

## 6. SUMMARY

The prehistoric and historic site Thunau am Kamp is situated in Lower Austria at the east edge of the Bohemian Mass and close to the valley of the river Kamp. Human activities are documented in this area by artefacts from the Neolithic to Medieval times. Earth wall constructions from the Late Bronze and Early Medieval Age indicate large settlements from each of these periods.

The first artefacts from this archaeological site were mentioned in the 19th century. In 1929 Josef HÖBARTH, a regional investigator, initiated archaeological excavations and found carbonized plant remains. They were analysed by the botanists Elise HOFMANN and Heinrich Ludwig WERNECK. The latter published the results in 1949.

From 1965 onwards, archaeological excavations have been conducted by archaeologists from the University of Vienna's Institute for „Ur- und Frühgeschichte“ every year except 1991 and 1992. In various contexts they recovered plant remains visible to the naked eye, have taken soil samples for archaeobotanical analyses and have conserved numerous samples of clay („Hüttenlehm“), including several pieces with remarkable imprints of plant-fragments.

In 1988 archaeobotanical investigations started an inventory to comprise all botanical components (remains and imprints) from the past 23 years. In addition, further samples were to be taken and analysed by the end of the excavation campaigns in 1990. As the archaeological excavations were resumed in 1993, much earlier than intended, archaeological investigations and interdisciplinary interpretations were delayed. Thus many descriptions and interpretations about the various contexts and origins of archaeobotanical material are incomplete. Consequently the results of macro-remains and plant imprints only give some insight into the activities of the dwellers. All the available archaeobotanical material taken by the end of the excavation campaign in 1995 were examined, including samples separated and selected by unknown methods. Samples stored as soil samples, and those taken from on-going excavations during the archaeobotanical investigations, were processed by flotation (using

sieves with the smallest mesh-size of 0,25 mm). All samples of „Hüttenlehm“ were examined closely for plant imprints and/or remains and were ranked according to the acquired criteria.

The archaeobotanical inventory also comprises a revision of the charred plant remains („Altfunde“ from Thunau am Kamp), discovered at excavations from 1929 to 1944. Nowadays they are stored in the Höbarthmuseum in Horn, listed as „fragmented samples“. Using all available descriptions as a starting point, the preserved samples were re-examined. Two samples were chosen for radiocarbon-dating. One of them contained some specimens of rye, which is argued to be part of „H. L. WERNECK's rye of the Hallstatt period“. Both are confirmed to be from the Late Bronze Age. Further, the examination of the „Altfunde“ showed four new undocumented taxa.

The samples of the excavation campaigns from 1965 to 1995 could be related to four periods, the Late Bronze Age/Urnfield Culture, the Early Iron Age/Hallstatt Culture, the Late Iron Age/La-Tène-Culture and the Early Medieval times. The macro-remains also correspond to various contexts as pots, graves, pits, hearths, houses, palisades/ditches, postholes, discolorations and walls. As the samples of the Urnfield Culture and the Early Medieval period represent several contexts, only one context of the Hallstatt Culture, the outlines of a house, and two contexts dated from the La-Tène-Culture, the outlines of a house and of a pit, were sampled for archaeobotanical analyses. Besides these, several samples are still undated and of unknown contexts.

The archaeobotanical investigations of the carbonized and mineralised (five seeds of *Cucumis* sp.-Typ, type „cucumber“) macro-remains and the plant imprints in „Hüttenlehm“ revealed 81 taxa.

Plant spectra from the four periods mentioned above are provided. Because of the great number of samples the Urnfield Culture and the Early Medieval period are better documented and are more important. The various assemblages of the contexts are characterized by low densities of

the plant-remains and by residues from different locations (in the settlement and its surroundings) and of various functional origins. Some contexts even contain remains from different time periods. They have been thus determined to represent “offene Fundkomplexe“. Only seven assemblages are considered to represent “geschlossene Fundkomplexe” – four of them are dated from the Urnfield Culture, three contexts are still undated.

To integrate undated samples, typical taxa approximate the two main periods (Urnfield Culture and Early Medieval period). The “Typica” of the Urnfield Culture are provided by numerous specimens of *Triticum monococcum*, einkorn, and/or *Vicia ervilia*, bitter vetch, in one context. Approaches to the Early Medieval period are characterized by specimens of *Secale cereale*, rye, *Cannabis sativa*, hemp, and *Cucumis* sp.-Typ, type “cucumber“. These “Typica” can neither be excluded from undocumented periods, nor from those periods not documented well enough in the material so far. In the present status of the archaeobotanical evaluations, the advanced “Typica” help to approach samples of the archaeological site Thunau am Kamp to the two time horizons mentioned above. As some analyses of radiocarbon-dating have confirmed, they help to identify mixtures of plant remains from various periods in some contexts.

The samples comprise sediments of different volumes, some of which are unknown. Several samples have been processed by unknown methods. Though archaeobotanical interpretations thus seem to be restricted, the investigations could reveal some new aspects, worth being pursued.

For example, plant remains from Early Medieval graves were assumed to be a sort of grave goods. Practicing a better method of sample processing by flotation, the residues now are believed to represent usual settlement refuse, deposited in the grave area by chance.

Although the various samples differ in many ways, constancy has revealed further information on the significance of some taxa in the four periods that have been examined.

The four acquired plant spectra are dominated by cultivated plants, mainly cereals and pulses.

In the Urnfield Culture macro-remains like spelt wheat (*Triticum dicoccum*, emmer wheat, and *Triticum monococcum*, einkorn) are most numerous. Also naked wheat (*Triticum aestivum* s.l./*durum/turgidum*) and some remains of *Triticum spelta*, spelt, and *Hordeum vulgare*, barley, are documented. In spite of this, barley is the most constant taxon. Although some grains of *Secale cereale*, rye, are documented in contexts of the Urnfield Culture, most of the samples examined by radiocarbon dating, are confirmed to be from an earlier time horizon (Roman times/“Völkerwanderungszeit” or Early

Medieval times) – in fact only 23 grains of the “Altfunde” are dated from the Urnfield Culture. Moreover, remains of *Panicum miliaceum*, broomcorn millet, *Lens culinaris*, lentil, *Pisum sativum*, pea, *Vicia faba*, faba bean, *Vicia ervilia*, bitter vetch, etc. are documented.

Taxa such as barley, naked wheat and spelt wheat, broomcorn millet and pulses are still documented in the Hallstatt Culture and in the La-Tène-Culture. These assemblages are characterized by very low densities of charred specimens. “Typica” from the Urnfield Culture or Early Medieval times are not documented in these periods so far.

Most Urnfield Culture taxa are still confirmed in the plant remains of the Early Medieval times. The investigations reveal less spelt wheat and more naked wheat. Mainly the rye residues increase, rye being dominant in some contexts. The assemblages still contain pulses, but less bitter vetch. However broomcorn millet dominates in numbers and in samples processed by flotation this taxon represents the most constant cereal of this period.

Unfortunately, roles many taxa played in the daily lives of the dwellers are still unknown. For numerous remains, on the one hand, it is impossible to distinguish for certain between cultivated and wild plants, e. g. *Avena* sp., oat, and on the other hand, some important taxa could not be integrated and related to a certain period, e. g. *Linum usitatissimum*, flax. Thus we can only speculate about many remains.

The basic food-stuff of the archaeological site Thunau am Kamp comprises also possible oil-plants/fibre-plants as *Linum usitatissimum*, flax (undated), and *Cannabis sativa*, hemp (Early Medieval times); possible oil plants are also *Camelina* sp. (Urnfield Culture), *Papaver* sp. and *Brassica/Sinapis*. The five mineralized seeds of *Cucumis* sp.-Typ, type “cucumber“, and the fragments of fruit-stones of *Prunus domestica* s.l., plum s.l., indicate horticulture in Early Medieval times. With other remains, it is still unclear if they correspond to cultivated or collected plants, e. g. *Vitis vinifera*, vine, *Malus* sp., apple, and *Prunus* sp. s.l. etc. The assemblages of the various remains are characterized by low densities and miscellaneous origins. Thus it is impossible to register the amounts of collected plants, such as *Sambucus* spp., and *Cornus mas* etc. Moreover, conclusions about the use of the “possible” nutriment-, food-, dye- or medicinal plants etc. are impossible to make. Further, because of their rubbish character, these assemblages offer no information on availability and condition of the food-stuff. Possible damages are indicated by remains of *Agrostemma githago* and *Claviceps purpurea*. As they do not appear in the seven “geschlossenen Fundkomplexen“, percentages of the specimens in stored cereal, and realistic conclusions of damages are unknown so far.

The plant imprints and plant remains in “Hüttenlehm” confirm uses of different fragments of plants. Most of the samples have plant imprints, only a small amount include carbonized plant fragments too. A great deal of the samples show a very high density of plant imprints. Most used fragments are vegetative parts (straw, chaff, spikelets, glumes, culms and leaf-blades) of *Poaceae*, which suggest they come from cereals. Supported by imprints of grains from different cereals, these fragments represent crop processing residues. It is supposed that the chaff of different crop processes were sampled and mixed to clay due to numerous imprints of spelt wheat and millet documented on the same pieces. Moreover these intentional interferences of chaff with clay are assumed to have taken place in the settlement itself. Combined with the locality of crop processing, one can assume, that crop processing occurred in the settlement too. In addition, the imprints of long culms and straw indirectly indicate harvesting closer to the ground.

The imprints of dicotyl leaf-blades correlate to houses of the Urnfield Culture and possibly correspond to insulation

material. Moreover, these imprints are often combined with grooved ones. As these characteristics do not appear in the other three periods, it should be pursued whether these documented situations were caused by “the big fire-catastrophe of the Urnfield Culture” or by changes in housing construction in the various periods.

This category of archaeobotanical material improved the plant-spectra of Thunau am Kamp. *Thlaspi cf. arvense* (seed) and *Fagus sylvatica* (fragments of leaf) are two taxa only documented as imprints so far.

The examined archaeobotanical material documented cultivated and collected plants, segetal, ruderal and other wild plants. The results could not reveal concrete informations about the “field location“, about harvesting, crop processing, storing and the handling of cultivated and stored plant nutriment. But the examined contexts – mainly “offene Fundkomplexe” – make it possible to compare the four plant-spectra to archaeobotanical investigations from other archaeological sites of the same periods and to approximate various agricultural methods.