

CULTIVATED PLANTS IN THE CLAY DISTRICT OF NIEDERSACHSEN, NORTHWEST GERMANY

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The *Marsch* or clay district is one of the main natural landscape units of northwestern Germany, which was deposited along the coast and the rivers during the Holocene. The occupation of the clay district has had a long history, dating back to the Neolithic period with several sites known in the Netherlands, and was substantially affected by sea level changes all the time. Because of the waterlogged conditions in the clay district, preservation of organic material is excellent, allowing detailed reconstructions of the former environments, and especially the marine influence and its impact on vegetation and occupation. The Lower Saxony Institute of Historical Coastal Research has been conducting archaeobotanical investigations in the clay district of the southern North Sea coast for several decades. Most influential for the development of archaeobotany at the institute were the investigations at the famous Roman period dwelling mound of Feddersen Wierde at the end of the 1950s. In the meantime, more than 20 sites have been investigated, among them the late Bronze Age site at Rodenkirchen Hahnenknooper Mühle, the oldest settlement in the German part of the clay district, and other sites which cover all cultural periods up to the Middle Ages. Neolithic sites as investigated in the Netherlands are unknown in the German part. These are surely present, but are covered by sediments too thick to be detected by presently available prospection methods.

The most important cultivated plants of the clay district are taxa which are at least moderately tolerant of soil salinity. *Triticum dicoccum* (emmer) and *T. monococcum* (einkorn) together with *Hordeum vulgare* (barley) were the most important cereals during the whole period, supplemented by *Avena sativa* (oats) since the Iron Age. *Secale cereale* (rye), which is present in small quantities since the Iron Age in the Pleistocene hinterland of the *Geest*, could not be cultivated in the clay district and was also not brought there by trade, as far as we know. Hence the percentage cereal composition in the clay district is very different from that of the neighbouring Pleistocene land, from which einkorn and emmer virtually vanished after the Roman period and the main cereal changed there from barley to rye. Investigations have also shown that there is no significant difference in the spectra of cultivated plants between sites in salt marshes and in riverine brackish marshes.

Plant proteins and oils were provided by *Vicia faba* (horse bean), *Linum usitatissimum* (flax) and *Camelina sativa* (gold-of-pleasure), which could also grow under oligohaline conditions and were cultivated in the whole clay district since the late Bronze Age. *Cannabis sativa* was not used before medieval times, but from then it is regularly present. From two sites of Roman age, Feddersen Wierde and Elsfleth-Hogenkamp, we know of *Isatis tinctoria*, which is used for dyeing. However, because of its suitability to dry soils it could hardly be cultivated directly in the clay district and was probably imported to dye the textiles for which the Frisians were famous.

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