## Facts about the empirical basis of the dissertation

The temporal frame of the thesis is c. 1050-1750 CE, with a focus on the 12th to 16th centuries. The project combines previously published archaeobotanical data with new analyses, which have been compiled in a database. The main body of the archaeobotanical material is derived from the site Thomas B. Thrigesgade, Odense (1100-1550 CE), and was analysed in association with the department of Natural Science and Conservation, Moesgaard Museum. Stable isotope analysis was carried out at the Dorothy Garrod Laboratory for Isotopic Analysis at the University of Cambridge.

## About Neeke M. Hammers

Neeke Hammers holds an RMA in Archaeology (Human Origins and Palaeoecology) from Leiden University and an MA in Environmental Archaeology from Umeå University. The PhD project was conducted at the School of Culture and Society and Centre for Urban Network Evolutions (UrbNet), Aarhus University.

## Time and place for the defence

Date: 1 November 2019 at 14.30
Venue: AU Campus Moesgaard, Lab 3 (4205-212)
Moesgaard Allé 20, 8270 Højbjerg

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PHD DEFENCE

# TRADE, IMPORT AND URBAN DEVELOPMENT

## AN ARCHAEOBOTANICAL AND ISOTOPIC APPROACH TO THE STUDY OF TOWNS IN DENMARK, C. 1050-1750 CE

PhD dissertation by Neeke M. Hammers

AARHUS UNIVERSITET

# TRADE, IMPORT AND URBAN DEVELOPMENT: AN ARCHAEOBOTANICAL AND ISOTOPIC APPROACH TO THE STUDY OF TOWNS IN DENMARK, C. 1050-1750 CE

**Summary of the main points of PhD dissertation "Trade, import and urban development" by Neeke M. Hammers, Centre for Urban Network Evolutions (UrbNet), School of Culture and Society, Aarhus University. The dissertation integrates archaeobotany and stable isotope analysis to assess changes in plant food economy and trade networks in Denmark from c. 1050 to 1750 CE, with a focus on the site Thomas B. Thrigesgade, Odense.**

## Archaeobotany in medieval Denmark

A study to the archaeobotanical record from Danish towns, based on both previously published data and new analyses shows diachronic changes in the availability and abundance of cultivated and imported plants, whereas the assemblage of collected plants remains similar over time. Most of the plant foods are native to Denmark and suggest that towns predominantly relied on local or regional resources. Evidence for imported material is scarce, and only increases from the 16th century onwards.



## Networks and social change

A study combining the artefactual and archaeobotanical records from Thomas B. Thrigesgade (Odense) has shown that both proxies indicate changes in trade connections and local traditions. The combined record provided evidence for local, regional, as well as inter-regional networks, although local networks appeared to be prevalent. Evidence for inter-regional networks was predominantly derived from material traced back to northern Germany. Main changes are visible in the abundance of hops, the presence of stave-built vessels, and the finds of exotic plant remains, such as fig and grape.

## Assessing networks and cultivation through stable isotope analysis

Stable isotope analyses ( 13C,  15N) was applied to cereal grains from Danish and Norwegian towns to assess variations in cultivation conditions and possible variations in grain supply between and within towns. General variations were observed between countries and between different regions in Denmark, but also within towns. Variations in carbon and nitrogen isotope values on grains from sites in Odense suggests that the grain was possibly sourced from different locations. Both oat and barley show highly variable isotope values, whereas rye has a more homogenous signal, which could indicate localised cultivation.

## Conclusion

Analyses of the archaeobotanical record combined with isotopic studies are crucial for the understanding of diachronic changes in food traditions and trade networks in Danish medieval towns. Large-scale excavations with continuous records (e.g. Odense, Copenhagen) are of specific interest, because of the possibility to observe long-term local changes in food economy. Through applying stable isotope analyses it was possible to gain more detailed insights in network dynamics, which would not have possible solely using the archaeobotanical record.