# **UZUN RAMA TOPLU MEZAR KURGANI**

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# ABSTRACT

Early Bronze Age kurgan Uzun Rama was built in the form of a tomb and was used for the burial belonging to one of the tribe members. The kurgan chamber was dug in a quadrangular form and was opened an entrance door in the eastern side. Its surface was covered wooden beams, then arranged with cobble-stones and finally, soil layer was added. After the tomb was filled, in accordance with the religious traditions it was fired and burnt. In the kurgan tomb a lot of ceramic examples, charred remains of the wooden vase, bone spindle heads, paste beads and pieces of fabric were uncovered. 79 persons, according to anthropological studies for bones of skulls and 83 individuals for the other bones of the body have been buried here. The Kurgan with the first phase of Early Bronze age is a longterm, cemetery of mass burial.

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# ÖZET

İlk Tunç Çağı'na ait Uzun Rama kurganı, yeraltına oda biçiminde inşa edilmiş ve bir kabile üyelerinin defini için tasarlanmıştır. Kurgan dörtgen şeklinde kazılmış, ahşapla kaplanmış, üzerine toprak eklenmiş ve doğu tarafında giriş kapısı açılmıştır. Mezar odası doldukdan sonra, dini geleneklere uygun olarak ateşe verilerek yakılmıştır. Kurgan mezarında seramik örnekleri, kömürleşmiş ahşap vazo kalıntıları, kemik ağırşaklar, boncuklar ve kumaş kalıntıları bulunmaktadır. Antropolojik çalışmalarda, kafatasına göre 79, gövde kemikleri dikkate alındığında ise en az 83 bireyin gömülmüş olduğu belirlenmiştir. Kurgan İlk Tunç Çağı'nın erken dönemine ait olmak üzere, uzun vadeli, toplu ölü gömme mezarıdır.



Figure 1: The Spreading Areas of the Under-Tomb Culture / Yeraltı Mezar Odası Kültürünün Yayılım Alanları

# **INTRODUCTION**

Changes in paleo environmental conditions in the Caucasus at the beginning of the 5<sup>th</sup> millennium BC began to be accompanied by significant changes in the agriculture, daily life, household activities and even the religious world view of the sedentry farmers and cattle-breeder tribes. The majority of the tribes living in the area were obliged to completely change their way of life passing through semi-nomadic way of life. Archaeological excavations showed that this changes become clearly noticeable in religious views especially in the burial customs.

The investigation of the barrows situated in the West and North-West regions of Azerbaijan proved already the new burial traditions and the formation of intended for longterm burial tombs of the nomad tribes which lived seminomadic way of life in this region. Uzun Rama Kurgan investigated near Ganja city is of great importance in terms of studying this custom.

The Kurgan chamber was dug in a quadrangular form on the white soil area and was opened an entrance door in the eastern side. Similar form kurgans of the same period are known from the sites of Shadily<sup>1</sup>, Gabala<sup>2</sup>, Osmanbozu<sup>3</sup>, Khanlar<sup>4</sup>, Dashuz<sup>5</sup>, Borsunlu<sup>6</sup>, Menteshtepe<sup>7</sup> Goranboy<sup>8</sup> and Khankendi<sup>9</sup> in the territory of western Azerbaijan (Fig. 1).

Similar form mass burial chambers are found in the later stages of the Early Bronze Age in the territory of Georgia, in the kurgans of Kiketi, Koda, Bedeni, Samqor, Alazan valley. In the archaeological literature was reflected the investigation of about 20 similar crypt beneath barrows that the funeral rites has been completely preserved and material culture found there to their smallest details were identical. The relatively different aspects of the explored crypt beneath barrows were observed in the structure of the chambers. Thus, chamber walls of the tombs were

- <sup>6</sup> Cafarov 1985: 79-88.
- <sup>7</sup> Lyonnet/ Quliyev 2011: 316-318.

<sup>9</sup> Qummel 1939: Figs. V-VI; Qummel 1948: Fig. 6.

<sup>&</sup>lt;sup>1</sup> Calilov 2012: 146-154.

<sup>&</sup>lt;sup>2</sup> Qaziyev 1969: 42-46.

Kesamanlı/Djafarov/Babaev1980: 7.

Qummel 1948: 21-24.

<sup>&</sup>lt;sup>5</sup> Akhundov 1999: 6-9.

<sup>&</sup>lt;sup>8</sup> Hüseynov 2006: 278-279.

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built using stone, brick, wood, clay plaster, and most are of the square, but a few of the circular form. In this regard, in the example of Uzun Rama kurgan, views (out of relatively original structure of the chamber) that will be said about different cultures of the Early Bronze Age tribes, concern to crypt beneath barrows in the territory of Azerbaijan that have already been investigated.

# **UZUN RAMA KURGAN**

The explored Kurgan is located in the area of Goranboy district, in the steppe of Uzun Rama. The location coordinates of the kurgans: N40392870, E46345890. The kurgans area is on 302 meters above sea level. The upper layer's diameter of the collective burial under Early Bronze Age Kurgan was 17 m and height-1.2 m. There was a cromlech consisting of cobble-stones in the edges of the top layer of the Kurgan (Fig. 2). Chamber walls of Uzun Rama crypt beneath barrow were built using mud bricks (clay blocks). A part of the Kurgan wall was built above the ground level. Thus, only 100 cm of the Kurgan chamber was dug in the virgin (untilled land) land. Later during the construction of the walls it was erected to 1,7 meter high. The back side of the wall's upper part was tempered with soil and cobble-stones on inside. In the construction of the walls 2-3 cm thick white soil solution was used as fixing solution. (Fig. 3). The chamber walls were of the 70 to 75 cm width, but of the dromos 40-50 cm width. Bricks (clay blocks) used in the construction are of the same thickness - 8-9 cm, the length is sometimes 22-23, and 30-35 cm and non - standard. During the construction not fully dried mud bricks (clay blocks) were used. This can be more clearly observed in the north wall of the chamber, in the corners and in the junctions with the entrance. (Fig. 4). Thus, due to more flexible mud bricks the north wall of the chamber could not bear the weight, had become deformed and flared towards the inside of the chamber, while in the corners and in the junctions with dromos not the bricks which have encased to each other, but their arrangement in the oval form owing to flexibility can be observed. Therefore, the



Figure 2: The Location Area of Uzun Rama Kurgan / Uzun Rama Kurganının Bulunduğu Yer.



Figure 3: The General View of Uzun Rama Tomb's Capping / Uzun Rama Kurganının Genel Görüntüsü.



Figure 4: The Mass Burial Chamber of Uzun Rama Tomb / Uzun Rama Kurganının Mezar Odası.

corners of the chamber, including junctions with dromos are whole and oval-shaped. The closest analogue of the construction technology in Uzun Rama Kurgan is known from Arslantepe.<sup>10</sup>

The width of the Kurgan chamber is 5,5 m, length-6,5 m, height-1,7 m. The width of its entrance in the eastern side is 1,3 m, the length-2,4 m and height-1,6-1,4 m. (Fig. 5) Early Bronze Age Kurgan Uzun Rama was built in the form of a tomb and was used for the burial of one tribe members. Its surface was covered with wooden beams, then arranged with cobble-stones and finally was added soil layer. The white soil solution was prepared and chamber surface was covered with two, 10-15 cm thick layers, with 35-40 cm interval. Perhaps, it was made to temper the top layer of soft white soil and the arrangement of stones that were used as capping. When the capping of the Kurgan was taken, at a 70 cm depth, in soil layer a few pieces of large obsidian stones, lined up side by side were found. According to the initial signs can be said that they were

<sup>&</sup>lt;sup>10</sup> Frangipane 2009: 136.



Figure 5: The Schematic Plan of Uzun Rama Tomb / Uzun Rama Kurganının Planı

used as a raw material. Over a large obsidian stones, is clearly visible the spots of numerous splinters torn from them. (Fig. 6)

Woods used in the construction for their firmness were a special kind of trees. Thus, the thickness of the stone coating on the wooden beams that were lined in horizontal position was about 2 m, which needed to maintain firm logs to bear such a load. Based on the laboratory analyses of tree remnants found in kurgans intact, i.e. not burnt and rotten, was defined that it was firm and perennial kind of juniper tree (Junipers).<sup>11</sup> (Fig. 7)

According to charred wood remnants which were found inside the chamber and out of the walls can be assumed that they were probably quite large, 20-30 cm diameter and more. The chamber floor of the Kurgan was spread with small gravel and tempered. In all four corners of the chamber were detected small pits with 30-35 cm diameter and 25-30 cm depth. In these pits were embedded wooden logs. While cleaning their inside, decomposed remmants of the logs were revealed. The wooden logs embedded in the four corners of the chamber had played a role of foothold centers when the tomb was constructed. Remains of two wooden logs placed with 60 cm interval on the entrance door of the Kurgan chamber were found. The timber that was placed towards the entrance remained out of the burning process, but instead was subjected to a strong decay. The other timber that was towards the chamber, because of burning was found charred.



Figure 6: Obsidian Items / Obsidien Öğeler.



Figure 7: The Mass Burial Chamber of Uzun Rama Tomb / Remains of Wood / Uzun Rama Mezar Odasının Ahşap Kalıntıları

The tomb was considered for long-term burial. After a while, i.e. in connection with the burial of a newly died tribe member, the human bones of the previous dead body were put aside in the chamber. Therefore, their initial position has completely been changed, so it was not possible to determine their direction. As this action was repeated for several times, except the central part of the tomb, in the other parts, especially in the side parts it caused 50 cm thick layer of human bones. Therefore, to determine the directions and forms of the buried people was impossible.

After the tomb was full of bones, in accordance with the religious traditions it was fired and burnt. Apparently, burning was not only connected with religious outlook, it may occur a tradition for wanting to avoid pillage of the tomb in the future. But in any case, burning of the tomb

<sup>&</sup>lt;sup>11</sup> Calilov / Farzaliyev / Seyfullayev 2016: 194-201.

was a tradition. While burning of the tomb a part of capping along the western wall was opened and then by giving fire was burned. Thus, the western wall of the Kurgan chamber was wholly, the north-west and south-west walls exposed to high temperature have got red color. During the burning process the entrance door was kept open. As a result, a strong air flow entering through the dromos had amplified the fire and the flame came out from the opening in the top. Therefore, the human bones, as well as grave goods were severely burnt. As the wind entering through dromos from the east side, drove off the flame to the west, these parts are less burnt. The burning process in the tomb had been brought to a level that gave the effect of oven or furnace.

In some cases the bones have turned to ashes, and sometimes have become charred. Affected by the fire in some cases cobble-stones began to melt, scarified and stuck to each other. One can meet various views of the researchers who conducted the excavation of the analogical kurgans on the burial traditions. Some of them state that the burial ceremony took place at the same time as a result of the death of the people<sup>12</sup> happened due to these and other diseases, but the others note that these kurgans belonged to one tribe and the funeral rites was carried out at different times.<sup>13</sup> Moreover, there are different opinions about the funeral rites of this type of kurgans or rather, about the existence of cremation or exhumation traditions. Some researchers tried to associate the tradition of burning of the dead and rituals related to fire with fire worship and to explain it with the belief to cleaning force of the fire<sup>14</sup>. In our opinion, in this type of tombs the cremation had not been a burial tradition. Taken into account that all the structure of one of the Kurgan chambers, most chambers' capping consisted of wooden beams, in this case, the cremation of the initially buried man could have resulted in the destruction of the entire tomb. During the firing of the tomb as a result of burning and sinking of the capping all the things in the grave, including the bones, ashes, coal, wood pieces and stones have formed a completely mixed layer (Fig. 8).

Preliminary result of the bio-archaeological studies made by D. Erdal and Y. Erdal have determined that the minimum number of individuals buried in the grave was between 79 (skulls) and 83 (other ones), and that most were adults between 15-35 years old, but that infants and children over 2-3 years old, or elders are also present. As yet, no specifi c infectious



Figure 8: A Fragment from the Mass Burial of Uzun Rama / Uzun Rama Mezar Odasındaki Toplu Gömüden Bir Kesit

<sup>&</sup>lt;sup>12</sup> Kesamanlı/Djafarov/Babaev1980: 8; Cafarov 1985: 83-84.

<sup>&</sup>lt;sup>13</sup> Qummel 1948: 17.

<sup>14</sup> Kosarev 1984: 223-26; İvanova 1978: 116-126.

diseases have been observed and people did not seem to have died in warfare<sup>15</sup>.

Basing on results of bioarchaeological investigations on the human bones it has been drawn a conclusion that the main occupation of the community which this Kurgan belonged to was cattle-breeding and they always had nomadic mode of life.<sup>16</sup> Based on the analysis of human bones was determined that the temperature hesitated between 300-1200 degrees Celsius within the tomb.

In the Kurgan tomb were discovered a lot of intact and broken ceramic examples, charred remains of the wooden vessel, charred remains of the wooden niche, bone spindle heads, paste beads and pieces of fabric.

### Ceramics

64 pieces of ceramic vessels dating to Early Bronze Age was discovered and taken from the kurgan. Some of them were completely destroyed at the result of the sinking of top layer during the fire. Most of the vessels are the jug and bowl-type containers. Thus, 38 pieces of the pottery are jug-type and 17 pieces are the bowl-type vessels. 62 ceramic vessels found in the Kurgan were completely restored. Ceramic samples are represented by pitchers, bowls, jugs, pots, cups and so on (Fig. 9-11).

Most of the ceramic vessels are in a small-capacity. In general, the pottery is black, gray and light yellowishred with a polished surface. The clay was tempered with fine sand iclucions. Some bowl-type clay pots are containing a mixture of large coarse sand, and even small pieces of stone. The preparation of pottery is observed the continuation of Chalcolithic traditions. Thus, ceramic samples were formed in the molds made using cloth sacks. In this case, to the composition of clay mixture relatively large sand particles and small stones were added. Then, both the inward and outward of the ready vessels were slipped and polished. However, in some areas, traces of fabric are clearly observed at the base of the pot, especially in inaccessible parts.

For shape and place of grips the jug-type pottery is divided into two types. Most of the ceramic vessels have one or two belt-type cross-sectional handles on the sides in some which connect the shoulder and mouth, in the others the shoulder and neck. In the first group of jugtype containers because of short or too short neck the transition from shoulder to mouth was directly. Seat of some jug-type ceramic vessels are curved inwards. In general, vessels are of a simple form. Thus, except the three pieces of jug-type vessels, on most of them are not found any pattern or geometric lines. On 3 jug-type ceramic vessels, on four sides of the body was drawn vertical, slant to the left and right thin-elongated modeling. Modeling pattern on a jug is one, while on the other is twin.

One of the potteries found in the Kurgan dominating in quantity are bowls. Bowls draw attention due to their relatively large capacity. They are of a simple form, large, black and gray or the mixture of gray and black. In the rim of some bowls were projections in the form of double nipple, on the other a single oval-shaped projection, but in the middle of some were small modeling with the hole on the flank. In some bowls this kind of modeling reminding the handle was on the one flank, but in the others on both flanks.

Bowls are of identical shape but differ from each other for their volume, height and mouth edges. The mouth edges of some are rectangular, of the others are oval, relatively wide and flat, the third are oval and inclined to inward.

Three pieces of charred wooden bowls was discovered in the tomb. The wooden bowls are of the similar shape with ceramic one. (Fig. 12)

# Wooden Niche

In the south-west corner of the tomb the remnants of a charred wooden niche was found. In the upper part of the niche was put a ceramic dish and human bones. We can assume that the bones on the niche belong to a reputable member of the tribe. When he was buried he had been laid in the most worthy place of the tomb, on the niche and pottery had been arranged next to him.

### **Spindle Heads**

8 pieces of bone spindle heads were found in the tomb. They were designed in the conical form. The spindle heads are of the identical form. Diameters are 3,5-4 cm. In the middle of some still have remained the charred remnants of the wooden helves. As a labor tool, only a number of spindle heads and the remains of rolled cloth were revealed, for which we can assume that these tribes were mainly dealing with weaving (Fig. 13).

### Adornment

A lot of small beads made of black, white and gray paste were found in the tomb. They all found in the same

<sup>&</sup>lt;sup>15</sup> Polumarch/ Pesqueur/ Jalilov. 2014: 244.

<sup>&</sup>lt;sup>16</sup> Researches were realized the by Assoc. Prof. Dilek Erdal, and by Prof.Dr. Yılmaz Erdal, Hacettepe University.

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Figure 9: The Pottery Revealed from the Mass Burial of Uzun Rama / Uzun Rama 'nın Toplu Mezarlığında Bulunan Çanak Çömlek.

Figure 10: The Pottery Revealed from the Mass Burial of Uzun Rama / Uzun Rama Mezar Odasında Bulunan Çanak-Çömlekler



Figure 11: The Pottery Revealed from the Mass Burial of Uzun Rama / Uzun Rama 'nın Toplu Mezarlığında Bulunan Çanak Çömlekler.



Figure 12: Carbonized Remains of a Wooden Bowl from the Mass Burial of Uzun Rama / Uzun Rama Mezar Odasında Bulunan Kömürleşmiş Ahşap Kase Kalıntıları.



Figure 14: Beads / Boncuklar.



Figure 13: Spindle Heads / Ağırşaklar.

place, i.e. on the child's skeleton. The beads were wheelshaped. They were identical in shape and size. Diameter of the beads is 2-3 mm. (Fig. 14)

# **Cloth remnants**

One of the most interesting findings that were revealed, in the tomb are fabric remains. In some cases they were found rolled, in the others on the bones. A part of the fabrics was burned, some parts was converted into coal. (Fig. 15)

# **Animal Remains**

The excavations of Kurgan yielded almost exclusively cranial remains (skull and mandible) along with a few postcranial remains (especially a couple of ribs and vertebra fragments). Most of the remains belong to domestic



Figure 15: Pieces of Fabric / Kumaş Parçası.

caprines (domestic sheep or domestic goat). At least 13 horn cores fragments attest of the deposit of goat skulls. Mandible fragments are numerous but usually lacking their teeth. The analysis of the mandibles shows that at least five heads were disposed in the kurgan, four of them belong to animals younger than two years while one belong to an animal between two and six years old<sup>17</sup>. From the presence or absence of a foramen on the lateral face of the mandible<sup>18</sup> it can concluded that the younger heads belong to a goat. Beside goat and sheep remains, a few fragments (including a horn core fragment) have been identified as domestic cattle. The animal remains assemblage from Kurgan also contains the distal part of a heavily burnt hare humerus.

To sum up, the most common animal deposit in the Uzun Rama kurgans consisted of domestic young goat and sheep

<sup>&</sup>lt;sup>17</sup> Payne 1973.

<sup>&</sup>lt;sup>18</sup> Halstead/Collins/Isaakidou 2002: Fig. 3.

heads. Four complete heads (skull and mandible) of goat and one of sheep were placed in the chamber. Considering the age of the sheep and goat (below two years old), it can be hypothesised that these animals were slaughtered especially to consume their meat, maybe in the frame of the burial of humans in the kurgans. It should be stressed that these animal remains, collected from a peculiar funeral context, can't provide any information related to the economy of the peoples who used the kurgans. For example, seven spindle whorls made from cattle femur have been found in the kurgan<sup>19</sup>. These objects attest of the exploitation of domestic cattle in this Early Bronze Age society even if this species is underrepresented in the kurgans.<sup>20</sup>

As for the periodisation of crypt beneath barrows, based on their structure, construction traditions and the analytical analysis of samples of the revealed material culture we can say that the tombs relate to the Early Bronze Age.

First of all, it should be noted that the early forms of these kurgans are known from Soyugbulag kurgans<sup>21</sup> and they have been formed on the basis of these traditions. So, the methods used here for the construction of kurgans in several forms are found in Soyugbulag kurgans.<sup>22</sup> The traditions of digging chambers in the mainland in a quadrangular form with brick walls, as well as of ground burial chambers continue in crypt beneath barrows, that are not found in the later stages of the grave chambers of Kura-Araxes culture. The remains of the building from similar clay blocks are known from Arslantepe VII<sup>23</sup>, Galayeri<sup>24</sup> settlements.

# CONCLUSION

For characteristic features and in comparison with the classic samples of the Kura-Araxes culture material culture samples revealed in the tomb we can say that they differ for their relatively unique features. In particular, this difference is clearly seen in making the vessel grips. Almost hemisphere, as well as the handles reminding bull nose have not been encountered. Especially the projecting patterns on the edge of grips which form a complex with the handles of the classic Kura-Araxes were not arranged. Ceramic vessels found in the tomb have simple-form, oval cross-section, and sometimes a belt-shaped grips. On the other hand, if in the classical Kura-Araxes vessels the sharp transition of the body to the shoulder draws attention, it is not felt in these one. This distinction is clearly manifested in the texture, manufacturing technology, even in the quality of the vessels. The potteries draw attention with their relatively non- symmetric structure, for to be baked in alternating temperature and rough preparation. We would like to emphasize in particular, that in the preparation of these vessels were used moulds made of cloth sacks. After forming their body in these molds, neck and mouth were formed with hands. Thus, as mentioned above, the Chalcolithic traditions are being observed in manufacturing of ceramic vessels. It is manifested not only in the technology of their production, as well as in the texture and form. In particular should be noted that belt-form grips are characteristic for most late Chalcolithic vessels. Production quality of the pottery is lower than the samples of Kura-Araxes culture, but identical to the local Chalcolithic ceramic vessels. Aeneolithic traditions are reflected in the production of ceramic vessels in their patterning, more precisely in the simple development. The first striking examples of Early Bronze Age, Chalcolithic traditions are the ceramic ware found in Chalcolithic -Early Bronze Age settlements of Babadervish<sup>25</sup> and Golveri<sup>26</sup>. Thus, similar patterns of the ceramic vessels revealed in the tombs have been found on the surface of Chalcolithic layer of the ancient settlements mentioned above, in Bronze Age layer. Taken into account the above-mentioned, as the bearer of Chalcolithic traditions it would be right to relate these crypt beneath barrows traditions to an early stage of the Bronze Age.

Roughly 20 crypt beneath barrows have already been investigated in the Azerbaijan territory; only from 3 of them were taken samples for radiocarbon analysis. The results of C 14 analyzes of charcoal samples taken from crypt beneath barrows that had been investigated by us give reason to date them to the end of the IV millennium BC. Or rather to the early stage of Kura-Araxes culture.

Charcoal samples taken from the crypt beneath barrows of Uzun Rama and Shadili were analyzed in Japan, at Tokyo University in the laboratory for radiocarbon periodization.<sup>27</sup> It is no coincidence that the result of radiocarbon analysis of coal samples taken from the analogical crypt beneath barrow in Mentesh tepe was dated with the same period (end of the IV millennium B.C)<sup>28</sup>. The results of radiocarbon analysis, once again confirm the above-mentioned views on the periodization of crypt beneath barrows. Basing on historical and analytical investigations, relating this to the same period with early Kura-Araxes culture, we can say that either this is a different culture, or the laconic version of the early Kura-Araxes culture.

<sup>&</sup>lt;sup>19</sup> Calilov 2013: Fig. 7.

<sup>&</sup>lt;sup>20</sup> Researches were realized the by Dr. Rémi BERTHON, UMR 5133 "Archéorient - Environnements et sociétés de l'Orient ancien", CNRS/Maison de l'Orient et de la Méditerranée – Jean Pouilloux, Lyon, France.

<sup>&</sup>lt;sup>21</sup> Lionne/Almamedov/Buke/Kurse/Djelilov/Xuseynov/Lut/Maxaradze/Reynard 2011: 50-51.

<sup>&</sup>lt;sup>22</sup> Lyonnet/Akhundov/Almamedov/Bouquet/Courcier/Jalilov/ Huseynov/Louye/Makharadze/Reynard 2008.

<sup>&</sup>lt;sup>23</sup> Frangipane 2009: 136.

<sup>&</sup>lt;sup>24</sup> Museibli 2011: 5.

<sup>25</sup> İsmailov 1977: 25-42.

<sup>&</sup>lt;sup>26</sup> Hüseynov 2010: 72.

<sup>&</sup>lt;sup>27</sup> Laboratory for Radiocarbon Dating, the University Museum the University of Tokyo, Hongo 7-3-1, Bunkyo, Tokyo 113-0033, Japan. e-mail. nendai@um.u-tokyo.ac.jp.

<sup>&</sup>lt;sup>28</sup> Lyonnet/Guliyev 2012: 92.

Sample	Lab-ID	Our-ID	Conventional <sup>14</sup> C age	$\square^{13}$ C for correction
Uzun Rama	PLD-23944	TKa-15795	4521±24 BP	-23.64±0.16‰
Shadily 2011	PLD-23945	TKa-15796	4524±24 BP	-21.72±0.14‰

#### Radiocarbon dates

#### Calibrated radiocarbon dates

Sample	Material	Calibrated date (1SD)	Calibrated date (2SD)	Dataset
Uzun Rama	Charcoal	3350BC(13.5%)3324BC 3234BC(30.7%)3173BC 3161BC(24.0%)3118BC	3355BC(29.9%)3264BC 3241BC(65.5%)3103BC	IntCal09
Shadily 2011	Charcoal	3351BC(14.3%)3325BC 3233BC(30.0%)3173BC 3161BC(23.9%)3118BC	3356BC(20.7%)3308BC 3303BC( 8.5%)3264BC 3241BC(66.2%)3104BC	IntCal09

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