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The common and the rare

a review of Early Modern Dutch plant food consumption based on archaeobotanical urban cesspit data

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Introduction

- Consumed food items can be disposed of during or after food preparation, as kitchen by-products, or after consumption, as human faecal matter.
- Both kinds of material contain subfossil plant remains which are generally interpreted as, respectively, indirect and direct evidence for past food consumption.
- In order to interpret and reconstruct what is common and what is rare, cesspit samples from Dutch urban centres were analysed in a diachronic local study.
- The data was derived from the Relational Archaeobotanical Database for Advanced Research (RADAR, version 2012).



Fig. 1
The location of the Dutch urban settlements with excavation data used, plotted on a modern-day map of the Netherlands

| Plant taxa | 1500-1600 | 1600-1700 | 1700-1850 | KBP | CR | GW | Category | Food unit | Plant taxa | 1500-1600 | 1600-1700 | 1700-1850 |
|-------------------------------------|-----------|-----------|-----------|-----|----|----|----------|-----------|--------------------------------------|-----------|-----------|-----------|
| Cerealia | 83 | 73 | 71 | | | + | 1 | S | Anethum graveolens | 6 | 4 | |
| Corylus avellana | 72 | 58 | 71 | + | | | 1 | S | Anthriscus cerefolium | 33 | 31 | 29 |
| Fagopyrum esculentum | 83 | 73 | 71 | + | | | 1 | S | Apium graveolens | 6 | 4 | |
| Humulus lupulus | 56 | 38 | 36 | + | | + | 1 | S | Beta vulgaris | 22 | | 7 |
| Juglans regia | 61 | 50 | 64 | + | | | 1 | S | Borago officinalis | 6 | 8 | 14 |
| Oryza sativa | 44 | 54 | 57 | + | | | 1 | S | Capparis spinosa | 11 | 8 | 14 |
| Panicum miliaceum | 67 | 54 | 50 | + | | | 1 | S | Carthamus tinctorius | 17 | 8 | |
| Piper nigrum | 33 | 38 | 57 | + | | | 1 | S | Carum carvi/Cuminum cyminum | | | 4 |
| Prunus avium/cerasus | 78 | 73 | 86 | + | | | 1 | S | Castanea sativa | 6 | 4 | |
| Prunus domestica | 67 | 77 | 86 | + | | | 1 | S | Cerealia | 56 | 35 | 36 |
| Secale cereale | 78 | 62 | 71 | + | | | 1 | S | Coriandrum sativum | 6 | | 7 |
| Triticum aestivum | 56 | 15 | 29 | + | | | 1 | S | Fagopyrum esculentum | 17 | 15 | 21 |
| Coriandrum sativum | 56 | 62 | 57 | + | + | | 2 | S | Foeniculum vulgare | 6 | | 14 |
| Foeniculum vulgare | 67 | 65 | 50 | + | + | | 2 | S | Humulus lupulus | 17 | | 21 |
| Sambucus nigra | 39 | 54 | 57 | + | + | | 2 | S | Juglans | 11 | 4 | 14 |
| Vitis vinifera | 89 | 92 | 93 | + | + | | 2 | S | Mespilus germanica | | | 7 |
| Brassica napus/rapa | 33 | 42 | 57 | + | + | | 3 | S | Olea europaea | | | 7 |
| Brassica nigra | 83 | 77 | 79 | + | + | | 3 | S | Petroselinum crispum | 11 | 4 | |
| Linum usitatissimum | 56 | 46 | 36 | + | + | | 3 | S | Pimpinella anisum | 6 | 12 | 21 |
| Malus domestica/Pyrus communis | 89 | 88 | 93 | + | + | | 3 | S | Pisum sativum | 17 | 8 | 21 |
| Mespilus germanica | 61 | 62 | 50 | + | + | | 3 | S | Portulaca oleracea | | | 7 |
| Vicia faba | 44 | 38 | 50 | + | + | | 3 | S | Prunus | | 4 | 7 |
| R. nigrum/rubrum/uva-crispa | 72 | 69 | 86 | + | + | | 4 | S | R. nigrum/rubrum/uva-crispa | 6 | | |
| V. myrtillus/uliginosum/vitis-idaea | 72 | 58 | 50 | + | + | | 4 | S | Sambucus nigra | 6 | 12 | 7 |
| Ficus carica | 100 | 85 | 100 | + | + | | 5 | C | Secale cereale | 28 | 8 | 7 |
| Fragaria moschata/vesca | 67 | 77 | 79 | + | + | | 5 | M | Sorbus | | | 7 |
| Morus nigra | 67 | 69 | 64 | + | + | | 5 | M | Spinacia oleracea | 6 | 12 | 29 |
| Rubus fruticosus | 89 | 73 | 64 | + | + | | 5 | C | Syzgium aromaticum | 28 | 31 | 36 |
| Rubus idaeus | 44 | 77 | 79 | + | + | | 5 | M | V. myrtillus/ uliginosum/vitis-idaea | 22 | 8 | 14 |
| | | | | | | | | | Vicia faba | 28 | 19 | 29 |
| | | | | | | | | | Vitis vinifera | 6 | | |

Table 1: Ubiquity > 50 (%) of plant macro-remains found in the cesspits under study. Also noted are potential origin: kitchen by-products (KBP), consumption refuse (CR); secondary fill e.g., garden waste (GW).
The taxa are ordered alphabetically within categories of potential ovule numbers.
Category 1: number of potential ovules n = 1, 2: n = 2-5, 3: n = 6-10, 4: n = 11-50, 5: n > 50
Food units are categorized as: S single fruit, M multiple fruit, C compound fruit.

Table 2: Ubiquity (%) of plant micro-remains (pollen) found in the cesspits under study, in alphabetical order.

Material, Methods & Results

- The data provided detailed diachronic information about plant consumption in 34 different urban settlements within the Netherlands (Fig. 1).
- These 34 settlements provided 62 sites that had cesspits in use in sub-period 1500-1600 (n = 38), 1600-1700 (n = 54) and 1700-1850 (n = 38).
- A total of 94 taxa of macro-remains and micro-remains of edible plants were present in the cesspits under study.
- This list of taxa roughly breaks down into four groups: fruit trees and fruit-producing shrubs (n = 34), vegetables (n = 25), herbs and spices (n = 27) and (pseudo-)cereals (n = 8).

Common finds

- The plant taxa that are present in > 50% of the sites in each of these three sub-periods show relatively few changes in ranking between the sub-periods for macro-remains (table 1) and micro-remains (table 2).
- Potential ovule production, clustering of fruits in food units, and plant usage were analysed to assess if these plant taxa were overrepresented (table 1).
- An increase in potential seed production was shown not to correspond with an increase in the percent ubiquity of subfossil plant taxa found in sites, although percentagewise the frequency of their presence was higher.
- Only a limited number of plant taxa represented by seeds and fruits are also represented by pollen.
- Many of the species represented solely by pollen finds are edible plants of which the leaves, flowers or flower buds were consumed.

Rare finds

- The 12 plant species were represented by singular finds (table 3). They are not interpreted as 'rare', for one or more of three reasons.
- First, some are present in sub-periods omitted from the selection because of overlaps in dating.
- Second, their absence from the archaeobotanical datasets may have been caused by post-depositional processes, such as grinding or pounding.
- Third, their absence may relate to the lesser preservation qualities of their vegetative plant parts, such as leaves and roots.

| Taxon | Plant name | Native species | Plant part | Possible preparation methods |
|-----------------------|-----------------------------|----------------|------------|------------------------------|
| Fagus sylvatica | Beech | Yes | Cupule | De-seeding, roasting |
| Coffea arabica | Coffee | No | Seed | Roasting, grinding |
| Berberis vulgaris | Common barberry | Yes | Seed | - |
| Salicornia europaea | Common glasswort | Yes | Seed | - |
| Lepidium sativum | Garden cress | Yes | Seed | - |
| Atriplex hortensis | Garden orache | Yes | Fruit | Threshing |
| Physalis alkekengi | Chinese or Japanese Lantern | Yes | Fruit | - |
| Melissa officinalis | Lemon balm | Yes | Fruit | - |
| Lens culinaris | Lentil | Yes | Seed | Boiling, pulverizing/mashing |
| Lactuca sativa | Lettuce | Yes | Fruit | - |
| Rosmarinus officinale | Rosemary | Yes | Fruit | - |
| Sinapis alba | White mustard | Yes | Seed | Grinding |

Table 3: The 12 species represented by singular finds, including plant part and possible preparation methods.
A '-' indicates that no preparation would have been needed to render the food edible.

Conclusion

- This review shows that there is a large potential for improving the dataset to reconstruct past food consumption practices by combining the analysis of macro- and micro-remains.
- Further attention needs to be paid to the detailed registration of plant parts in general and potential preparation marks in particular to reconstruct diet.
- Post-depositional processes influencing the chances of recording a taxon during archaeobotanical analysis have to be studied in greater detail and deserve further attention in future research.
- A more accurate picture of Early Modern Dutch food consumption will be obtained by supplementing bio-archaeological results with data from primary historical sources pertaining to food consumption, such as cookbooks and herbaria.