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**CULTIVATORS OR SHEPHERDS?
NEW ARCHAEOBOTANICAL DATA REGARDING PLANTS
CULTIVATION WITHIN AENEOLITHIC-BRONZE AGE
COMMUNITIES, LOCATED IN THE
ROMANIAN INTRACARPATHIAN AREA**

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Key-words: *plants cultivation, Aeneolithic, Bronze Age, Romanian Intracarpathian area, Coțofeni culture.*

Abstract: *The article presents new archaeobotanical data regarding the plant species, which were included in the human diet of the communities from Aeneolithic-Bronze Age, located in the Romanian Intracarpathian area. The archaeobotanical data have been sampled from four archaeological sites dated in the period mentioned above. Our results are extremely important in the attempt of reconstructing the vegetal diet of these prehistoric communities, especially because, until now, these data did not exist. The lack of these archaeobotanical data made many archaeologists release the hypothesis according to which the main occupation of these communities was animal breeding rather than plants cultivation.*

Introduction

The so-called Intracarpathian area is located into the arc made by the Romanian Carpathian Mountains. The area is dominated by the mountain chain and has the character and quality of a basin. The plateau image results from the difference of altitude between the bottom and the surface of the valleys. The valleys are 300-400m deep. There are some controversies in geographical literature about the identity of Transylvania basin. Some people say that this area overlaps with the Transylvanian Plateau, while others see it as being just the area circumscribed inside the diapir folds (Badea et al. 1983).

In this paper we will refer to the sites located within Romanian Intracarpathian area. The archaeological interdisciplinary researches from the last years had offered new data regarding the daily existence of the communities belonging to the Aeneolithic-Bronze Age (Fig. 1).

One of the cultures with unpainted ceramics, characteristic for Aeneolithic-Bronze Age in the Intracarpathian area was the Coțofeni culture (Roman 1976; Gogăltan 1999; Laszlo et al. 2001). As mentioned above, the archaeobotanical analysis, which help the reconstruction of the human vegetal diet is scarce for this chronological period. But, in the last years, there were collected soil samples from

archaeological sites, in order to determine which plant species were included in the human diet. Thus, now, we can present the first archaeobotanical data resulted from archaeological contexts belonging to Coțofeni culture, recovered from Șeușa-Gorgan, Cetea-Picuiata, Cheile Turzii-Peștera Ungurească archaeological sites. Another set of new data comes from an archaeological context belonging to Carei-Bobald site, which belonged to the cultural group of Koszider (Hungary), dated in the middle Bronze Age (Nemeti and Roman 2003).

The sites

The archaeological site Șeușa-Gorgan is located on the top of a hill, at 463m altitude above the Black Sea. From morphological and geographical point of view, the site is situated within an area, which is connected with the Mureș Corridor River and also with the Secașelor Plateau (Badea et al. 1983) (Fig. 1). In prehistoric times, this high position has provided the populations with an excellent view of the entire valley, starting from Vințul de Jos and ending with Teiuș. This means over 30 km of screening. The toponym's etymology of the area where the archaeological site is located, respectively *Vârful Gorgan*, together with the morphological configuration of the area, had determined the archaeologists to presume that there exist a *tell* settlement type (Ciută et al. 2006). The presumptions were also based on the archaeological materials found on the surface of soil, belonging to the Coțofeni culture. The systematically archaeological excavations have started in 2000, in order to establish which the prehistoric communities that inhabited that area were.

During the 2005-2006 excavations, within a surface dwelling belonging to IIIb-IIIc phase of Coțofeni culture, was revealed a huge quantity of charred seeds. The depth where these charred seeds were revealed was about 1 m. The charred seeds looked like a small level of intense dark carbonized material. The next operation was to sample very carefully the level containing the charred seeds, in order to gather all the significant data from the context. The archaeological complex named D1/2005 (D from deposit) has proved to be very rich in charred seeds, most of them being picked with the help of a palette knife (Ciută et al. 2007).

The second archaeological site, Cetea-Picuiata, is situated in a piedmont area of the village surroundings (Fig. 1). The village Cetea is located 20 km north of Alba Iulia, being a mountain village with the centre developed over the course of the upper Cetea stream. The place called *La Pietri* includes three neighbouring limestone formations which dominate the area, the left side of the Cetea valley, downstream, starting from the place called *Băile Romane*. The archaeological excavations were concentrated in three distinct locations, respectively *Picuiata*, *Ierboasa* and *Măriuța* (Moga et al. 2005).

During the 2004-2006 seasons were carried out archaeological excavations in the north-eastern quarter and with that occasion was discovered valuable information regarding the Coțofeni habitations. Then was discovered a tumulus. After dismantling, inside the tumulus, three hearths were revealed. Additional information was brought by the discovery and partial research, in southwest

quarter, of a small circular pit. Besides ceramic, belonging to Coțofeni culture, phase III, this pit also contained charred cereal seeds. The distribution and character of these structures is not a common find for the Coțofeni habitation (Ghenescu et al. 2007).

The third archaeological site is located in a mountain area, respectively in Cheile Turzii, inside a cave called *Peștera Ungurească*. Cheile Turzii is part of Trascău Mountains, which, as geographical locations, form the eastern side of Apuseni Mountains (Badea et al. 1983) (Fig. 1). In this context, it is worth mentioning that all the area is full with caves where archaeological materials were revealed. *Peștera Ungurească* is the largest cavern from Cheile Turzii, going deeply in the mountain for a distance of 75m, being orientated towards north, north-east-south and south-east. The cave's entrance looks like a portal of trapezoidal shape, 11 m high, with its large side of 19 m down. The cave was used since prehistorically times and the archaeological excavations carried out here revealed human habitation belonging to different cultures from Aeneolithic and Bronze Age (Bărbulescu et al. 1992).

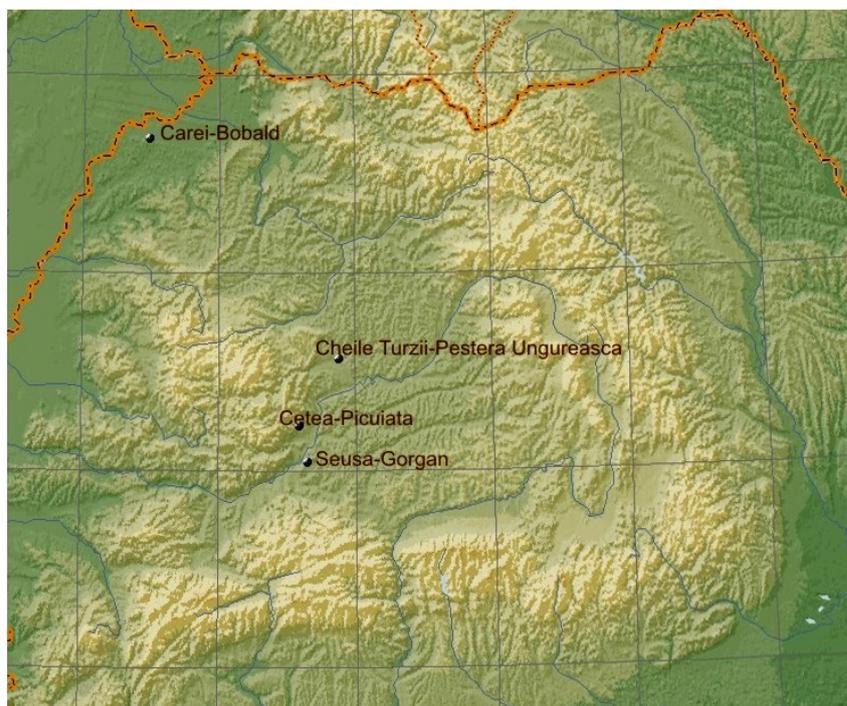


Fig. 1 Map showing location of the archaeological sites within Intracarpathian area.

In the 80's and 90's Gheorghe Lazarovici carried out important archaeological researches. They were interrupted until 2003 when they started again up until now (Lazarovici and Meșter 1996; Bălțean et al. 2004). During the 2006 campaign,

from the levels belonging to Coțofeni culture, were recovered and analyzed samples containing charred macro remains (Arpad et al. 2006).

The last archaeological site we analyzed was *Carei-Bobald*. The point Bobald is a tell type settlement, being located 5 km southeast of the city of Carei, on the left terrace of Mergheșului river (Fig. 1). In the *Carei-Bobald* settlement, during the excavations carried out in 2002 (section VII, pit 7), in a context belonging to the middle bronze age, more specifically to the Koszider cultural group (Hungaria), was found, inside a pot, a large quantity of charred acorns (Nemeti and Roman 2003).

Materials and methods

The materials of this study consist of charred seeds collected from sites in different seasons of excavations. During the 2005-2006 excavation from Șeușa-Gorgan site were sampled 11 soil bags weighting almost 100 liters. The soil has been floated. After the flotation were recovered almost 3.1 kg of charred seeds.

From *Cetea-Picuiata* archaeological site were collected 2 samples consisting in soil bags weighting 10 liters.

Also, from *Cheile Turzii-Peștera Ungurească* were collected soil bags consisting of charcoal seeds. The soil from the cave has been washed with the help of sieves of 1.6 and 0.8 mm, using river water from nearby.

The sample from *Carei-Bobald* was picked during the 2002 seasons of excavation from a ceramic pot.

All samples were fully sorted using a magnifier lamp and were determined under a low power microscope, both by comparison with a modern reference collection (Systemic Archaeology Institute). Seeds were separated from wood charcoal and small fragment bones. All the preserved plant remains were charred.

For species verify we used the relevant identification literature (Grințescu et al. 1957; Beldie et al. 1972; Renfrew 1973; Hopf and Zohary 1988).

Results

Șeușa-Gorgan (jud. Alba).

Applying a complex approach and sampling strategy of the archaeological contexts, allowed the recovery of significant quantities of charred macro remains (Ciută et al. 2007). The archaeobotanical analyses of the samples revealed the prevalence of wheat *emmer*, *Triticum dicoccum* (about 80%) (Fig. 2) followed by wheat *einkorn*, *Triticum monococcum* (about 20%) (Fig. 3). The importance of the discovery of this kind of contexts is worth to be mentioned.

Basically it is the first discovery of such silos containing cereals from the Coțofeni culture. The question to be asked is related to the position of this settlement and also the functionality of these contexts in which the silos were revealed. Why were there no other similar cases revealed until now? A single discovery does not allow us to generalize. So, the silos from Seusa-Gorgan will remain, until further reports, a single discovery, which provides a piece (a very

important one!) from a huge *puzzle*, which recreates the subsistence way of the Coțofeni inhabitants.

Cetea-Picuiata (jud. Alba).

The soil samples came from a pit named G2, precisely from a *tumulus*. The researchers wonder if this is a context with a ritual deposit (Ghenescu et al. 2007). From this context there were recovered about 500 caryopses of wheat *emmer* (Fig. 4). Also, it is worth mentioning the fact that the sample does not have intrusions of other species. As we have already mentioned, the reports with discoveries of charred seeds from Coțofeni culture, are quite rare. The more as they appear in a context with a possible ritual deposit.

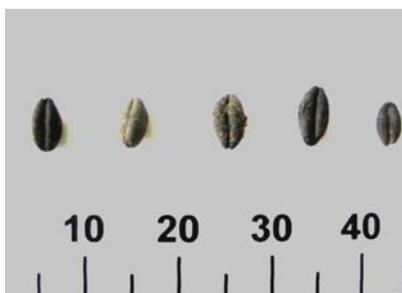


Fig. 2 *Triticum dicoccum* (Şeusa-Gorgan)



Fig. 3 *Triticum monococcum* (Şeusa-Gorgan)

Cheile Turzii- Peștera Ungurească (jud. Cluj).

From the levels belonging to Coțofeni culture, more specifically from quadrant F6-G6, pit 5, were recovered 7 cereal caryopses. Three of them belong to *Triticum monococcum*, two belong to *Triticum dicoccum* and the other two belong to *Cerealia* family. The samples recovered during 2007 campaign are on the way to be analyzed. We hope that they will provide additional information regarding plants cultivation by Coțofeni inhabitants. It is important to mention that in all the caves from the neighbouring area were found archaeological materials belonging to Coțofeni culture (Lazarovici and Meșter 1996), resulting that the area was intensively inhabited during the Aeneolithic-Bronze age.

The archaeobotanical analyses of the samples recovered from the Coțofeni levels, which otherwise are quite poor quantitatively, reveals an initial conclusion, namely that agriculture has not been a main concern for cave inhabitants. Probably this was due to the geographical conditions.

In order to reconstruct the picture regarding the cultivated species within the site from Cheile Turzii we also referred to the plant species recovered from the

levels belonging to late Neolithic and Aeneolithic, respectively from the levels belonging to Zau, Petresti and Bodrogkeresztur cultures. The inhabitants of these cultures lived in the same cave and exploited the same area. However, the most numerous botanical macroremains were recovered from the levels of Bodrogkeresztur culture (phase II and III) from a gold processing workshop. (Arpad et al. 2006). Thus, from the *Cereal* family were identified 194 caryopses, whole or fragmentation, followed by the species of wheat *Triticum monococcum* with 95 caryopses and by *T. dicoccum* with 55 caryopses. From *Triticum aestivum* specie we determined only 3 grains and the species *Hordeum vulgare*, *Secale cereale* and *Panicum miliaceum* were represented, each of them, by a single grain.

The leguminous plants were represented by 4 seeds of *Vicia* sp. From the fruits category, most common were the seeds of black elderberries (*Sambucus nigra*) and cornelian cherry stones (*Cornus mas*) (Fig. 5).

A first conclusion is the one according to which these communities have preferred the *emmer* and *einkorn* wheat species. The data complete the theory already known, namely that these two species were cultivated together or separately (Hopf and Zohary 1988), but, also, are the most common species encountered in Neo-aeneolithic settlements from Romania.

Carei-Bobald (jud. Satu Mare)

The macro botanical analysis, carried out to determinate the species, has established that the acorn fruits belonged to the oak species, *Quercus robur*. This oak tree was widely spread in our country, in the *Atlantic phase* (the 5000-2250 BC), during the stage of *Picea abies*, with mixed hazelnuts and oaken (Cârciumaru 1996). There were recovered around 300 acorns and fragments of cotyledons belonging to *Quercus robur* (Fig. 6, 7). Some of them are in a good state of preservation, while others shatter at simple touch.



Fig. 4 *Triticum dicoccum* (Cetea-Picuiata)



Fig. 5 *Cornus mas* stones (Cheile Turzii)



Fig. 6 *Quercus robur* acorn (Carei-Bobald)



Fig. 7 *Quercus robur* cotyledons (Carei)

Discussion and Conclusions

During Late Aeneolithic and Bronze Age were registered oscillations of the climate, which were not proper for plants cultivation. Also, the graphic with temperature values simulation, of the last 10.000 years, shows an average of low temperatures for the period between 6000-5000 BP (Schweiffen 1996).

The palynological analyses carried out on samples recovered from Coțofeni levels from Băile Herculane-*Peștera Hoților* have revealed a dry climate with a shade colder. In this period the percentages of mixed oak were much lower while those of *Carpinus* evidenced a significant increase (Cârciumaru 1996, p. 98-99).

Also, the palynological analyses for the Late Aeneolithic phase show that forest advanced again in the detriment of areas allocated for plants cultivation. Throughout this period, the process of forest's expansion continued, meanwhile, the cereals were kept at a lower rate (Cârciumaru 1996, p. 138).

The main process of wheat *emmer* and *einkorn* cultivation during the Coțofeni culture may show the fact that both wheat species were planted because they were species adapted to that type of climate. Both species are resistant in cold climate conditions. It is presumed that the economy of the Coțofeni inhabitants was linked to the geomorphologic conditions. Petre Roman launched the hypothesis according to which there was a predominance of plant cultivation in the lowland areas, and the growth of cattle in the mountain and hill areas (Roman 1976). But, there are few reliable data to support this theory. The fauna analyses carried out in several sites from Transilvania and Banat showed the prevalence of goats, followed by cattle. This may reflect a pastoral transhumance economy for those areas (Ciugudean 2000).

Because of the scarcity of systematic researches it cannot be draw a certain picture regarding the subsistence strategies and natural resources exploitation.

The hypothesis, according to which these culture inhabitants were communities with a pronounced trend of mobility, is revealed by the large number of seasonal settlements. These seasonal settlements are attributed to groups of

nomadic or semi nomadic shepherds. But P. Roman contests this theory in his monographic book dedicated to Coțofeni culture (Roman 1976, p. 16-34). The archaeo-zoological analyses are irrelevant because they exist only for a few sites (Ciugudean 2000). The archaeobotanical analyses that could provide important data regarding the type of Coțofeni communities' economy were missing entirely until now.

In 1996, Marin Cârciumar, one of the few Romanian archaeobotanist researchers, has pointed out that a large part of archaeological sites, belonging to transition period, was not the subject of intense archaeozoological and archaeobotanical research. And the few sites analyzed are far from covering the main area of interest. Until now, the situation is not changed, although some small steps towards the involvement of the interdisciplinary methods were already made (Cârciumar 1996, p. 142).

The archaeobotanical data obtained from our analyses carried out on samples recovered from Coțofeni levels proved that plant cultivation was a part of the subsistence economy of these communities. The plant cultivation was made on small plots around the settlement. The main wheat species cultivated were *Triticum dicoccum*, followed by *Triticum monococcum* (Fig. 8). In order to complete their diet, they gathered wild fruits from surrounding area, as was revealed by the *Cornus mas*, *Sambucus nigra* and *Quercus* fruits, discovered in the archaeological contexts (see Table 1).

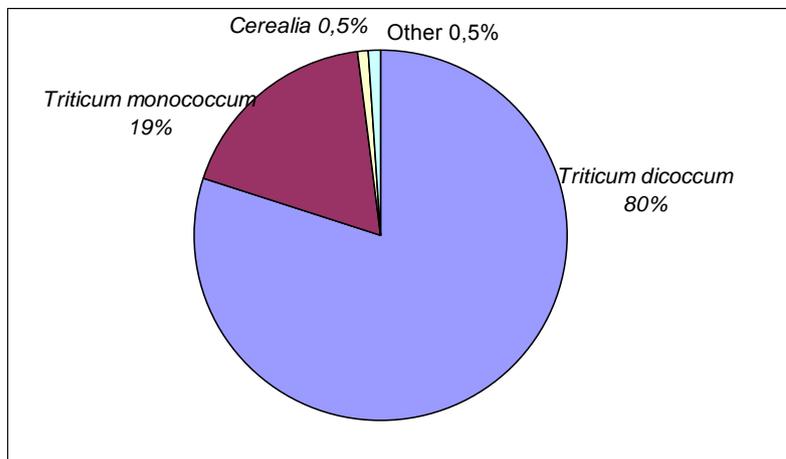


Fig. 8 Graphic with species percentages from all archaeological sites

Tabel 1 List of identified taxa, with the number specimens from each archaeological site

<i>Taxa (charred remains)</i>	<i>Seusa-Gorgan</i>	<i>Cetea-Picuiata</i>	<i>Cheile Turzii-Pestera Ungureasca</i>	<i>Carei-Bobald</i>
<i>Triticum monococcum</i>	20 % from all samples		103 caryopses	
<i>Triticum dicoccum</i>	80% from all samples	500 caryopses	55 caryopses	
<i>Triticum aestivum</i>			3 caryopses	
<i>Hordeum vulgare</i>			1 caryopse	
<i>Secale cereale</i>			1 caryopse	
<i>Panicum miliaceum</i>			1 caryopse	
<i>Cerealia</i>			208 caryopses	
<i>Vicia</i> sp.			4 seeds	
<i>Sambucus nigra</i>			108 seeds	
<i>Cornus mas</i>			52 stones whole/fragments	
<i>Quercus robur</i>				300 fruits
<i>Corylus avellana</i>			4 nut fragments	

There is still a debate regarding the subsistence way of Coțofeni culture communities. Were these populations predominantly shepherds? As the quantities of fauna materials discovered in their settlements are very few. Or plant cultivation was the prevalent way of life? So far none of these assumptions was confirmed by the interdisciplinary analysis. Moreover, the researchers of this period claim that these activities depend largely on the area where the settlement was located. If it was a lowland area it is very likely that they were communities cultivating plants, while the peoples located in highland area had, as their main occupation, the animal breeding (Ciugudean 2000; Laszlo et al. 2001).

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