

ARCHAEOBOTANICAL ANALYSES ON CHARRED MACROREMAINS FROM ȘIMLEU SILVANIEI “OBSERVATOR” SITE (2015 ARCHAEOLOGICAL CAMPAIGN)

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REZUMAT: Cercetarea arheologică cu caracter preventiv derulată în anul 2015 la Șimleu Silvaniei, punctul “Observator” (județul Sălaj, RO) a permis cercetarea unei ample suprafețe (4600 m²) a acestui sit arheologic cu o locuire complexă. Majoritatea complexelor descoperite aparțin locuirii din prima epocă a fierului, iar câteva sunt atribuite perioadei Laténe, respectiv Bronzului târziu. Din complexul Cx. 28 ce aparține perioadei mijlocii a primei epoci a fierului provine o cantitate de resturi carbonizate provenind de la mei (*Setaria italica*), în timp ce din complexul Cx. 77, atribuit locuirii din perioada fazei Gáva II au fost adunate resturi carbonizate de grâu primitiv (*Triticum monococcum* și *Triticum dicoccum*), precum și câteva cariopse de mei.

CUVINTE-CHEIE: nord-vestul României; prima epocă a fierului; analize paleobotanice; grâu; mei.

ABSTRACT: The archaeological campaign of 2015 from Șimleu Silvaniei (Sălaj county, RO) “Observator” had a preventive character determined by the building of a forest road whose route crossed a part of the area with archaeological remains. The surface investigated on this occasion had about 4600 m² and were discovered 252 archaeological complexes, most of them belonging to the First Iron Age, along with Dacian features and a Late Bronze Age pit. From some of the archaeological features of the First Iron Age some quantities of seeds were also recovered. From feature nr. 28, belonging to the Middle Period of the First Iron Age was picked one sample with the weight of 67 grams containing 7 charred amorphous matrix of *Setaria italica*. From feature nr. 77 belonging to Gáva II – phase were been picked two small samples containing charred macroremains. **Sample 1** contained 97 specimens of *Triticum cf. dicoccum* and 8 specimens of *Triticum cf. monococcum*. **Sample 2** with the total weight of 114 grams was made by 19 charred amorphous matrix of *Setaria italica* with intrusions of *Triticum sp.* Inside sample were identified 15 *Triticum monococcum* and 37 *Triticum dicoccum* very damaged by fire.

KEYWORDS: North-west Romania; First Iron Age; archaeobotanical analyses; wheat; millet.

SITE LOCATION

The archaeological site from Șimleu Silvaniei, Sălaj county (Pl. 1/2) “Observator” it is located on the upper plateaus of Măgura Șimleului (597 m at the summit, Pl. 1/1). The archaeological remains from this site have been known since the end of the 19th century when a series of discoveries are mentioned, but also the names of some of those who carried out “archaeological excavations” on the area¹. In 1994

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¹ Bejinariu 2006, p. 15–18; Bejinariu 2017, p. 93–94; Pop 2007, p. 39–43.

extensive excavations are started in the “Observer” area as part of a project concerning archaeological sites from Măgura Șimleului area. The long-term research of the “Observer” area runs until 2015 with some interruptions. During the excavations, traces of the human presence belonging to the final Eneolithic period, Early, Middle and Late Bronze Age, First Iron Age, Laténe D and Early Middle Age have been discovered.

The fortified settlement of the First Iron Age has an area of approximately 30 – 35 ha and is situated mostly on the plateaus north of the peak called “Observer”. The excavations have shown the existence of extensive defensive constructions, with a complexity and structure determined by the terrain configuration, and the inhabited areas have often benefited from massive leveling works, which unfortunately have often affected the previous dwelling. The First Iron Age habitation is a long one and can be dated based on the archaeological material approximately in the interval delimited by the end of the period Ha A2 / beginning Ha B1 until the end period of the stage Ha C / beginning Ha D². Numerous archaeological complexes (houses, pits and house annexes) have been discovered with a rich archaeological inventory, but until the research carried out in 2015, complexes with and consistent plant macro-remains have not been identified. Earlier, some data were published by colleague Dan V. Sana in his doctoral dissertation, where he analyzed the discoveries of the First Iron Age in the Șimleu Silvaniei “Observer” site, including the campaign of 2008³. From the pit designated as Cpx. 25/1995 comes one caryopsis of wheat determined as belonging to the *Triticum dicoccum* species. At the same time, the presence of the garden bean (*Vicia faba*, minor variant) was identified, a legume more rare present in discoveries of this period on the territory of Romania. From another pit, comes seeds of stickwilly or false cleavers (*Galium spurium*) and hairy tare (*Vicia hirsuta*), both species with therapeutic virtues.

The archaeological campaign of 2015 had a preventive character determined by the building of a forest road whose route crossed a part of the area with archaeological remains. The surface investigated on this occasion had about 4600 m² and were discovered 252 archaeological complexes, most of them belonging to the First Iron Age, along with Dacian features and a Late Bronze Age pit. From some of the archaeological features of the First Iron Age some quantities of seeds were also recovered. Given the scarcity of information regarding the analysis of the vegetal remains that appear in archaeological contexts of the first Iron Age in Transylvania, we considered that a determination, respectively their publication is welcome, in advance to that of the rest of the archaeological inventory of these features. In this article we will refer to the plant macro-remains from of Cpx. 28 and Cpx. 77 features. A simple visual analysis is about cereals, and this fact gives us the possibility of a comparative analysis. Since from this archaeological site we have also the determination of a lot of cereal seeds that coming from an archaeological context (pit) belonging to the Late Bronze Age dwelling, of the Cehăluț – Hajdúbágyos cultural group⁴.

Cpx. 28 is a complex with an oval contour on the level at which it was observed (-0.60 m) (Pl. 2/2, Pl. 3/2). It turned out to be a roughly round pit with 1.70 m in diameter of and a depth of 1.40 from the current soil surface. To the east there is a kind of “lower threshold” of access (-0.90 m). In the profile it was observed very well that both the pit and the access area have the same filling: brown with a clayey appearance. The pit inventory consisted in an storage vessel and fragments from other potteryes, such as bowls with inverted rim, cups, various other types of vessels. In the pit were also found fragments from two pyramidal weights of burnt clay. A small amount of plant remains (seeds) was recovered from the pit inventory. The seeds were grouped and not scattered in the filling of the complex. Based on the ceramic inventory, this complex belongs to third phase of the fortified settlement evolution from Șimleu Silvaniei, a phase dated in the middle period of the First Iron Age⁵.

² Sana 2010a, p. 19–24; Bejinariu 2017, p. 194.

³ Sana 2010, p. 179–180.

⁴ Ciută, Bejinariu 2012, p. 155–167.

⁵ Sana 2010, p. 196–199.

Cpx. 77 – is a roughly round pit at contour level (-0.20 m) (Pl. 2/1, Pl.3/1). It has a diameter at the aperture of about 1.06 m, but it widens a lot, so that at the bottom (-0.82 m deep) it measures 1.80 m in diameter. Partially it overlaps a feature (Cpx. 79) which is also a bell-shaped storage pit in profile, which belongs also to the First Iron Age habitation. The inventory of this pit consisted of a very large amount of burnt adobe and hearths, especially at the bottom and near the walls of the pit. However, a number of fragmented vessels (bitronconic and bowls with inverted rim) also appeared, including fragments from a thick-walled tray. Next to them appeared three massive pyramidal weights, made of burnt clay. At the bottom of the pit, a large quantity of lightly charred cereals was deposited in its northern part. The ceramics that come from this context can be attributed to the Gáva II phase.

ENVIRONMENTAL DATA

The analysis of the vegetal macro-remains from clear archaeological contexts is also an important source for obtaining clues regarding the reconstruction of the paleoenvironmental and paleoclimate characteristic of the period during which the evolution of the human community from Șimleu Silvaniei "Observator" was evolved. Very recently, the results of analyzes carried out on samples collected from the swamp from Iaz (Plopiș commune, Sălaj county) from the upper course of the Barcău river were published. Paleoecological data suggest for 1200–600 B.C. (which largely coincides with the evolution of the fortified settlement from Șimleu Silvaniei "Observator") that the respective period was characterized by a more arid optimum and a fluctuating humidity level. The high abundance of coprophilic mushroom spores indicates the growth of animals as the main agricultural activity during this period. The low values of plant species characteristic of pastures can be attributed to intensive grazing, which does not allow many plants to reach full maturity before being consumed. Until to 600 B.C., the degree of human impact on the environment can still be well understood. The destruction of *Fagus sylvatica* forest continued, mainly through controlled fire, as suggested by the values of coal and the presence of fungi that feed on burnt wood. Probably, the fire was probably mainly used to provide larger areas for grazing. However, there are indications that suggest the continuous cultivation of vines in the region⁶.

ARHEOBOTANICAL DATA

The archaeobotanical samples were been picked directly from the archaeological contexts (Cx28 and Cx77) since were visible with naked eye. From Cx77 and Cx28 which both were pits were been sampled the visible charred macroremains. The plant macrofossils were been sorted under a magnifying lamp and identified using a binocular microscope, both by comparison with a modern reference collection and with the aid of relevant identification literature. In this paper the plant nomenclature follows Flora României (*Romanian Flora I-XII*).

From **Cx28** was picked **one sample** with the weight of 67 grams containing 7 charred amorphous matrix of *Setaria italica*.

From **Cx77** were been picked two small samples containing charred macroremains.

Sample 1 contained 97 specimens of *Triticum cf. dicoccum* and 8 specimens of *Triticum cf. monococcum*.

Sample 2 with the total weight of 114 grams was made by 19 charred amorphous matrix of *Setaria italica* with intrusions of *Triticum sp.* Inside sample were identified 15 *Triticum monococcum* and 37 *Triticum dicoccum* very damaged by fire (Pl. 4/a-b).

These 26 charred amorphous matrix are a very remarkable and interesting find. The process of combustion is the result of these charred amorphous matrix. When seeds are exposed to high temperatures

⁶ Grindean et alii 2015, p. 122, tab. 3.

during charring, the highly inflammable vapours usually lead to the rupture of the seeds, and to their complete combustion, leaving these kind of charred amorphous matrix⁷.

DISCUSSIONS

Foxtail millet, *Setaria italica*, it wasn't discovered as frequently as broomcorn millet, *Panicum miliaceum*, in prehistoric contexts. But there are discoveries where both occurred in some deposits. The earliest is probably *Panicum miliaceum*, and certainly not *Setaria italica*. In European archaeological sites both broomcorn and foxtail millets are found in association with one or more Near Eastern crops⁸.

Setaria italica thrives best on fairly fertile soil. It can grow on poor land but it will not tolerate waterlogged or arid conditions. It requires warm weather during the growing season. It is most productive where there is fairly abundant rainfall, although it can be cultivated in semiarid regions. The short growing season is a great advantage from this point of view⁹.

About foxtail millet we found that it became a widely grown crop in Europe only during the Bronze Age, and then only along the Alps in southeastern Europe. Foxtail and broomcorn millet remains are also common from Swiss Lake Dwelling sites in Switzerland and Austria. E. Neuweiler (1946) estimates that the site of Baldeg, in which foxtail millet grains were recorded, dates back at least to 1600 B.C.¹⁰. H. Helbaek (1950) reports that foxtail millet is encountered in southern European archaeological sites dating from the late third millennium B.C. onward¹¹. It was chiefly cultivated in Bronze Age in Alpine Europe. Correlating to our chronological period *Setaria italica* was discovered in Hallstatt, Austria¹².

In Romania, the earliest find of *Setaria italica* was registered in Gumelnita culture in Hârşova and Morteni sites, both located in south of Carpatians. In La Tene Age were made discoveries of *Setaria italica* in Căpâlna and Pîscu Crăşani sites. Their discovery reveals the use of the species in the diet of dacian populations¹³.

Seeds of foxtail millet could be consumed boiled as millet as it was confirmed by its revealing in the stomach of Graballe man¹⁴. But it will not exclude the hypotheses if its use in the process of bread making since the seeds were been discovered together with flax seeds inside bread remains from settlement from Irgenhausen from Switzerland¹⁵.

The revealing of seeds belonging to *Triticum monococcum* and *Triticum dicoccum* in same contexts with *Setaria italica* suggests that Iron Age populations from northwestern part of Romania still included these species in their diet, although *Triticum aestivum* is the primary species used in this chronological period.

As we mentioned earlier, from the same archaeological site – Şimleu Silvaniei "Observator" – another batch of seeds was analyzed several years ago. These ones come from an Cehăluţ-Hajdúbágyos cultural group pit, based on the ceramic inventory, assigned to the first two stages of the late Bronze Age in northwest Romania. The species identified from that context are: *Triticum monococcum* (about 15% of the total seeds), respectively *Triticum dicoccum* (about 85%)¹⁶. From another pit investigated in 1995, attributed to the Gáva culture (likely) habitation, comes a *caryopsus* attributed to the *Triticum dicoccum*

⁷ Stikka, Heiss 2013, p. 78.

⁸ Kroll 1983, p. 64.

⁹ Renfrew 1973, p. 101.

¹⁰ Neuweiler 1946, p. 128.

¹¹ Zohary, Hopf 1988.

¹² Renfrew 1973, p. 101.

¹³ Cărciumaru 2005, p. 94.

¹⁴ Helbaek 1950, p. 84.

¹⁵ Cărciumaru 2005, p. 94.

¹⁶ Ciută, Bejinariu 2012, p. 158.

species¹⁷. Both species are also found among the carbonized remains collected from feature 77/2015 attributed to the Gáva II stage. Probably the two species of primitive wheat were among the favorites of the communities that inhabited the area of the high plateau of „Magura Șimleului“ at the end of the IInd millennium B.C. and in the first centuries of the next millennium, due to the fact that they are resistant species¹⁸, with good yields even on less productive soils¹⁹ such as those on Măgură. There is even the hypothesis that the two wheat species would have been intentionally grown together to reduce losses in case of less agricultural favorable weather²⁰. The species *Triticum dicoccum* was also highlighted in the Cehăluț – Hajdúbágyos settlement on the lower course of the Crasna river, at Tășnad «La seră» (Satu Mare county), in the pit 185²¹. But surely those who lived on „Măgura Șimleului“ during this period, especially in the first centuries of the first millennium B.C., when the human presence covers a large area, which also implies a large population, it must have been cultivated including the low area, that of the meadow of Crasna, with a much more fertile soil. Probably the millet species *Setaria italica*, more pretentious compared to the soil conditions, has found a favorable place on the large terraces, which develops especially on the left bank of the Crasna valley. For a broader comparative view, the main impediment is the small number of analyzed archaeobotanical lots, belonging to the First Iron Age settlements from Transylvania. We mention in this context the discoveries from Teleac, where in a grave with ritual deposits were identified remains from the *Triticum durum* and *Hordeum vulgare* species²². We also report the discovery of some charred millet remains on the bottom of a vessel discovered in a house in Bernadea attributed to a Basarabi community in Transylvania²³. From a pit investigated in the fortified settlement from the First Iron Age at Tășad (Bihor county), in Criș Rivers Basin, comes a significant quantity of carbonized seeds. Were identified *Triticum monococcum* and *Triticum dicoccum* in approximately equal percentages, *Triticum spelta*, while *Triticum aestivum* appears in the highest percentage (over 73%), and *Panicum miliaceum* appears in a negligible amount²⁴. As we can see the database is precarious and this aspect does not allow us to formulate even working hypotheses at this stage of the research.

ABBREVIATIONS

Aarb. Nordisk	
Oldkde. og Hist.	Aarbøger for Nordisk Oldkyndighed og Historie. København
AMP	Acta Musei Porolissensis. Zalău
ATS	Acta Terrae Septemcastrensis. Sibiu
BAR	British Archaeological Reports. Oxford
BMA	Bibliotheca Musei Apulensis. Alba Iulia
EphNap	Ephemeris Napocensis. Cluj-Napoca

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¹⁷ See note 3.

¹⁸ Ciută 2009, p. 175.

¹⁹ Cărciumaru 1996, p. 157.

²⁰ Ciută 2012, p. 49, note 138.

²¹ Ciută 2012, p. 126.

²² Vasiliev *et alii* 1991, p. 131.

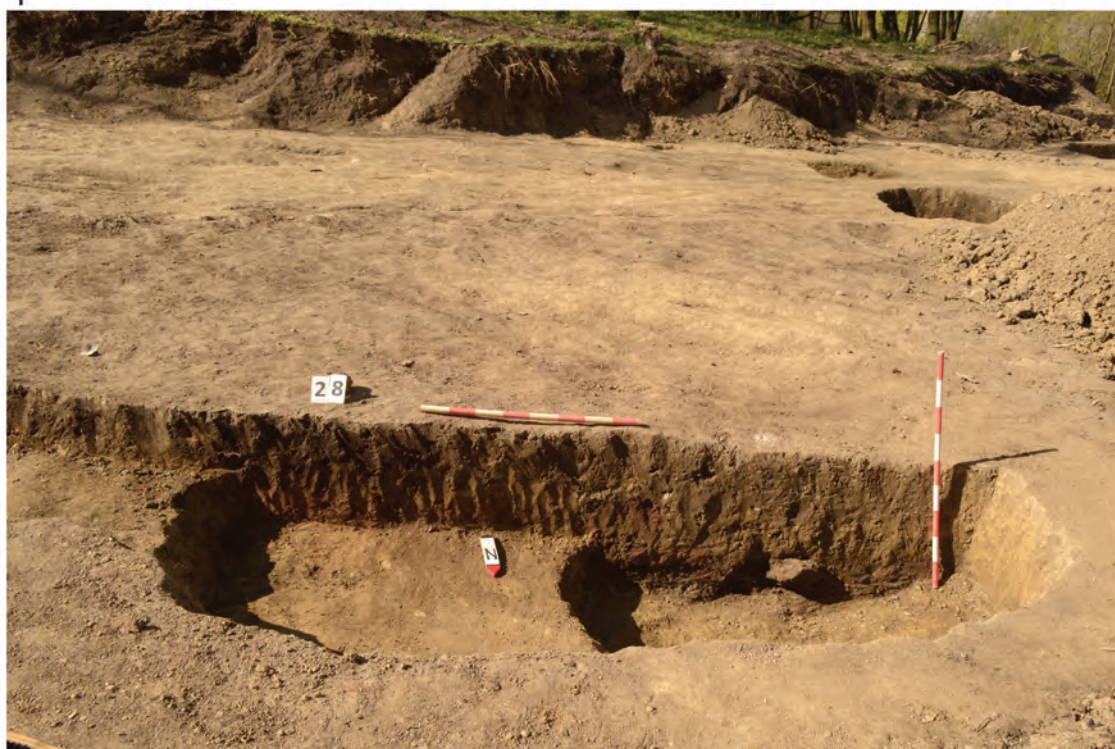
²³ Ursuțiu 2002, p. 78.

²⁴ Cărciumaru 1996, p. 119.

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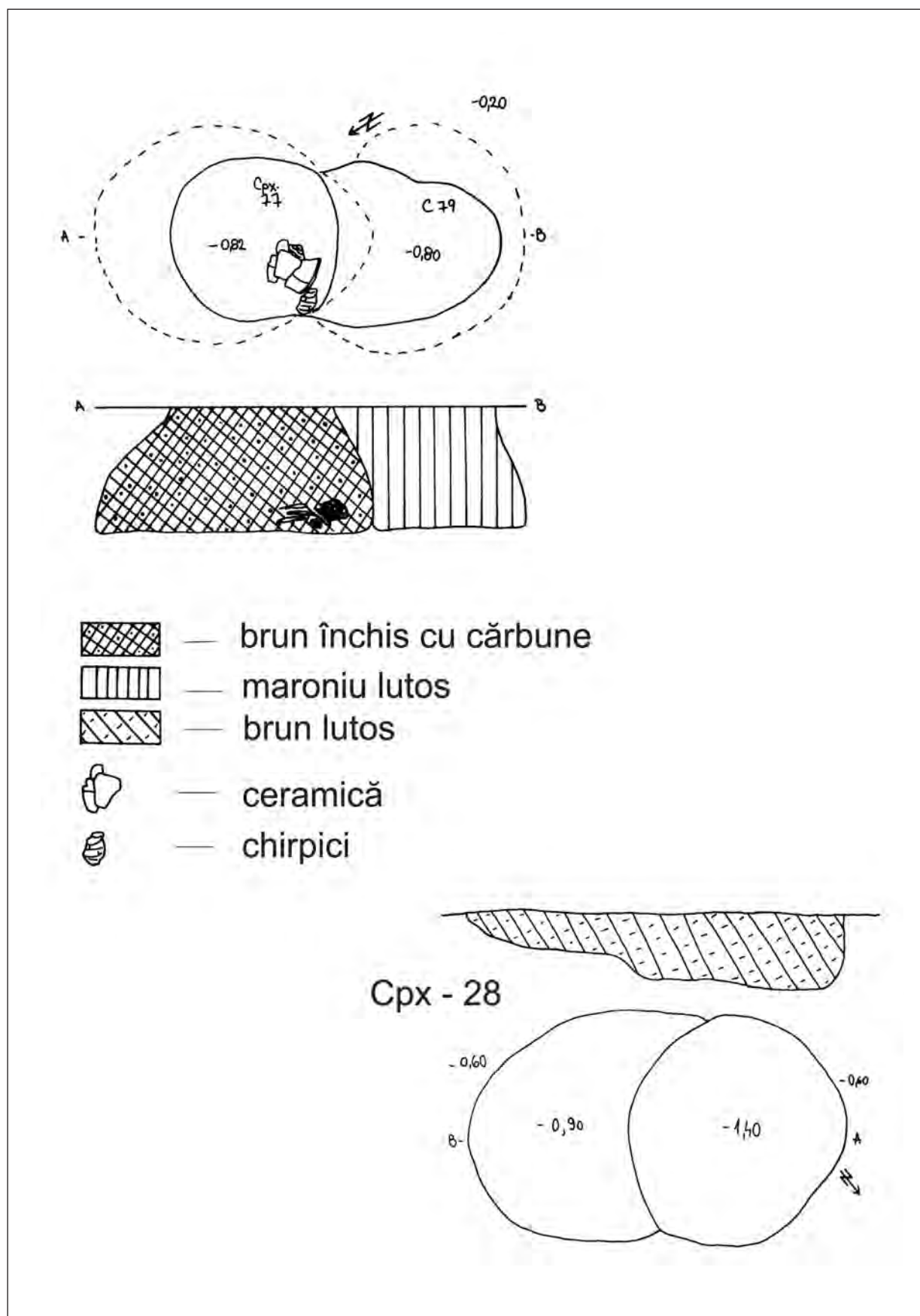


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Pl. 2. 1–2: Features nr. 77 and 28 photos.



Pl. 3. 1-2: Features nr. 77 and 28 drawings.



Pl. 4. a-b: Seeds from pit nr. 77.