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# « Are friends acidic ? »: differentiating humiferous Neolithic occupation horizons (Northern France, Belgium, Luxembourg)

Scientific contents:  
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with the help of  
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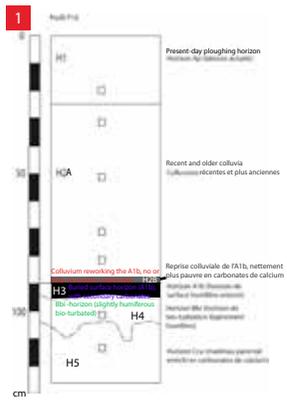
The general subject of this poster is the use of field soil characteristics as a complement to other approaches of Neolithic buried surface horizons.

The main objective is the definition of sub-types of neolithic surface horizons, contributing to the recognition of specific in situ man-made environments. Such horizons, when dated, are part of the archaeological record. A second point of this study is to compare regional or local evolutions of soils influenced by human activity or to some extent by climate (as here in South Champaign). A third, more general goal is to encourage the discovery and study of more such well-defined horizons. Finally, these results aim at the promotion of the application of field soil characteristics to buried surface horizons.

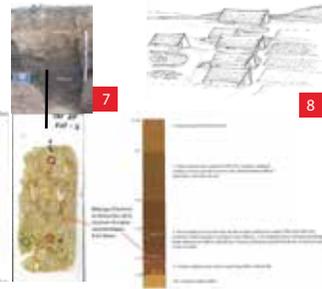
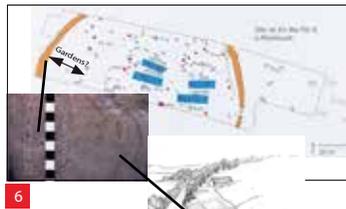
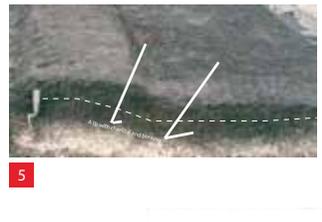
The field study implies the differentiation of soil forming factors and preservation conditions of the soils in the site. Field approaches are very different in acidic and calcareous soil conditions, both very present in the study area. Taking these differences into account, some morphological specificities can be observed and described in the field that allow some hypotheses on the type of surface horizon (is it formed in situ or an upfill, is it bioturbated or ploughed, ...) and adapted sampling to check these. However field soil characteristics are not sufficient - there are for instance no actual traces of the ploughing instruments in the neolithic case-studies. They almost always call for confirmation by other analytical means.

Later procedures have included thin section and malacological studies (in calcareous contexts). Laboratory analyses have been used to check for particular anthropic additions including possible fertilizers. For this a reference is given by a large data-basis including the natural soil horizons, grouped by soil-regions. Some cases reflect the initial situations, others slight modifications (burning / adding charcoal), ploughed horizons with or without fertilizing / surface erosion (larger and smaller cultivated surfaces ?), finally thin activity surfaces with/ without accumulation / pollution.

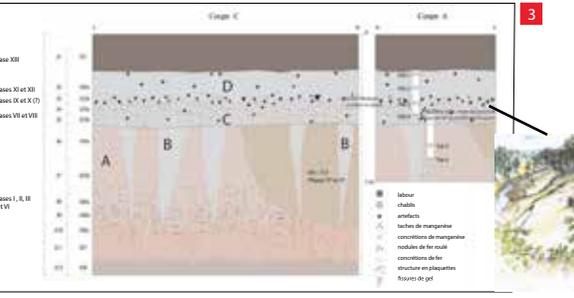
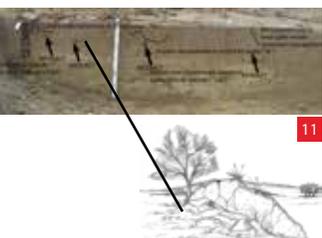
For these 9 main types of surface horizons, it was possible to separate morphologies and laboratory characteristics. They reflect in situ activities that are little known in the study area. The results of this approach proposed only for ca. twenty cases in Northern France and Belgium/Luxembourg, may encourage more research on this topic. It seems probable that more of these can be recognized, when (geo-)archaeologists are conscious of their looks and importance.



- 1: Difficulty of reading surface horizons in case of strong later bioturbations and/or recarbonation: Marnay-sur-Seine (Aube, F.), profile P16, on very calcareous silty alluvial materials.
- 2: Some of the various processes that can be distinguished by the study of an old surface horizon (after Fechner et al., 1997)
- 3: Example of an original soil: Rebecq (Brabant wallon, B.), under an old mesolithic occupation surface, on eroded and newly sedimented decarbonated loess with a two-phased «Bt»-horizon, all affected by polygonal fissures of the Later Dryas. Hypothetical reconstitution by P. P. Sartieaux (AWAP).



2	PLOUGHING	BIOTURBATIONS	INCOMING SEDIMENT/UPFILL
	Rapid process, potentially repetitive	Mostly slow process, of long duration (except for instance by pigs or trampling)	Rapid or slow process, potentially repetitive
	<b>Ploughing instruments</b> spade, hoe, ard, plough? <b>Type of surface</b> gardens, fields, fruit, flower or vegetable cultivation... <b>Fertilisation techniques</b> organic, mineral, cattle...	<b>Cause of bioturbation</b> furrowing/ digging animals in or at the surface, related or not to the phase of occupation; roots, uprooted or decaying trees, ...	<b>Type of upfill</b> anthropic, deliberate or not, by erosion-sedimentation? <b>In case of erosion</b> are the original sediments organic and/or mineral, related to a bare surface of a settlement, a kraal, a pathway, a field ?
	OR: COMBINATION AND/OR SUCCESSION OF THESE DIFFERENT FORMATION PROCESSES		



- Acid soils.**
- 4: Original, fine, slightly humiferous surface horizon with very few charcoals and artefacts, cut by a Middle Neolithic ditch in Carvin (Pas-de-Calais, F).
  - 6: Early Neolithic ploughed horizon with mineral and organic fertilisation: Remicourt "En Bia Flo" II (prov. of Liège, B.). Hypothetical reconstitution of zones with trampling, away from the houses, by C. Populaire.
  - 9: Slight erosion (in analyses and thin section) below a fine humus surface with artefact scatters in a Final Neolithic settlement: Sauchy-Lestrée (Pas de Calais, F.). Hypothetical reconstitution of zones with trampling, away from the houses, by C. Populaire.

- Calcareous & superficially decarbonated soils.**
- 5: Slightly modified original forest soil horizon (burning / adding charcoal) dated to the Middle Neolithic in Dampierre-le-Château (Marne, F), on superficially decalcified marls. Malacology: O. Decocq.
  - 7: Final Neolithic (?) ploughed horizon on thin decalcification clay on chalk, without fertilizing: Cuperly (Marne, F).
  - 8: Early Neolithic ploughed horizons without fertilizing in Remerschen (Lux.) and Ay-sur-Moselle (Moselle, F). Hypothetical reconstitution of larger fields in relation with houses, by C. Populaire.

**From calcareous to acid soils.**

12: South Champaign: localized cases of soil evolution between Early Mesolithic and Middle Neolithic in Nogent-sur-Seine (Aube, F), a mesolithic pit is affected by a neolithic decarbonation and clay accumulation. The complete development of these is shown by the fills of Middle Neolithic and Early Bronze age pits.



- 10: Fine horizon without local erosion due to passage nor polluting activities: short-term Late Neolithic occupation in Aouigny (Marne, F).
- 11: Fine horizons with anthropogenic accumulation of layers and artefacts and polluting activities in the Early Neolithic settlement of Lieusaint (Seine-et-Marne, F). Hypothetical reconstitution of clay deposition due to the abandonment of constructions made with unburnt clay, by C. Populaire.