architectural element unearthed in the lower strata, characterized by a sparse arrangement of stones, primarily observed in the southern section. Unlike the first wall, this secondary structure constructed with smaller stones. Within this trench, the Parthian/Sassanid period pottery, including buff and orange wares (Fig. 5), alongside Middle Bronze Age buff and grey ceramics were found (Fig. 6). Given the disturbances of some layers of this trench, we interpret that the uppermost stratum, associated with the first wall, corresponds to the Parthian/Sassanid period (Period I of Sarcham). In the other hand, the lower layers, marked by small stone architecture, belong to the Middle Bronze Age (Period III Sarcham).

Period I and Period III in Trench A: The potsherds recovered from Trench A present a fascinating puzzle due to their uncertain contexts. While careful analyses are somewhat limited, the undisturbed layers within the trench have yielded valuable information, particularly regarding the Middle Bronze Age occupation of the site. A total of 820 potsherds were collected from contexts associated with the Parthian/Sassanid period (Period I). Among these, the prevailing surface colors are orange (712 = 86.82%) and grey (108 = 13.17%). The pottery assemblage exhibits a diverse range of forms, including buff, red, and brown wares. Within this collection, 9.2% represent fine orange ware, 56.7% fall into the category of medium quality, and 34% are coarse. In contrast, the grey ware group comprises 5.8% fine, 66.9% medium, and 27.1% coarse specimens.

The firing quality of the potsherds varies: 46.5% are well-fired, while the remainder falls into the under-fired category. Slip application also shows diversity, with 27.6% featuring a thin slip and 72.4% displaying a thick slip. The production techniques are equally diverse, with 21.5% being wheel-made and 78.5% being hand-made. Notably, all pottery vessels were tempered with small or medium grit. Two thermoluminescence samples, analyzed by the Laboratory of Iranian Cultural Properties at the Research Center for Conservation of Cultural Relics, provide chronological context. A sample from context 1011 yields a date of 1830±125 years ago, while another sample indicates 1780±120 years ago. Consequently, this context aligns with the end of Parthian or the early Sassanid period (Fig. 7). However, it is essential to note that human disturbances have affected parts of this context. Remarkably, potsherds from the historical period and

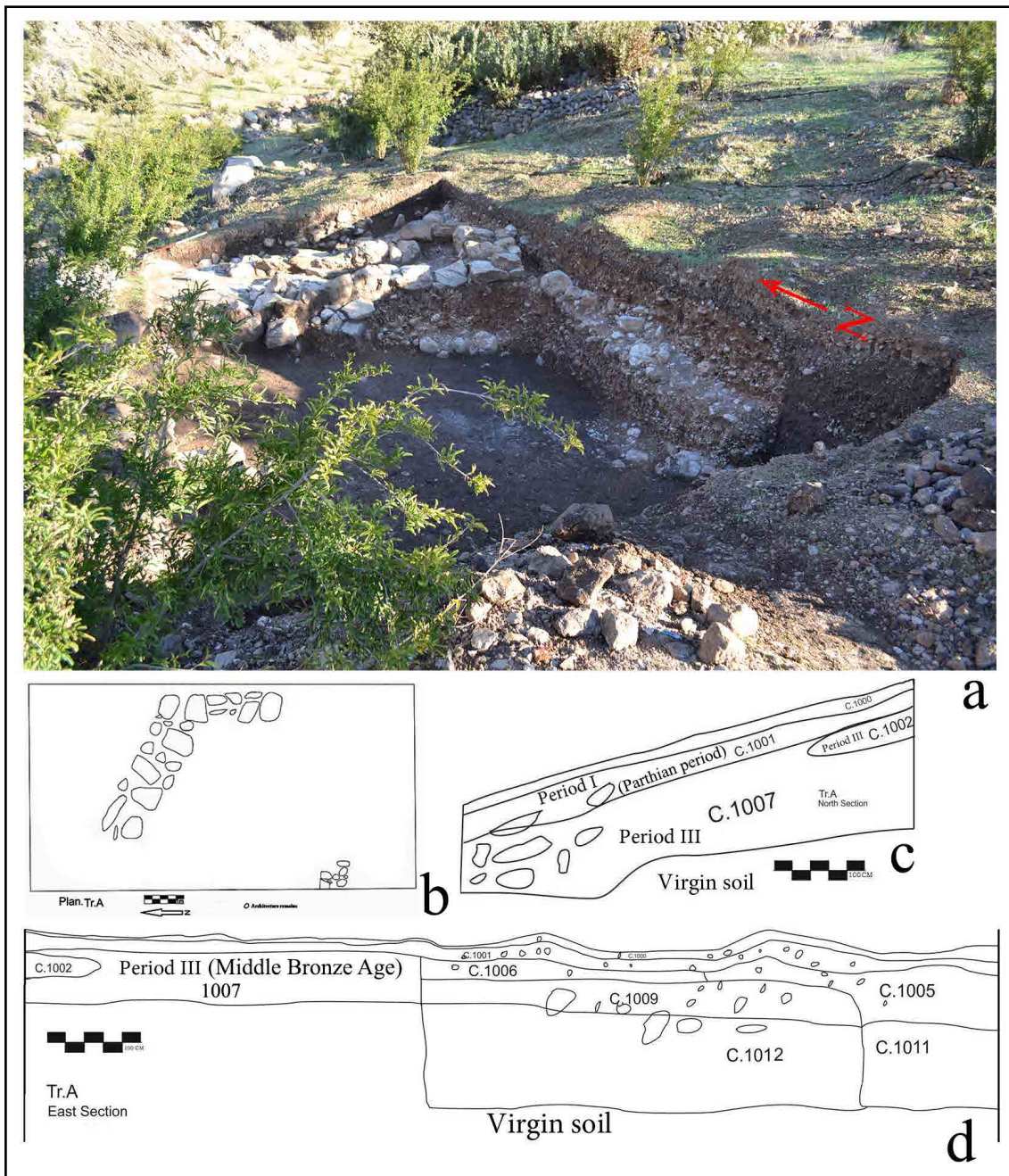


Fig. 4a: Trench A; 4b: Plan of Trench A, 4c: north sections of Trench A, 4d: East sections of Trench A

the first millennium BC coexist within this intriguing archaeological layer.

The most common vessel forms for this period include: Jars with short necks, bowls, hole-mouth vessels with horizontal bands under the rim, hemispherical hole-mouth bowls, funnel-necked jars, and open mouth bowls. These vessels exhibit characteristic ornamentation, such as small parallel bands applied beneath the rim and incised grooved designs (Fig. 5). In addition to pottery, our excavations yielded a few iron artifacts and other small finds (Fig. 8: upper row).

Period III (Middle Bronze Age) lies stratigraphically beneath Period I (Parthian/Sassanid period). While some contexts within Period I were disturbed, the lowermost layer in the northern part of Trench A (Period III) remains remarkably intact. Our analysis

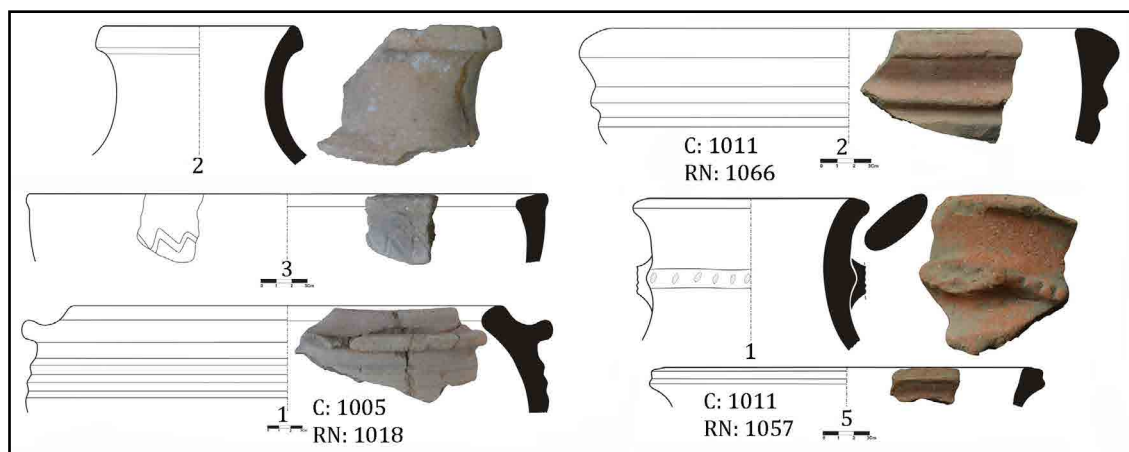


Fig. 5: Period I (Parthian/Sassanid) potteries from Trench A

Potteries Registry

Fig. 5: Period I (Parthian/Sassanid Period), Trench A

1005 (context number)/1018 (registry number): 2 (excavation number of pottery); Rim fragment of a jar with a short neck which the rim is thickened; rim diameter: 6 cm; medium texture; orange; thin slipped on the exterior and interior; grit inclusion; under-fired, wheel-made.

1005/1018: 3; Rim fragment of a bowl with a thick rim and incised grooved decoration under the rim; rim diameter: 16 cm: medium texture; orange; thin slipped on the exterior and interior; grit inclusion; under-fired, hand-made.

1005/1018: 1; Rim fragment of a hole-mouth vessel with a horizontal band under the rim; small parallel bands under the rim; rim diameter: 36 cm; coarse texture; orange; thick slipped on the interior and exterior; grit inclusion; under-fired; hand-made.

1011/1066: 2; hemispherical hole-mouth bowl with rim with concave and grooved rim; rim diameter: 14 cm; medium texture; orange; thin slipped on the interior and exterior; grit inclusion; well-fired; wheel-made.

1011/1057: 1; Rim fragment of jar with a short neck and a horizontal band; rim diameter: 5 cm; medium texture; orange; grit inclusion; well-fired; wheel-made.

1011/1057: 5; Rim of open mouth bowl; rim diameter: 9 cm; fine texture; orange; thin slipped on the interior and thick slipped on the exterior; grit inclusion; well-fired; hand-made.

of the 517 potsherds from Period III reveals the following details: The most common surface color was buff (376=72.72%) and the next group was grey wares (141=27.27%). 6.4% of buff ware was classified as fine, 57.5% medium and 36% coarse; from the grey ware, 8.7% were fine, 72.5% medium, and 18.6% coarse. 22% of potsherds are well-fired and 78% are under-fired. 25.7% have a thick slip and 74.3% have a thin slip. 3.4% were wheel-made and 96.6% hand-made.

Two AMS C14 results provide chronological context for specific contexts: Context 1005: Dates to 1128-976 cal. BC; Context 1007: Dates to 1621-1506 cal. BC (Fig. 9). The latter sample, taken from an undisturbed layer in the northern part of Trench A, appears contemporaneous with Period III in Trench D. Unfortunately, the first sample, associated with the Early Iron Age context, lacks reliable data.

4.2. Trench B

Trench B (3×2 meters) was opened in the southern part of the site (Fig. 3). Some Chalcolithic pottery was identified on the surface of the trench. However, excavation revealed primarily natural contexts, with a few disturbed potsherds.

4.3. Trench C

Trench C is small (2×2 meters), located in the southeastern part of the site, adjacent to Trench B (Figs. 3 and 10). This trench included Middle Bronze Age (Period III Sarcham), based on the presence of buff and grey ware. One wall, oriented north to south, measuring 2 meters in length and 72 centimeters in width-similar to the architectural phase observed in Trench D. The size limitation of the trench precluded precise measurements of the wall. In addition of potsherds, mortars, hand stones, and grinding stones were found.

Period III in Trench C: The ceramic assemblage from Trench C, comprises two main types: buff ware (67 n=69%) and grey ware (30 n=31%). Due to the limitations of excavation area, precise analysis remains elusive. However, parallels can be drawn between this pottery and that found in Trench D and Hasanlu VI (Fig. 6). The buff pottery can be divided to three groups, including fine (11.11%), medium (48.14%) and coarse wares (40.7%). The classification for grey potteries is as follows: fine (3.4%), medium (37.9%) and coarse wares (58.6%). Most of the potteries (88%) are hand-made and grit (95%) commonly used for temper and the rest (5%) have mixed temper. 88% of the assemblage is low-fired and only 12% are well-fired. Approximately 90% of the pottery exhibits inner and external surface washing, often with a thin wash. Some pottery from this period features a polished surface. The carinated bowls (Fig. 6; 3003/3006: 1, 3003/3010: 2) closely resemble the Period III pottery found in Trench D (Fig. 6).

4.4. Trench D

Trench D, measuring 3×12 meters, was strategically excavated north of Trench A, with the anticipation of unearthing significant archaeological deposits (Fig. 11a, b). 13 distinct contexts were excavated, spanning from the surface layer (4000) down to the virgin soil (4013). At its maximum depth, the material culture layer in this trench reaches 305 centimeters. The material culture within this trench exhibits a stratigraphic sequence encompassing the Late Bronze Age (Period II), Middle Bronze Age (Period III), and Middle Chalcolithic (Period IV) (Fig. 11c, d).

Period II of Trench D: The uppermost layer (contexts 4001 and 4002) primarily consists of monochrome buff ware, with a minor presence of grey ware. Notably, contexts 4001 to 4002 exclusively belong to the Late Bronze Age (Fig. 12). Contexts 4003 to 4009 represent the Middle Bronze Age (period III). These layers immediately follow the Late Bronze Age deposits. Contexts 4010 to 4012, dating to the Middle Chalcolithic, underlie the Period III remains. There is no gap between the Late Bronze and Middle Bronze Age deposits. No cultural material was discovered during period I (Parthian/Sassanid Period) in Trench D.

The Late Bronze Age (Period II), 2635 potsherds were recovered comprises 2284 pieces of Buff Ware (86.7%) (buff to orange) and 351 pieces of Grey Ware (13.3%). 10.5% of pottery of period II is wheel-made and remainder hand-made. 29% are well-fired and 71% are under low fire temperature. All potsherds exhibit a grit temper. The inner and outer surfaces of the wares have a thin slip. Fine grey ware includes less than

1% of the assemblage, medium grey ware makes up 63%, and grey coarse ware 39%. Most of Buff ware are coarse (51.4%) and medium (48%), and just 0.38% are fine.

The common vessels of this period are cups (Fig. 12; 4001/4017: no 13), dishes (Fig. 12; 4001/4006: no: 42), plain S-shaped bowls (Fig. 12; 4001-4002, no: 6; Fig. 12: 4001/4006: 14, Fig. 12: 4001/4011, no: 4, Fig. 12: 4001/4017: no: 14), pitchers (Fig. 6: 4001/4006: 30), vases (Fig. 12; 4002/4010: no: 1) and beakers (Fig. 12: 4001/4002: 142, 144), and carinated bowls (Fig. 12: 4001/4002: 1).

Additionally, two hand stones, two pounders, a mortar and a pestle were recovered (Fig. 8, middle row). One AMS 14C sample from context 4001 dated to 1436-1297 cal. BC (Fig. 9). One thermoluminescence sample from context 4001 dates to 3300±210 years ago, corresponding with the 14C dating (Fig. 7).

Period III in Trench D: Period III, corresponding to the Middle Bronze Age, is stratigraphically situated below Period II at the excavation site. Two distinct walls oriented east-west were identified, both attributed to Period III (Fig. 11b) based on the pottery assemblage (?). The first wall, characterized by a robust structure measuring 110 cm in width, was unearthed at the northern corner of the trench (Fig. 11c). The second wall, spanning 130 cm in width, was positioned towards the middle of the trench. Owing to the limited extent of the trench, only a segment of this wall was visible, with other aspects remaining obscured. An irregular stone structure was found between these masonry walls, displaying signs of disarray rather than deliberate construction, suggesting it may have been a previously destroyed structure. These architectural features, along with associated debris, are believed to pertain to Period III. Noteworthy discoveries within this context include thick layers of ash, unearthed predominantly in the western section, interspersed with potsherds and animal bones. The transition from Middle Bronze Age deposits to Middle Chalcolithic remains occurred at a depth of 230 cm (Fig. 11d). A total of 595 potsherds from Period III were recovered, with 87% (518) categorized as buff ware and the remaining 13% (77) as grey ware (Fig. 6). The grey potsherds predominantly exhibit coarse fabric (57%), followed by medium (39%) and fine ware (4%). In contrast, the buff ware category comprises mainly coarse pottery (75%), with lesser proportions of medium (22.7%) and fine ware (2%). Approximately 14.5% of the potsherds were wheel-made, while the majority (85.5%) were hand-made. Nearly half of the pottery fragments were well-fired, while the rest exhibited under-firing. The pottery commonly features a thin washed surface and is tempered with grit. In addition to pottery, various small artifacts were excavated, including a hand stone and two pounders (Fig. 8: lower row). Prominent vessel types from this period include plain open bowls (Fig. 6: 4003/4013: no: 6), plain closed bowls (Fig. 6: 4003/4030: no: 3), and plain S-shaped bowls (Fig. 6; 4003/4013: no 1 and 2). A noteworthy find includes a fragment of a large pot displaying a lug in Trench A (Fig. 6: 1002/1008: no: 1). Two AMS radiocarbon dates (from context 4004) indicate a timespan 1529–1665 cal. BC and 1747–1905 cal. BC (Fig. 9).

Period IV in Trench D: The stratigraphic layer representing Period IV (Middle Chalcolithic) exhibits a thickness of approximately 75 cm, extending from a depth of 230 cm to 305 cm within the excavation site. In contrast to the overlying stratum, the excavated portion of Period IV predominantly comprises pottery fragments, with an absence of discernible architectural structures. Positioned directly beneath the remains of Period III, Period IV deposits are localized in the northern corner of Trench D (Fig. 11d). The secondary architectural wall associated with Middle Bronze Age deposits cuts

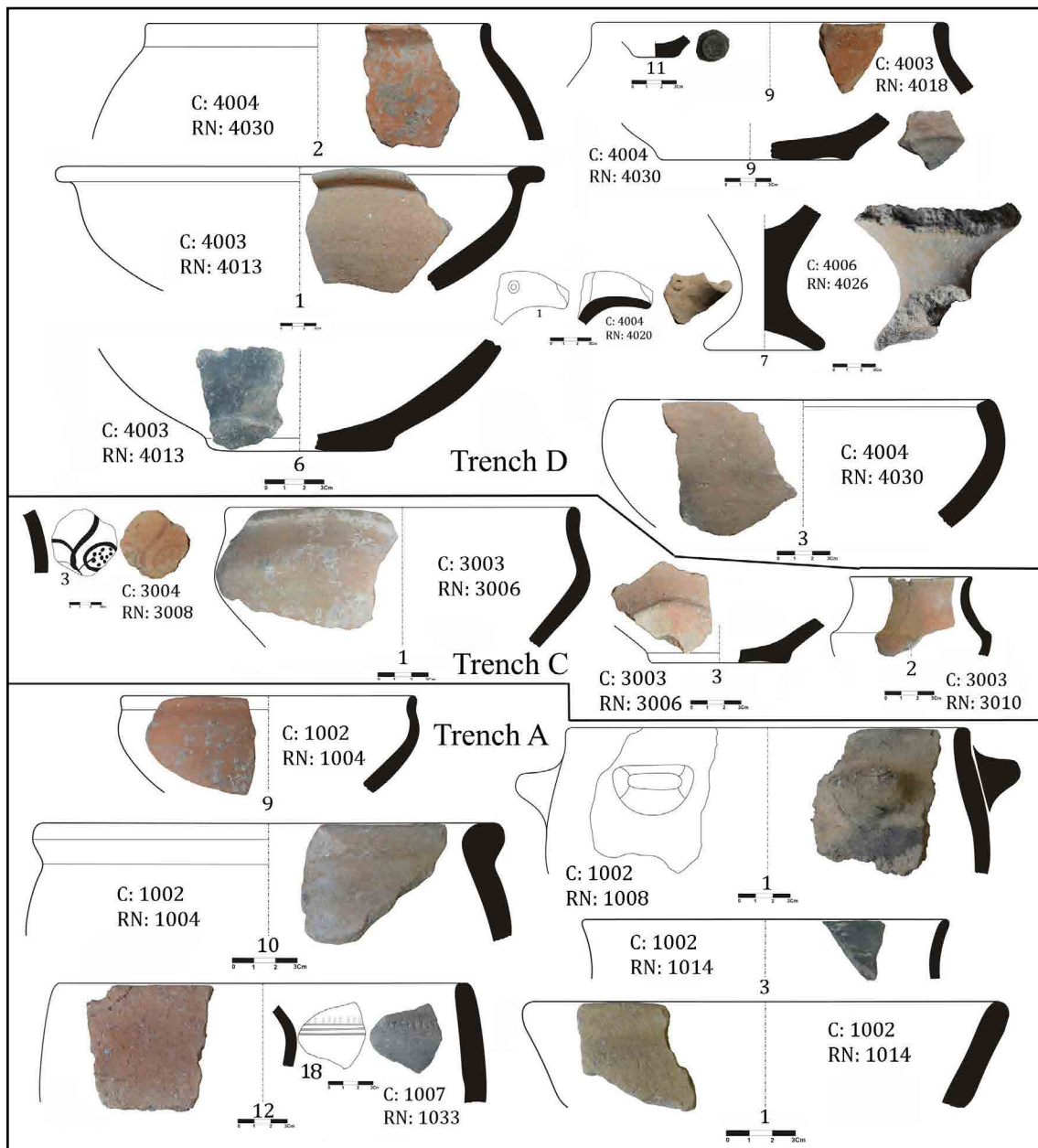


Fig. 6: Period III (Middle Bronze Age) potteries from Trenches A, C, and D

Potteries Registry

Fig. 6, Period III (Middle Bronze Age), Trench D, C and A

Trench D

4004/4030: 2; rim fragment of jar; medium texture; rim diameter: 19 cm; brown; thin slipped on the interior and on the exterior; grit inclusion; well-fired; hand-made.

4003/4013: 1; rim fragment of bowl; medium texture; rim diameter: 23 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; well-fired; wheel-made.

4003/4013: 6; base fragment of bowl; coarse texture; base diameter: 9 cm; grey; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4003/4018: 11; button base of a beaker?; medium textured; base diameter: 3 cm; grey; without slip; grit inclusion; well-fired; wheel-made.

4003/4018: 9; rim fragment of a jar; coarse textured; rim diameter: 24 cm; brown; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4004/4030: 9; base fragment of bowl; base diameter: 13 cm; medium texture; brown; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4004/4020: 1; a fragment of open spout with a circle ornament; medium texture; buff; thin slipped on the interior and on the exterior; grit inclusion; well-fired; hand-made.

4006/4026: 7; base fragment; medium textured; base diameter: 7.5 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4004/4030: 3; rim fragment of hemispherical bowl; medium textured; rim diameter: 21 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

Fig. 6/Trench C:

3004/3008: 3; body potsherd with red painted motifs which include lines and dots motifs; medium texture; buff; thin slipped on the interior and on the exterior; grit inclusion; well-fired; wheel-made.

3003/3006: 1; rim fragment of carinated bowl; fine textured; rim diameter: 23 cm; buff; burnished on the exterior; grit inclusion; under-fired; hand-made.

3003/3006: 3; base fragment of bowl; medium texture; base diameter: 9 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

3003/3010: 2; rim fragment of carinated bowl; fine textured; rim diameter: 7 cm; buff; burnished on the exterior; grit inclusion; under-fired; hand-made.

Fig. 6/Trench A:

1002/1004: 9; plain S-shaped bowl; rim diameter: 13 cm; fine texture; orange; thin slipped on the interior and on the exterior; grit inclusion; well-fired; wheel-made.

1002/1004: 10; rim fragment of hole-mouth jar with everted rim; rim diameter: 20 cm; medium texture; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

1007/1033: 12; rim fragment of bowl; coarse texture; rim diameter: 30 cm; buff/brown; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

1007/1033: 18; Body fragment of a bowl with incised grooved decoratio, medium texture; gray; thin slipped on the exterior and interior; grit inclusion; under-fired, hand-made.

1002/1008: 1; rim and body fragment of jar with a lug on the body; medium texture; rim diameter: 22 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

1002/1014: 3; rim fragment of a jar; fine texture; rim diameter: 15 cm; grey; burnished on the interior and on the exterior; grit inclusion; under-fired; wheel-made.

1002/1014: 1; rim fragment of bowl; coarse texture; rim diameter: 20 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

slightly into the uppermost layers of the Period IV strata.

The ceramic assemblage of Period IV encompasses a variety of pottery types, including plain chaff-tempered, red-slipped, impressed ware, and a limited number of Seh Gabi painted ware pieces, notably Black on Buff (BOB) examples (Fig. 13). The absence of typical Dalma monochrome and bichrome pottery within this layer serves as a key indicator linking it to the Seh Gabi cultural horizon, specifically identified as Godin IX within the chronological framework established by Kangavar (Henrickson, 1985). While impressed ware is a characteristic ceramic form of the Dalma layer (Godin X), it is important to note that Dalma impressed ware extends into the later phase of Godin VII (Late Chalcolithic) (Henrickson, 1983). A total of 1882 potsherds were recovered from Period IV, with red pottery comprising 87% (1636) of the assemblage and buff pottery accounting for the remaining 13% (246). Approximately 11% of the pottery in this layer is wheel-thrown, while the majority is handmade. Of the pottery fragments, 46% exhibit evidence of thorough firing. Chaff or vegetal material is commonly used as a temper. The buff pottery is further classified into coarse ware (34%), medium ware (61%), and fine ware (5%), mirroring a similar distribution in the red pottery category: coarse ware (49.3%), medium ware (49.8%), and fine ware (0.7%). A notable portion of the red pottery (13.1%) features a thick slip, while the majority (87%) showcases a thin slip.

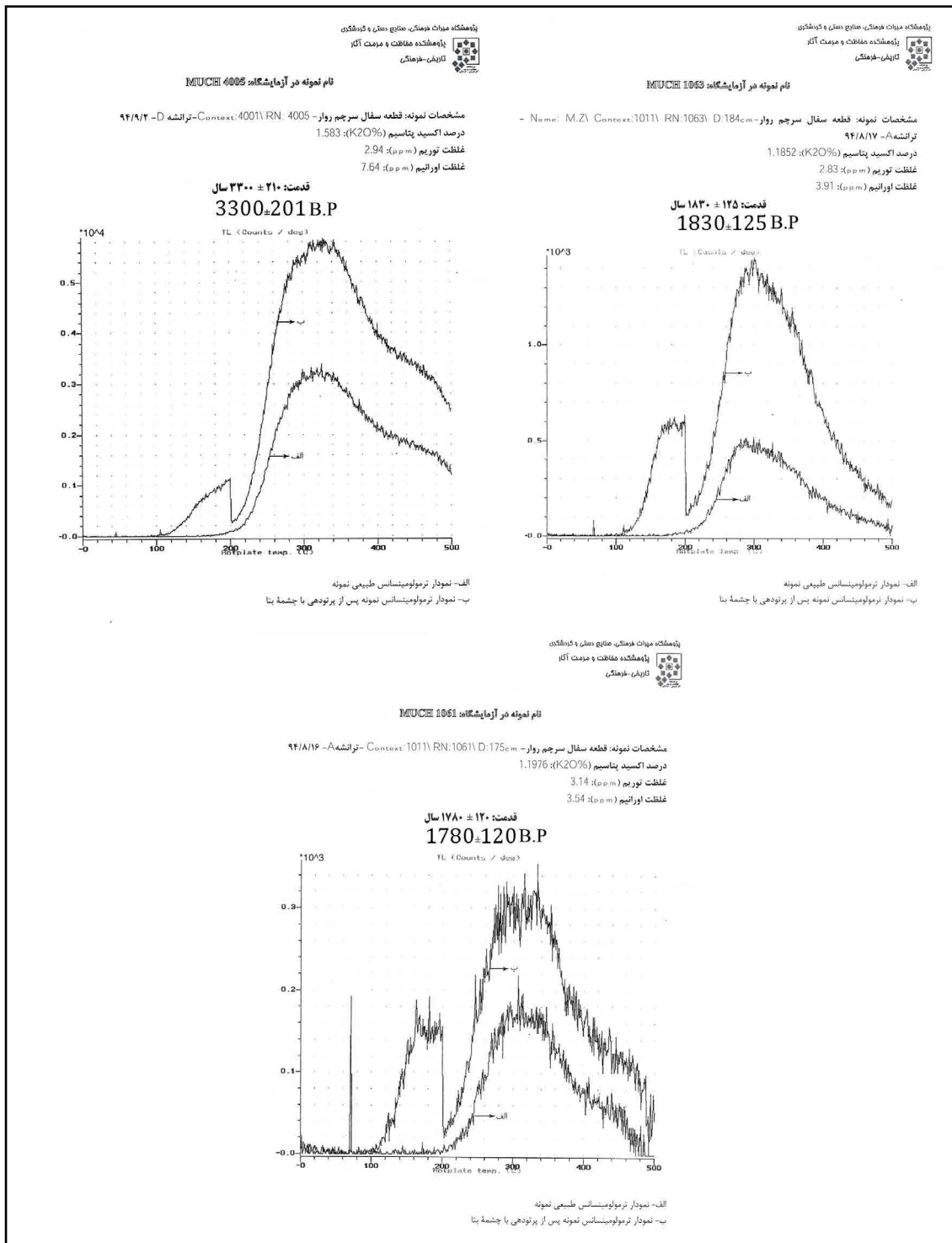


Fig. 7: Thermoluminescence dating of Sarcham Site potteries

Impressed pottery pieces constitute 14.7% (241) of the red pottery fragments. In addition to the pottery finds, two lithic tools and a fragment of a stone object were uncovered within this period. Common vessel forms from this period include globular hole-mouthed vessels (Fig. 13: 4010/4045: no: 9), angular hole-mouthed vessels (Fig. 13: 4010/4045: no: 21), open hemispherical bowls (Fig. 13: 4010/4037, no: 27), wide-mouth necked or collard pots with low, everted necks (Fig. 13: 4010/4037: no: 19), conical bowls (Fig. 13;

Table 1: radiocarbon dates of Sarcham

Lab code	Trench/ Context/ Period	$\delta^{13}\text{C}$ (‰)	14C age (yrBP \pm 1 σ)	14C dates Calibration		Material
				1 σ Calibration	2 σ Calibration	
PLD-35387 Sample 1	Tr. A, Con. 1005 (Early Iron Age)	-22.42 \pm 0.29	2880 \pm 25	1108-1099 cal BC (6.5%) 1089-1013 cal BC (61.7%)	1188-1181 cal BC (0.7%) 1154-1149 cal BC (0.4%) 1128- 976 cal BC (93.7%) 952- 946 cal BC (0.6%)	Bone
PLD-35388 Sample 2	Tr. A, Con. 1007 (Middle Bronze Age)	-20.40 \pm 0.33	3285 \pm 25	1610-1572 cal BC (34.8%) 1566-1530 cal BC (33.4%)	1621-1506 cal BC (95.4%)	Bone
PLD-35389 Sample 3	Tr. D, Con. 4001 (Late Bronze Age)	-20.65 \pm 0.26	3110 \pm 25	1424-1385 cal BC (41.4%) 1340-1311 cal BC (26.8%)	1436-1297 cal BC (95.4%)	Bone
PLD-35390 Sample 4	Tr. D, Con. 4004 (Middle Bronze Age)	-20.73 \pm 0.31	3505 \pm 25	1883-1868 cal BC (11.4%) 1847-1775 cal BC (56.8%)	1905-1747 cal BC (95.4%)	Bone
PLD-35391 Sample 5	Tr. D, Con. 4004 (Middle Bronze Age)	-20.52 \pm 0.27	3325 \pm 25	1640-1604 cal BC (36.0%) 1584-1544 cal BC (30.4%) 1538-1535 cal BC (1.8%)	1682-1677 cal BC (1.0%) 1665-1529 cal BC (94.4%)	Bone
PLD-35392 Sample 6	Tr. D, Con. 4012 (Middle Chalcolithic Period)	-32.76 \pm 0.24	5495 \pm 30	4361-4329 cal BC (68.2%)	4445-4420 cal BC (5.6%) 4397-4387 cal BC (1.3%) 4374-4320 cal BC (78.5%) 4293-4265 cal BC (9.9%)	Bone

4010/4045: no: 16), collard jars (Fig. 13: 4010/4038, no: 24), trays (Fig. 13: 4010/4045, no: 38), and open hemispherical bowls (Fig. 13; 4010/4045: no: 15). Radiocarbon dating through AMS 14C analysis indicates a chronological range of 4400-4374 to 4320 BC cal. for this period (see: Fig. 9).

5. Absolute and Relative Chronology

Six 14C samples were analyzed on bone specimens discovered from the Sarcham archaeological site in Paleo Labo Co., Ltd, Gunma province, Japan (Table 1). The radioactive carbon dating was conducted using the accelerator mass spectrometry (AMS) technique. Specifically, six bone samples (PLD - 35387 and PLD - 35388) were obtained from Trench A, while an additional four samples (PLD - 35389 to PLD - 35392) were extracted from Trench D. The samples underwent preparation and analysis using a Paleo Lab compact AMS system (1.5 SDH, manufactured by NEC). Following correction for isotope fractionation effects, the 14C concentration data were utilized to determine the 14C age and corresponding calendar year. Collagen extraction was performed on the bone samples, and the carbon and nitrogen contents were quantified using the vario MICRO CUBE (Elemental), an elemental analyzer for gasification pretreatment. The carbon-to-nitrogen (C/N) molar ratio was subsequently calculated based on the measured carbon and nitrogen contents.

The following analysis focuses on the 2 σ calendar year range (95.4% probability) and presents the organized results. Both dating samples analyzed in this study were bone specimens, and the carbon-to-nitrogen (C/N) ratio was assessed to validate the collagen quality. Typically, collagen extracted from bone exhibits a C/N ratio ranging from 2.9 to 3.6 (DeNiro, 1985). In this study, the C/N ratios of collagen extracted from each sample ranged from 2.92 to 3.41, falling within this established range. Therefore, it can be inferred

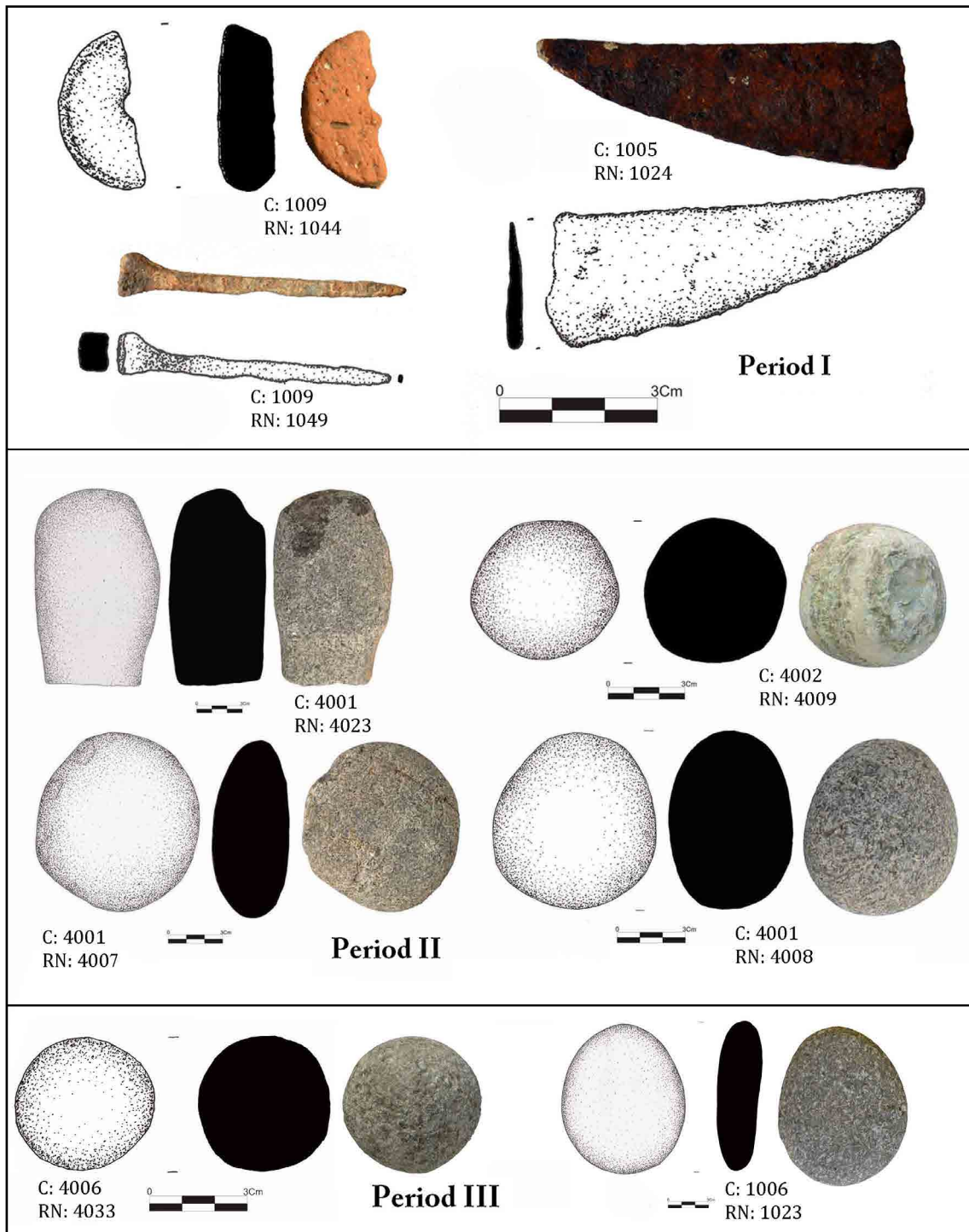


Fig. 8: Small finds of Trenches A, C, and D (Period I, II, and III)

that the likelihood of collagen alteration or the introduction of exogenous carbon in these bone samples is minimal.

This section dealing with the relative chronology of the site based on the pottery assemblage and absolute dating. As mentioned previously, the archaeological excavation conducted at Sarcham has revealed evidence of four distinct archaeological periods: the historical period (Parthian/Sassanid, referred to as period I), Late Bronze Age (period II),

Middle Bronze Age (period III), and Middle Chalcolithic (period IV). However, due to the constraints of the excavation process, no architectural remains corresponding to periods II and IV were identified. The remnants of these periods primarily comprise pottery, faunal remains, and various small artifacts. Potsherds dating back to the Early Iron Age were recovered from the site surface and a disturbed layer within Trench A, although the in situ layer from this period remains elusive. The surface layers of the site have been destroyed by agricultural activities.

The pottery fragments from period IV encompass plain buff chaff-tempered, red slipped

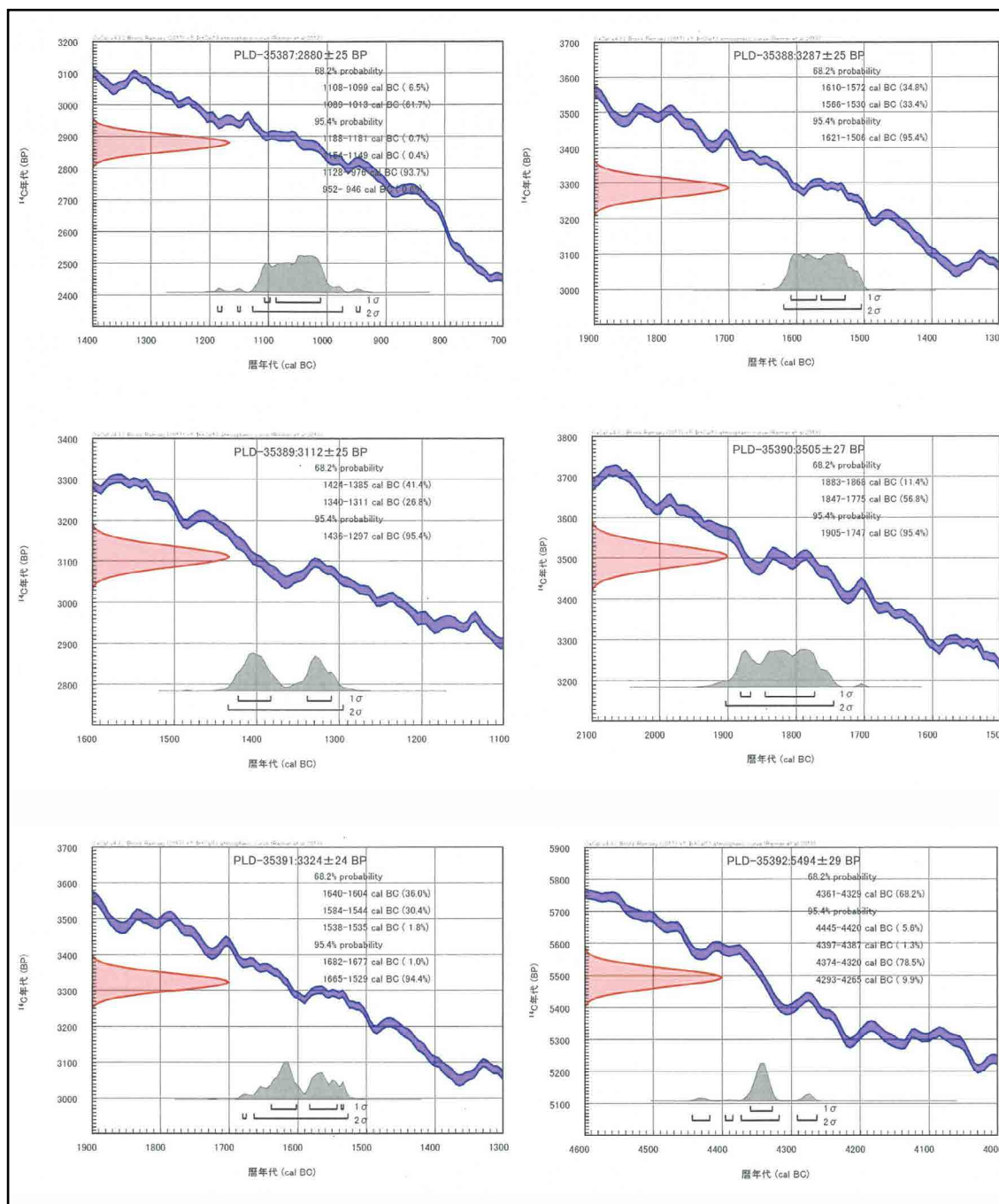


Fig. 9: 14C dating of Sarcham Site

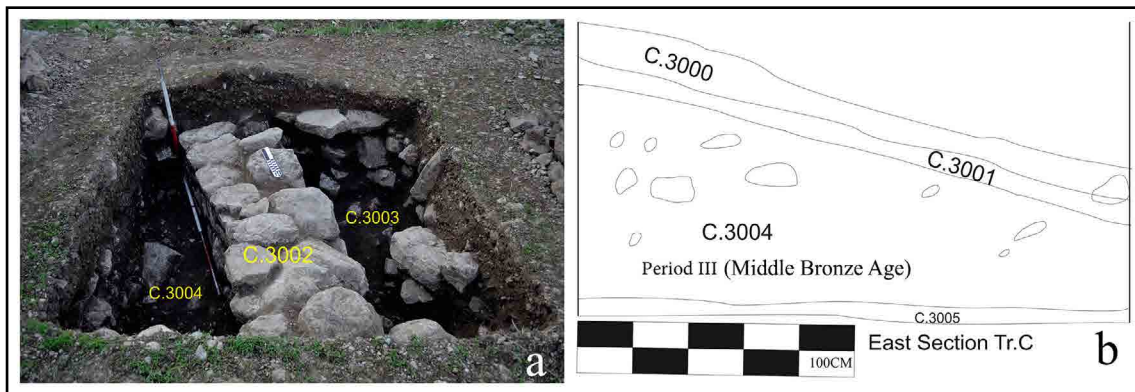


Fig. 10: Architecture discovered at Trench C; 10b: East section of Trench C

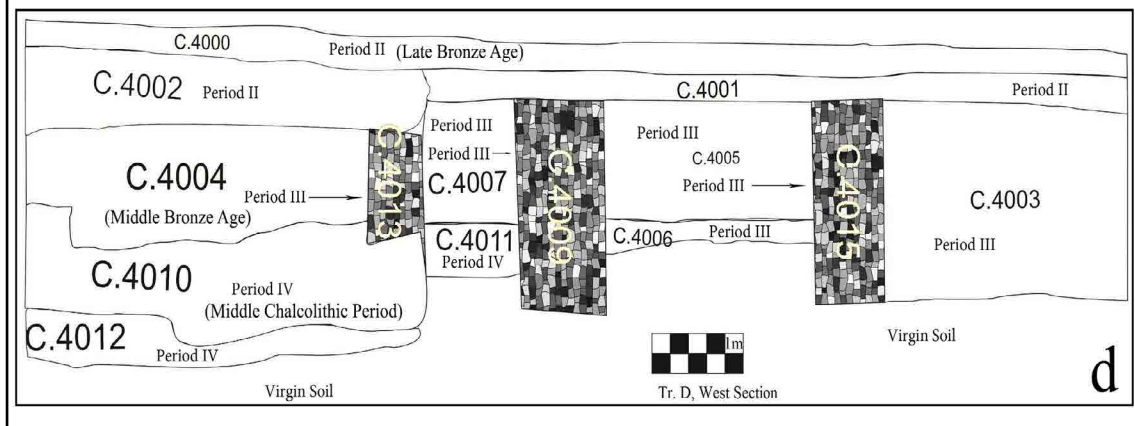
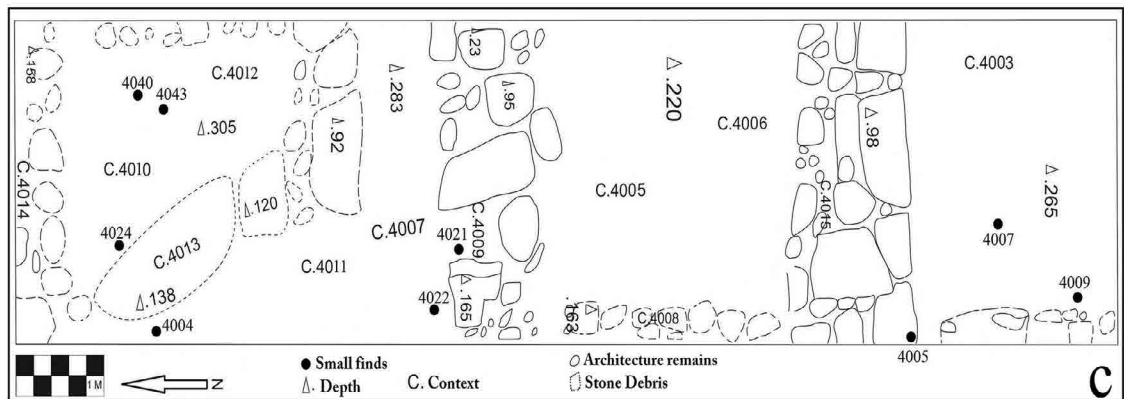


Fig. 11a: Location of Trench D; viewed from north side of site; 11b: Solid period III architectural remain from trench D; 11c: Plan of Trench D; its architecture is belong to period III; 11d: West section of Trench D

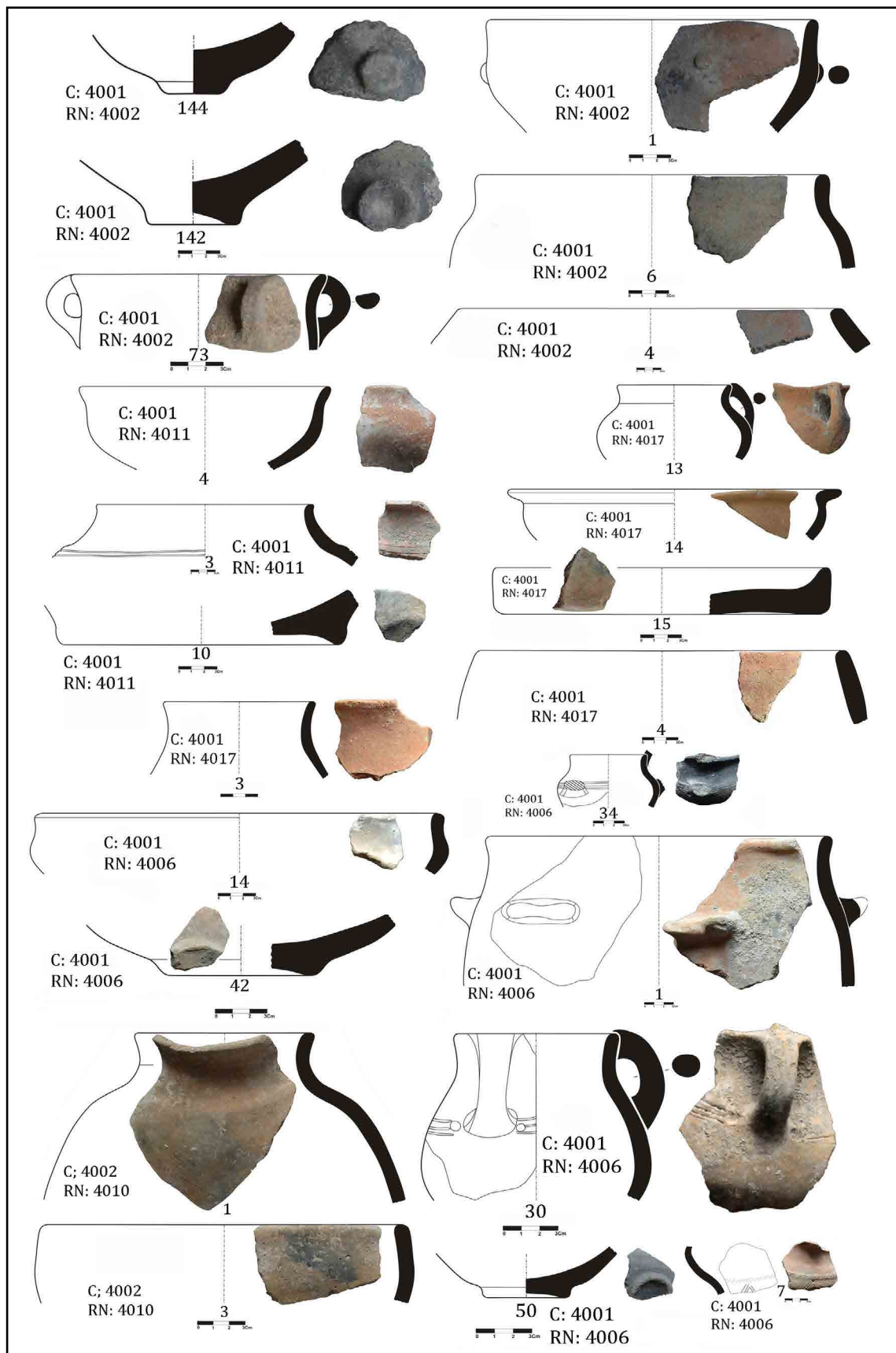


Fig. 12: Period II (Late Bronze Age) potteries from Trench D

Potteries Registry

Fig. 12: Period II (Late Bronze Age), Trench D

4001/4002: 144; ring base of globular beaker; base diameter: 1.5 cm, medium texture; grey; thin slipped on the interior and exterior; grit inclusion; under-fired; hand-made.

4001/4002: 142; ring base of globular beaker; base diameter: 3.2 cm, medium texture; grey; thin slipped on the interior and exterior; grit inclusion; under-fired; hand-made.

4001/4002: 73; a fragment of pot with vertical handles which the handle connected to the rim; rim diameter: 14.5 cm; medium texture; grey; without slip; grit inclusion; well-fired; wheel-made.

4001/4011: 4; plain S-shaped bowl; rim diameter: 19 cm; thin slipped on the interior and on the exterior; brown; grit inclusion; under-fired; wheel-made.

4001/4011: 3; fragment of jar with everted rim with two parallel incised lines on the shoulder; rim diameter: 30 cm; medium texture; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; wheel-made.

4001/4011: 10; ring base; base diameter: 21 cm; medium texture; grey; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4001/4107: 3; a fragment of flaring rim; rim diameter: 12 cm; coarse texture; buff; thin slipped on the interior and on the exterior; grit inclusion; well-fired; wheel-made.

4001-4006: 14; plain S-shaped bowl; rim diameter: 31 cm; medium texture; buff; thin slipped on the interior and on the exterior; grit inclusion; well-fired, hand-made.

4001-4006: 42; ring base of a bowl; base diameter: 8 cm; fine texture; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired, hand-made.

4002/4010: 1; rim and body fragment of oval jar with everted rim and narrow neck; medium texture; rim diameter: 11 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; wheel-made.

4002/4010: 3; rim fragment of globular bowl; medium texture; rim diameter: 22; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; wheel-made.

4001/4002: 1; carinated bowl with a knob on the body; rim diameter: 23 cm; medium texture; reddish-brown; thin slipped on the interior and exterior; grit inclusion; under-fired; hand-made.

4001/4002: 6; pot with enlarged rim; rim diameter: 22 cm; medium texture; buff, without slip; grit inclusion; well-fired; hand-made.

4001/4002: 4; hole-mouth pot; rim diameter: 45 cm; medium texture; reddish-brown; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4001-4017: 13; rim and body fragment of cup with a vertical handle; rim diameter: 10 cm; fine texture; buff; thin slipped on the interior and on the exterior; grit inclusion; well-fired; hand-made.

4001-4017: 14; rim fragment of plain S-shaped bowl with everted rim; rim diameter: 16 cm; fine texture; buff; thin slipped on the interior and on the exterior; grit inclusion; well-fired; wheel-made.

4001-4017: 15; rim and base fragment of tray; base diameter: 24 cm; medium texture; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4001-4017: 4; rim fragment of bowl; rim diameter: 30 cm; coarse texture; reddish-brown; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4001-4006: 34; rim and body fragment of cup with a vertical handle and five parallel incised lines on the shoulder; medium texture; rim diameter: 7 cm; grey; thin slipped on the interior and on the exterior; grit inclusion; well-fired; hand-made.

4001-4006: 1; rim and body fragment of jar with a lug on the body; medium texture; rim diameter: 27 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4001/4006: 30; rim fragment of a pitcher, medium texture; rim diameter: 10 cm; buff; thin slipped on the interior and on the exterior; grit inclusion; under-fired; hand-made.

4001/4006: 50; a fragment of ring base; medium texture; base diameter: 4 cm; grey; thin slipped on the interior and on the exterior; grit inclusion; well-fired; hand-made.

4001/4006: 7; body potsherd with a raised ridge which have a oblique incised lines on there; medium texture; buff; thin slipped on the interior and on the exterior; grit inclusion; well-fired; hand-made.

Fig. 13: Period IV (Middle Chalcolithic), Trench D

4010/4045: 15; rim fragment of open bowl; medium texture; rim diameter: 34 cm; buff; red thin slipped on the interior and on the exterior; chaff inclusion; well-fired; hand-made.

4010/4038: 2; rim fragment of hole-mouth jar; medium texture; rim diameter: 37 cm; brown; thin

slipped on the exterior; chaff inclusion; under-fired; hand-made.

4010/4045: 12; rim fragment of oval bowl; medium texture; rim diameter: 11 cm; buff; red thin slipped on the interior and on the exterior; chaff inclusion; well-fired; hand-made.

4010/4045: 16; rim fragment of everted simple bowl; medium texture; rim diameter: 14 cm; buff; red thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4012/4047: 13; rim fragment of hole-mouth jar which everted rim; medium texture; rim diameter: 16 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4010/4045: 5; rim fragment of hole-mouth jar with curvature in the shoulder; medium texture; rim diameter: 11 cm; buff; red thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4010/4037: 27; rim fragment of hemispherical bowl; fine texture; rim diameter: 17 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; well-fired; wheel-made.

4010/4045: 21; rim fragment of hole-mouth jar; medium texture; rim diameter: 13 cm; buff; fingertip impressed on the exterior; chaff inclusion; under-fired; hand-made.

4010/4045: 9; rim fragment of globular hole-mouth jar; coarse texture; rim diameter: 28 cm; buff; fingertip impressed on the exterior; chaff inclusion; under-fired; hand-made.

4010/4045: 38; a fragment of tray; medium texture; rim diameter: 19 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4012/4047: 19; a body potsherd; fine texture; buff; thin slipped on the interior and on the exterior; geometric black painted; chaff inclusion; well-fired; wheel-made.

4012/4047: 11; rim fragment of vertical simple bowl; medium texture; rim diameter: 24 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4012/4047: 22; rim and base fragment of bin; medium texture; rim diameter: 23 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4010/4038: 40; a body potsherd; fine texture; tan-buff; burnished; geometric thick black painted; chaff inclusion; well-fired; wheel-made.

4010/4037: 19; rim fragment of everted rim bowl; medium texture; rim diameter: 19 cm; thin slipped on the interior and on the exterior; chaff inclusion; well-fired; hand-made.

ware, impressed ware, and a limited number of Seh Gabi Painted ware pieces. Henrickson has highlighted a distinctive Seh Gabi Painted type within this period, characterized by un-slipped, tan-buff fine ware with prominently black paint exhibiting a thick and shiny surface (Henrickson, 1985: 70). These potsherds can be compared with the black painted ceramics found at Sarcham. Comparative analysis of this pottery assemblage aligns it with the Seh Gabi period (Henrickson, 1985; Young, 1969; Young and Levine, 1974: 6-7; Levine and Young, 1987: Fig. 9-10), corroborated by radiocarbon dating results placing it within the range of 4500/4400 to 4200 BC. The mid-5th millennium BC stands out as a pivotal prehistoric epoch in western Iran, marked by a widespread expansion of archaeological sites across Kurdistan Province, spanning diverse landscapes such as plains, foothills, high valleys, caves, and rock shelters (Saed Mucheshi and Azarshab, 2014; Saed Mucheshi, 2010). A similar trend is observed in Chalcolithic sites within Hawraman, a mountainous region.

The Middle Bronze Age represents a relatively understudied archaeological epoch within Kurdistan province. Radiocarbon analyses conducted on Period III materials at Sarcham indicate the presence of artifacts dating back to the first half of the second millennium B.C., offering novel insights into a Middle Bronze Age site in Kurdistan. Notably, the pottery recovered from this period diverges from the typical painted Urmia and Godin III wares, except for one piece, revealing the prevalence of grey wares instead. While these ceramics are commonly associated with Iron Age contexts, radiocarbon dating at Sarcham firmly situates this pottery within the early 2nd millennium BC. Alongside

the grey ware, fragments resembling buff potsherds akin to those from Period II (Late Bronze Age) were recovered. Some pottery forms from Sarcham III, such as the simple hemispherical and carinated bowls, bear resemblance to the potteries of Godin III: 2 and Godin III: 1 (Henrickson, 1985: 579; Henrickson 1986: fig. 16). Furthermore, bowls featuring an outward edge (Fig. 6: 4003/4013, 1) are reminiscent of 2nd millennium B.C. pottery discovered at Dinkha Tepe in northwestern Iran (Hamlin, 1974: fig. 3, no. 27). Analogous forms observed in Sarcham III can also be found at Dinkha from the same period. The hemispherical bowl (Fig. 6: 4004/4030, 3) and carinated vessels from layer III exhibit similarities to Haftavan VIB (Edwards, 1981: Figs. 18 and 19) from the 2nd millennium B.C. Additionally, parallels can be drawn between the pottery of this period and that of Hasanlu VIb during the Middle Bronze Age, particularly evident in spherical vessels featuring incised decorations (Fig. 6: 1007/1033, 18) (Danti, 2013: Fig. 17a and 17b). Plain S-shaped bowls and carinated vessels from Period III (Fig. 6: 1002/1004, 9) in Trench A and Trench C (Fig. 6: 3003/3010, 2; 3003/3006, 1) bear resemblance to Anatolian carinated bowls from the Muş region dating back to the 2nd millennium BC (French and Summers, 1994: Figs 3, 4).

During the Late Bronze Age (Period II), two distinct groups of pottery were prevalent: buff and grey wares. The latter variety was notably discovered in the northwestern regions of Iran and the southern Alburz area, exemplified by findings at sites such as Hasanlu V (Young, 1965), Khurvin (Vanden Berghe, 1964), and Sialk V (Ghirshman, 1938). Notably, Tepe Godin served as a cemetery, with only a few burials identified, prompting Young to draw comparisons between the material culture of these burials and those at Giyan I4-I3 (Young, 1969: 19). While the aforementioned pottery has traditionally been associated with the Iron Age I, it is worth highlighting the prevalence of beakers as the typical form within these burials, a characteristic also observable in Period II as evidenced at Sarcham. These beakers, alongside similar cups, were used in the context of Giyan I (Contenau and Ghirshman, 1935, Pl. 10, 12, 13, 14, 15, 16, 19, 20) and Sarcham. The resemblance of Period II pottery extends beyond these sites, with certain common vessels like plain S-shaped bowls, beakers, and vases bearing striking similarities to the beakers (Overlaet, 2003: 116), pitchers (Ibid: 81), and plain S-shaped bowls (Ibid: 126) discovered at Pusht-I Kuh. Notably, while the chronology of the latter is firmly placed within the Iron Age I, this observation raises questions regarding the persistence of certain pottery forms or potential chronological discrepancies.

Some of the knob-applique pottery found in Period II exhibits similarities to similar/comparative pottery discovered in the southern Urmia basin. The pottery unearthed from the latter half of the second millennium B.C in both Sarcham and the Urmia basin displays a reddish-brown color and is decorated with small knobs (Kroll, 2005: Fig. 2, 7; Sarcham: Fig. 12: 4001/4002, 1). Additionally, incised horizontal lines, nail impressions, and other decorative motifs can be observed on the pottery from this era (Sarcham: Figs. 12: 4001/4006, 34; 4001/4011, 3; Figs. 12: 4001/4006, 7; 4001/4006: 30). Such ornamentation is recognized as a characteristic feature in Pusht-I Kuh as well (Overlaet, 2003: 92).

The archaeological remains from Period I, recovered solely from Trench A and originating from disturbed and uncertain contexts, are dated to the Parthian/Sassanid era. Pottery from this period exhibit colors such as orange, brown, red, and buff. The Parthian/Sassanid pottery was discovered predominantly in the upper phase and the southern part

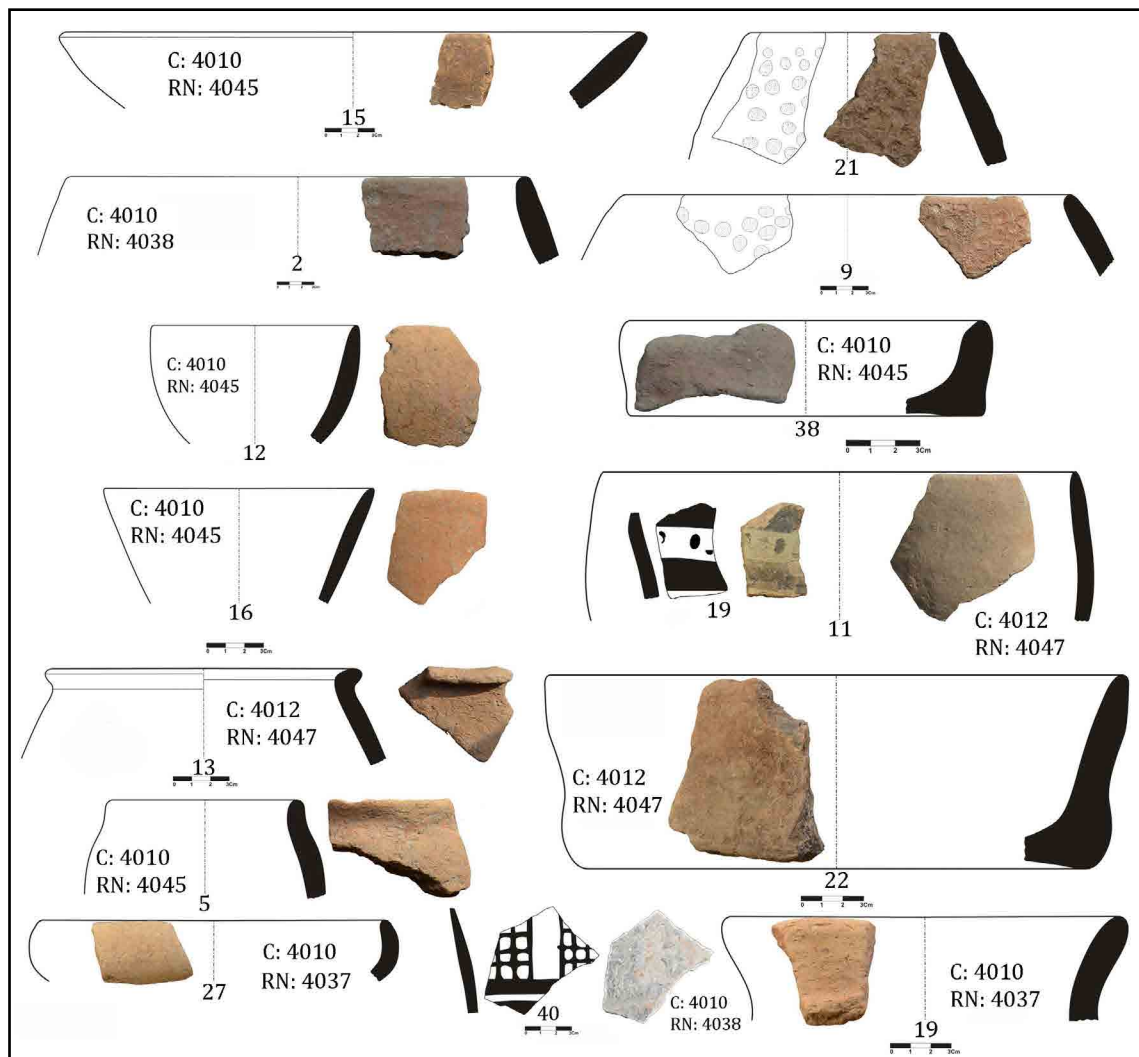


Fig. 13: Period IV (Chalcolithic period) potteries from Trench D

Potteries Registry

Figure 13: Period IV (Middle Chalcolithic), Trench D

4010/4045: 15; rim fragment of open bowl; medium texture; rim diameter: 34 cm; buff; red thin slipped on the interior and on the exterior; chaff inclusion; well-fired; hand-made.

4010/4038: 2; rim fragment of hole-mouth jar; medium texture; rim diameter: 37 cm; brown; thin slipped on the exterior; chaff inclusion; under-fired; hand-made.

4010/4045: 12; rim fragment of oval bowl; medium texture; rim diameter: 11 cm; buff; red thin slipped on the interior and on the exterior; chaff inclusion; well-fired; hand-made.

4010/4045: 16; rim fragment of everted simple bowl; medium texture; rim diameter: 14 cm; buff; red thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4012/4047: 13; rim fragment of hole-mouth jar which everted rim; medium texture; rim diameter: 16 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4010/4045: 5; rim fragment of hole-mouth jar with curvature in the shoulder; medium texture; rim diameter: 11 cm; buff; red thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4010/4037: 27; rim fragment of hemispherical bowl; fine texture; rim diameter: 17 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; well-fired; wheel-made.

4010/4045: 21; rim fragment of hole-mouth jar; medium texture; rim diameter: 13 cm; buff; fingertip impressed on the exterior; chaff inclusion; under-fired; hand-made.

4010/4045: 9; rim fragment of globular hole-mouth jar; coarse texture; rim diameter: 28 cm; buff; fingertip impressed on the exterior; chaff inclusion; under-fired; hand-made.

4010/4045: 38; a fragment of tray; medium texture; rim diameter: 19 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4012/4047: 19; a body potsherd; fine texture; buff; thin slipped on the interior and on the exterior; geometric black painted; chaff inclusion; well-fired; wheel-made.

4012/4047: 11; rim fragment of vertical simple bowl; medium texture; rim diameter: 24 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4012/4047: 22; rim and base fragment of bin; medium texture; rim diameter: 23 cm; buff; thin slipped on the interior and on the exterior; chaff inclusion; under-fired; hand-made.

4010/4038: 40; a body potsherd; fine texture; tan-buff; burnished; geometric thick black painted; chaff inclusion; well-fired; wheel-made.

4010/4037: 19; rim fragment of everted rim bowl; medium texture; rim diameter: 19 cm; thin slipped on the interior and on the exterior; chaff inclusion; well-fired; hand-made.

of the wall within Trench A, encompassing approximately two-thirds of its area. This distribution can be attributed to the leveling of the upper phase of the Sarcham site and the infilling of its uneven parts. Within specific contexts (1000, 1001, 1005, 1009, 1011, 1012, 1014, and 1015), Parthian/Sassanid pottery, alongside a limited quantity of Bronze/Iron Age pottery, was identified. Consequently, a portion of the pottery discovered exhibits characteristics of gray or buff pottery from earlier periods. Broadly speaking, the pottery assemblage in Sarcham I is predominantly composed of orange and buff pottery, with a smaller number of pale brown and red pottery fragments also recovered. Distinguishing between the gray ware of the Bronze/Iron Age and that of the Parthian/Sassanid era proved challenging. Various vessel forms were identified, including jars with short necks, bowls with thick rims and incised grooved decorations beneath the rim, hole-mouth vessels featuring horizontal bands under the rim, hemispherical hole-mouth bowls, open-mouth bowls, and jars with short necks (Fig. 5), which bear resemblance to Parthian/Sassanid pottery found in western Iran (Haerinck, 1983).

6. A Short Account on Sarcham Faunal Remains

The zooarchaeological analysis of animal bones from Sarcham was conducted at the Bioarchaeology Laboratory, Central Laboratory of the University of Tehran in 2016. This assemblage comprises 603 bones and bone fragments, totaling 6 kilograms in weight. The bones were recovered from Trench A (325 specimens, 1149.3 grams), Trench C (85 specimens, 474.2 grams), and Trench D (193 specimens, 4383.4 grams). The preservation of the assemblage was notably poor, with the majority of the remains (395 pieces, 65.5%) being fragmented, leaving only 208 specimens (34.5%) identifiable taxonomically.

The Sarcham assemblage is derived from refuse associated with consumption activities. Evidence of anthropogenic modifications, such as cut marks, chopping marks, and signs of heating, calcination, and burning, are prevalent on sheep/goat, cattle, and boar bones (17 specimens) within the assemblage (Fig. 14a & 14b). Furthermore, distinctive traces left by rodents and carnivores (43 specimens) are observable on the skeletal elements of ungulates (Fig. 14c, 14d & 14e).

In the bone identification process, we used the osteological reference collections at the Bioarchaeology Laboratory, as well as with various osteological atlases (Clutton-Brock *et al.*, 1990; Helmer and Rocheteau, 1994; Helmer, 2000; Halstead *et al.*, 2002). Quantitative analysis was conducted using four key metrics: Number of Remains (NR) encompassing

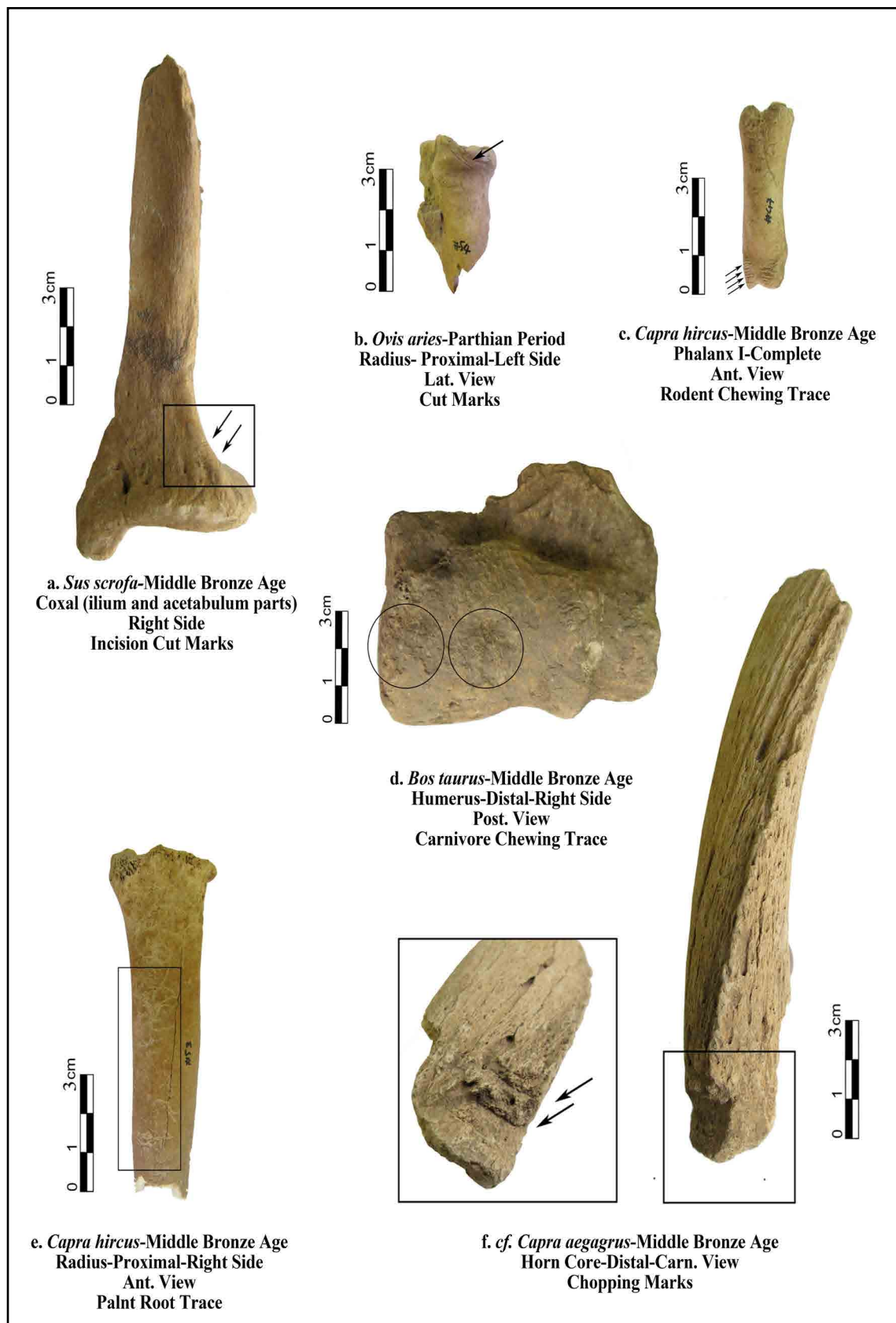


Fig. 14: Anthropogenic, rodent, carnivore and natural traces on the surface of animal bones at Sarcham

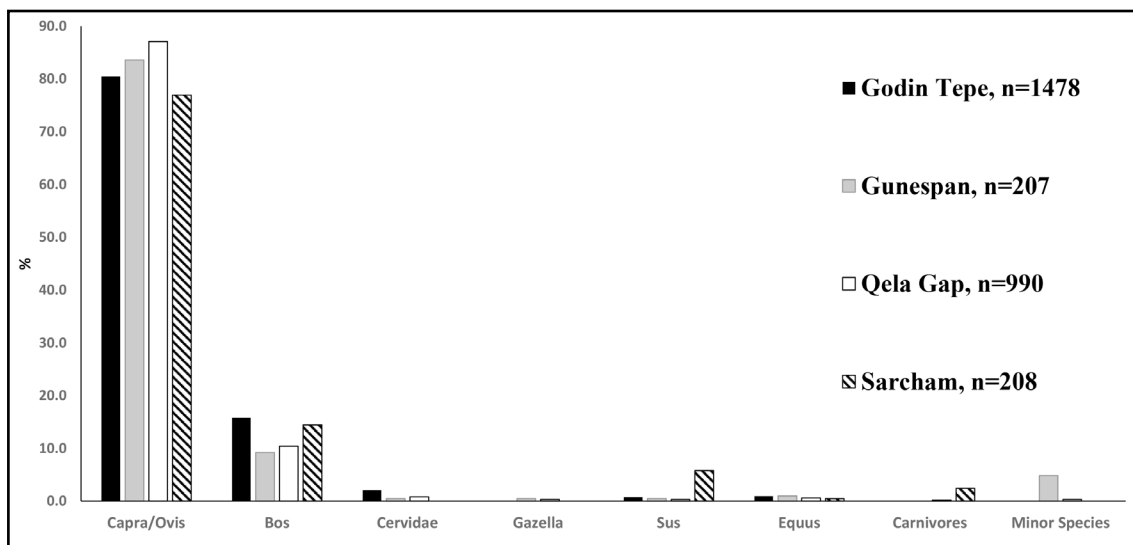


Fig. 15: Distribution of identified species at Tepe Godin, Gunespan, Qela Gap and Sarcham Rowar, during the MBA and LBA, in the Central and Northern Zagros regions

all identifiable and unidentifiable bones, Number of Identified Species (NISP), Minimum Number of Individuals (MNI) (Mashkour, 1993). Additionally, we applied bone weighting techniques to assess fragmentation levels and estimate the nutritional value associated with each species present in the assemblage. This approach was based on the recognized correlation between skeletal weight and meat yield (Davis, 1987; Uerpmann, 1973).

The zooarchaeological analysis encompasses three distinct chronological periods: the Middle Bronze Age, Late Bronze Age (MBA and LBA) and the Parthian/Sassanid period. The majority of the assemblage belongs to the MBA (412 specimens, 3940 grams), followed by the Parthian/Sassanid period (112 specimens, 293.7 grams) and lastly the LBA (79 specimens, 1774 grams). Taxonomic identification was achievable for only 143 specimens from the Middle Bronze Age, 45 from the Late Bronze Age, and 20 from the Parthian/Sassanid period. Accordingly, a total of 208 bones (34.5%) were identified, which included the small portion of faunal assemblage. Some of the unidentifiable bones could still be categorized as large, medium, or small mammals, or small ruminants.

Bronze Age (Middle & Late Bronze Age): The faunal assemblage from the Middle Bronze Age (MBA) and Late Bronze Age (LBA) comprises a limited number of identified species. Therefore, we have combined the data from these two periods for our analysis.

Caprines: The predominant species identified in the assemblage are sheep/goat, accounting for the majority of the identified remains (142 specimens, 75.5%). Among the identified specimens, 7 were attributed to domestic sheep (*Ovis aries*), 45 to domestic goat (*Capra hircus*), and 3 to wild goat (*Capra aegagrus*), while 87 specimens could not be classified as either sheep or goat. The bones exhibit butchery and cooking marks such as cut marks, chopping marks, and evidence of heating and firing. Notably, a heavy cut mark on the skull for the separation of horn core, possibly from a wild goat in the MBA, is noteworthy (Fig. 14f). Similar practices have been observed at other archaeological sites such as Qela Gap-MBA (Amiri *et al.*, 2020) and Gunespan-Iron Age III (Amiri *et al.*, 2021), suggesting the potential use of horn sheaths for crafting purposes. These marks may indicate the utilization of horn sheaths for specialized containers or the production of items like knife handles through melting the sheaths (Schmidt, 1972).

Cattle: The cattle (*Bos taurus*) population at Sarcham during the Middle and Late Bronze Ages (MBA & LBA) is represented by 30 remains, comprising both adult individuals (over 4 years old) and juveniles (under 20 months). Cattle were primarily utilized for meat and potentially milk consumption. No evidence of pathologies indicative of the use of cattle as draft animals was found at the site.

Boar: Wild boar or domestic pig (*Sus scrofa/Sus scrofa domesticus*) accounts for 5% of the remains. On the Iranian Plateau, suids typically constitute less than 10% of the Number of Identified Specimens (NISP) before the Iron Age in most regions (Mashkour, 2006).

Equids: Only one fragment of a coxal bone was recovered from the MBA, but it was not diagnostically identifiable to the species level.

Dog: Three fragments of domestic dog (*Canis familiaris*) were identified from the MBA.

Minor species: Seven complete Gastropod mollusks from the MBA were also retrieved.

Parthian/Sassanid Period: A total of 20 taxonomically identifiable specimens from the Parthian/Sassanid period were documented, including 5 specimens of domestic goat (*Capra hircus*), 2 specimens of domestic sheep (*Ovis aries*), 11 specimens classified as either sheep or goat, and 2 specimens of boar (*Sus scrofa/Sus scrofa domesticus*). Additionally, 92 bone and teeth fragments could not be taxonomically identified and were grouped into two main categories: mammals and small ruminants.

Discussion: In total, 92% of the faunal assemblage comprised domestic animals, while 8% belonged to wild species. During the Bronze Age (MBA & LBA), sheep/goat and cattle were the primary sources of food provision, reflecting a clear preference for small herbivores evident in the comparison of the total weight of caprines (1964 grams) to that of cattle (1383 grams). This is clearly an indication of dependence on small and large domestic herds, which has had a social and economic role in the Zagros Mountains since the domestication of sheep and goat (Abdi, 2003). A similar dietary trend is observed when comparing the faunal assemblage of Sarcham with that of contemporaneous sites in the Bronze Age Zagros Mountains (Fig. 15), such as Godin Tepe (Gilbert, 1979) in Kangavar Plain, Gunespan (Amiri *et al.*, 2021) in Malayer Plain, and Qela Gap (Amiri *et al.*, 2020) in Azna Plain. These sites also exhibit a reliance on sheep, goat, and cattle herding. While cattle remains are less abundant, they play a crucial role as a meat source, as evidenced by their higher contribution to the overall weight of the assemblage. Notably, the limited presence of suids raises questions about their domestic or wild status, given the substantial wild boar populations inhabiting the Zagros Mountains.

7. Conclusion

The archaeological excavation conducted at the Sarcham site represents significant information in the Hawraman region, as it unearthed material culture spanning the Chalcolithic, Bronze Age, and historical periods. The strategic positioning of the site adds to its significance, given the rugged and mountainous terrain characteristic of the Hawraman region, which sets it apart from other areas within Kurdistan Province. The inhabitants of this region predominantly engage in livestock husbandry and horticulture, underscoring the historical importance of human habitation in this challenging environment.

The excavation at the Sarcham site holds particular interest as it provides insight into a region that historically lacked the agricultural capacity for grain cultivation. Surveys

conducted in the broader Hawraman area have revealed a scarcity of settlement sites, especially from prehistoric eras, making the existence of sites like Sarcham particularly noteworthy for scholarly investigation. Despite the relatively modest scale of our excavation project, the findings at Sarcham indicate a Chalcolithic tradition similar to the Seh Gabi period (4500-4250 BC) in the Central Zagros region.

Subsequent to a hiatus, settlement activity at the site recommences in the early second millennium BC, persisting until the middle of the same millennium during the Middle Bronze Age. The Late Bronze Age occupation continues uninterrupted until 1200 B.C., characterized by the presence of simplistic pottery similar to examples found in the Central Zagros region, albeit lacking the painted pottery tradition. Notably, the pottery styles from this period exhibit similarities in form with those found in northwestern Iran and Anatolia, suggesting cultural connections across regions.

The Bronze Age occupation at Sarcham adheres to a tradition of homogeneity, with the differentiation between the Middle and Late periods established through stratigraphic analysis and absolute dating methods. Resettlement at the site occurs during the Parthian/Sassanid Period, marking a renewed phase of human activity. Zooarchaeological investigations conducted at Sarcham during the Parthian/Sassanid period and Bronze Age reveal a reliance on domestic animals such as sheep, goats, and cattle, with a noteworthy emphasis on the utilization of boars, adding a unique dimension to faunal assemblage of the site.

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کاوش در سرچم، محوطه باستانی چند دوره ای در منطقه هورامان، استان کردستان، ایران

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چکیده	تاریخچه مقاله
محوطه باستانی سرچم در جنوب غربی استان کردستان (منطقه هورامان) در غرب ایران واقع شده است. این محوطه به عنوان بخشی از پروژه نجات بخشی باستان شناسی سد داریان (DDASP) در سال ۱۳۹۴ ه.ش. کاوش شد و یک محوطه چند دوره ای با نهشته های چهار دوره باستان شناسی را نشان می دهد. هدف این پژوهش، ارائه یافته های حاصل از کاوش و معرفی دوره های مختلف شناسایی شده آن است. توالی فرهنگی محوطه شامل دوره مس و سنگ میانی (مرحله سه گابی)، عصر مفرغ میانی و جدید و عصر اشکانی/ساسانی است. سفال های دوره مس و سنگ میانی به دست آمده از محوطه سرچم با سفال های دوره سه گابی منطقه زاگرس مرکزی؛ و به همین ترتیب سفال های دوره مفرغ با منطقه شمال غرب ایران، آنتولی و نیز با نمونه های فاز پایانی گودین III دارای تشابه است. کاوش در محوطه سرچم برای نخستین بار داده هایی از دوره میانه و جدید عصر مفرغ در استان کردستان را آشکار ساخت. سفال های به دست آمده دال بر این است که برخی از ظروف خاکستری که قبلاً به دوره آهن I نسبت داده می شد، از عصر مفرغ منشأ گرفته است. لایه فوقانی این محوطه، هرچند تا حد زیادی آشفته بود، دارای سفال هایی از دوران اشکانی/ساسانی است. این مطالعه بر اهمیت باستان شناختی سرچم تأکید و به درک تاریخ فرهنگی منطقه کمک می کند.	<p>صص: ۱۵۱-۱۸۱</p> <p>نوع مقاله: پژوهشی</p> <p>تاریخ دریافت: ۱۴۰۲/۱۲/۲۸</p> <p>تاریخ بازنگری: ۱۴۰۳/۰۷/۰۷</p> <p>تاریخ پذیرش: ۱۴۰۳/۰۸/۱۰</p> <p>تاریخ انتشار: ۱۴۰۳/۰۹/۳۰</p>

کلیدواژگان:

محوطه سرچم، هورامان، استان کردستان، ایران، کاوش نجات بخشی.

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