Clearance for a medieval curtis, Black Death and buckwheat (Fagopyrum esculentum Moench): vegetation history of the area around the confluence of the rivers Swalm and Meuse, the Netherlands, AD 800-1900

Corrie Bakels, Marijke Langeveld and Iris van Tulder

Two pollen diagrams obtained in the neighbourhood of Swalmen, a village in the southeastern part of the Netherlands, reveal a complex history spanning from AD 800 to 1900. The diagrams provide insights into the vegetation changes that occurred in the area around the confluence of the rivers Swalm and Meuse.

The Swalmen diagram, obtained from an abandoned oxbow of the small river Swalm, a tributary of the river Meuse, displays the large-scale medieval clearance which led to a new parceling of the region. The Syperhof diagram, obtained from deposits in an oxbow of the river Meuse nearby, shows the impact of the Black Death and prompts the suggestion that the start of buckwheat cultivation is somehow connected with the ravages of the Black Death. Initially buckwheat may have served as an emergency crop.

INTRODUCTION

In 2002 the Archeologische Diensten Centrum (ADC), Amersfoort, the Netherlands, excavated a terrain bordering the lower course of the river Swalm, a tributary of the river Meuse north of Roermond (fig. 1). The excavation preceded the construction of motorway A73. The site was named Swalmen-Nieuwenhof, Swalmen being the name of the nearest village and Nieuwenhof an important farm nearby. The excavation report appeared in 2013 (Vreenegoor and van Doesburg 2013).

Finds dated to the Early Middle Ages show that the area was inhabited during that period, but the most important finds are a set of buildings that belonged to a medieval site occupied between 950 and 1225. The buildings are interpreted as part of a major homestead, probably a curtis, a nobleman's estate. The site was abandoned as a residential site after 1225.

The Swalm is a relatively small meandering river with a source in Germany. Swalmen-Nieuwenhof is situated on its left bank at 1.5 km from the point where the river joins the river Meuse. The valley contains several oxbows filled with loamy and sometimes peaty sediments, one of which is situated close to the excavated area (fig. 1). Palynological investigations of the final excavation, executed by Corrie Bakels (unpublished), suggested that the area had been cleared for vegetation restoration in connection with the medieval occupation. The excavation report focused on the area of the river Meuse close to the confluence of Swalm and Meuse.

The archaeological findings were complemented by palynological investigations, which provided insights into the vegetation changes that occurred in the area around the confluence of the rivers Swalm and Meuse.

Coring, by Corrie Bakels and Wim Kuijper, took place in October 2003. Both oxbows of the Swalm and the Meuse were sampled. In 2004 both cores were analysed by students under close supervision by Corrie Bakels. The core from the Swalm, named ‘Swalmen’, was the subject of the MSc thesis of Marijke Langeveld and the core from the Meuse, named ‘Syperhof’ after a farm nearby, was the basis for the BA thesis of Iris van Tulder. As BA work requires far less pollen counting than MSc work, the Syperhof diagram was finished by Corrie Bakels.

Figure 1: The location of the cores (black dots)
2. METHODS AND MATERIAL

A side-filling core was used for sampling the soil of the oxbow. The core was taken at 1.5 cm and six time-slice samples were taken from the five slices selected for pollen analysis; pollen was transferred by the usual treatment into 40% KOH, partly suspended in 0.5% acetic acid, before transfer to a slide with Cytomount (Patzelt, 1988) and air-dried. All pollen and fungal spores were counted (Bullock et al., 1992) using a compound microscope with a 40x objective lens. The category grasses (Poaceae, not included in the pollen sum) show a rise, but the tree cover in the wetter part of the landscape, witness the curve of alder (Alnus) and willow (Salix) falls within its range and expectation. Pollen curves show sudden changes after the event (Fig. 2). This core was processed in serum pollen percentages (AP), whereas the others were vacuum-dried and after treatment with hydrochloric acid the pollen was extracted with water. A sample of 95760 was dated at Groningen (Table 1).

Table 1 The 14C dates obtained from the cores Swalmen and Syperhof (Grimm 1991).

<table>
<thead>
<tr>
<th>Depth (cm)</th>
<th>GrA Age BP calAD</th>
<th>Date</th>
<th>95.4%</th>
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<td>59760</td>
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<td>40-42</td>
<td>295 ± 35</td>
<td>1270 - 1390</td>
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<td>48-50</td>
<td>670 ± 35</td>
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<td>50-52</td>
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<tr>
<td>70-72</td>
<td>670 ± 35</td>
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Note: The 14C dates obtained from the cores Swalmen and Syperhof.
The decline in tree-pollen percentages most probably reflects not only the clearance made for building the homestead, but also clearance further away, including the wetter parts with alder carr. According to finds made during the excavation, the inhabitants of the farm bred horses, and for these animals pastures would have been needed. The low-lying land near the landscape in the wider surroundings. They are held responsible for the parceling of today. The rectangular systems of rural roads dissecting the area go back to their times. Excavation of one of these roads has proven this. This implies a large-scale opening-up of the landscape, and the

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Figure 2: The pollen diagram. Lithology, selection of curves. Squares indicate the level of clearance.
Figure 3. The up-to-date height model of the Netherlands (AHN map) of the area south of the confluence of the rivers Swalm and Meuse. Elements of proven medieval origin are indicated by arrows, the excavation by hatching and the location of the core by a dot.
the mouth of the river Rouer and not too distant, such as Cologne and Aachen in Germany, it is quite possible that the area knew a less harsh kind of ‘Wüstung’ in which not villages were abandoned but many fields were no longer tilled: the
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After the Black Death the area was hit by a severe decline, which hit the region particularly hard. The number of victims in the villages around Swalmen, it is known that

In general the 13th-14th century is considered to be the beginning of what is called the ‘Wüstung’ period; a period of dramatic 1270-1394. In the Syperhof diagram it is dated later than 1270-1394. It is followed by a rise in the upland tree (AP) curve, mainly due to a rise in oak (Quercus) and a decline in cereal (Triticum) pollen. This implies that rural activity continued but not as far as the upland tree (AP) curve, mainly due to a rise in oak (Quercus) and a decline in cereal (Triticum) pollen. This implies that rural activity continued but not as far as

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The regression is also recorded elsewhere in western Germany. Van Hoof (2006) published a diagram from a site of the river Roer, also a tributary of the river Meuse and at nine km downstream of the Swalmen diagram discussed below.

Nevertheless, the general picture is the same (van Hoof et al 2006, 406). The regression is also recorded elsewhere in western Germany. Van Hoof (2006) published a diagram from a site of the river Roer, also a tributary of the river Meuse and at nine km downstream of the Swalmen diagram discussed below.

After this phase, rural activities slowed down. The

It is not only the rise in cereal pollen that is recorded in the regional pollen record. The population increase during this period is recorded in the regional pollen record.

The pollen record indicates that after the Black Death the area was hit by a severe decline, which hit the region particularly hard. The number of victims in the villages around Swalmen, it is known that

3.2 Syperhof

The tree-herb ratio (AP-NAP) shows open landscapes with woodlands as the dominant component. However, the tree pollen curve shows a dramatic drop after the Black Death and a slight increase towards the end of the fourteenth century. The botanical macroremains retrieved from the buildings at the site indicate that the local woods returned to some extent, with willow (Salix) as the dominant tree. Hazel (Corylus) are prominent as well and represent the fringes of the woods. In the wetter parts of the landscape grasses (Poaceae) are more important than alder (Alnus)

Another crop plant, buckwheat (Fagopyrum) appears in a late phase of farming, dated to 1270-1394. In the late medieval period the area was abandoned in a switch to arable land. Buckwheat growing would have been restricted to the wetter parts of the landscape, only

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In general the 13th-14th century is considered to be the beginning of what is called the ‘Wüstung’ period; a period of dramatic
of suitable material for dating, but the end occurred before 1485-1663. After that tree pollen percentages decrease and those of herbs, most conspicuously cereals, rise. Rural life had recovered. The uppermost part of the diagram shows again a rise in tree pollen percentages, this time due to pine (Pinus). From Germany, one third of the population perished (Creutz 1933; Schmitz-Cliever 1954). Such a decline in the population would have its effect on the extent of land under cultivation. As cited above the agricultural regression recorded in the oxbow of the river Roer ended around 1440. In the Syperhof diagram it could not be pinpointed this sharply due to a lack...
hard historical data show that buckwheat was introduced in 1389–1390 at at least two places: in Deventer on the river IJssel in the northern Netherlands and in the hinterland of Antwerp in the southern Netherlands (Kempen-area). Within 50 years buckwheat was mentioned throughout the whole of the Kempen and also more and more in the IJssel valley and elsewhere in the northern Netherlands. The dates provided by the Swalmen and Roer diagrams are in agreement with this history, but Syperhof is not. Some buckwheat is present before 1389. Four explanations can be offered: 1. the $^{14}$C date is faulty, 2. the ‘early’ pollen grains were transported downwards from a higher level, 3. the ‘early’ pollen grains were brought in by river water from a region where cultivation started earlier, and 4. incipient cultivation is not recorded in the historical sources. A fifth possibility offered by Leenders (1996), namely that “buckwheat was always present as a weed” cannot be rejected because its pollen and macroremains are absent from prehistorical records before the Late Iron Age. The finds up to 1500, pollen and fruits together, are depicted in fig. 6 (RADAR 2010).

3.3 Buckwheat (Fagopyrum esculentum Moench)

Buckwheat appears in the Swalmen diagram between 1270 and 1394. In the Roer diagram buckwheat is already present in its upper part, deposited between 1430 and 1553 (van Hoof et al. 2006). Buckwheat is a late addition to the range of crop plants cultivated in the Netherlands (fig. 5). Leenders (1996) notes that historical data show that buckwheat was introduced in 1389–1390 at at least two places: in Deventer on the river IJssel in the northern Netherlands and in the hinterland of Antwerp in the southern Netherlands (Kempen-area). Within 50 years buckwheat was mentioned throughout the whole of the Kempen and also more and more in the IJssel valley and elsewhere in the northern Netherlands. The dates provided by the Swalmen and Roer diagrams are in agreement with this history, but Syperhof is not. Some buckwheat is present before 1389. Four explanations can be offered: 1. the $^{14}$C date is faulty, 2. the ‘early’ pollen grains were transported downwards from a higher level, 3. the ‘early’ pollen grains were brought in by river water from a region where cultivation started earlier, and 4. incipient cultivation is not recorded in the historical sources. A fifth possibility offered by Leenders (1996), namely that “buckwheat was always present as a weed” cannot be rejected because its pollen and macroremains are absent from prehistorical records before the Late Iron Age. The finds up to 1500, pollen and fruits together, are depicted in fig. 6 (RADAR 2010).
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The curve of buckwheat shows an interruption after the first appearance of the plant and therefore a document is needed to interpret the absence of buckwheat. The pollen diagram of the post-Tellinum soil from the Syperhof site shows that buckwheat was cultivated in Belgium and southern France before 1300, but up to now no archaeological finds have been recorded this early (Sigaut 2014, 110; Slicher van Bath 1963). That leaves the fourth possibility: buckwheat as a crop of negligible importance.

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Before the large scale clearance the region was already exploited by a farming population, but to a much lesser extent. Important evidence for the landscape prior to 1200-1100 is the relative importance of oak at the expense of other trees. After the abandonment of the large farms around 1250, the region retained its use as an agricultural land. After 1375-1400 the cultivation of wheat, barley, rye and oats was supplemented by buckwheat.

The Syperhof diagram shows the same region. Its curve is only in part paralleled by the pollens directly counting the Black Death. The rise in oak pollen is matched by a decline in cereal pollen percentages. This reduction or change in savannah activities may reflect a reduction in the overall population, but not to such an extent that the entire abandonment was total. At the same time the cultivation of buckwheat increased. Buckwheat may have served as emergency crops. Before 1305-1400 it is expected to remain small. Only in the appearance spectra the two pollen percentages are again, but that it due to the planting of pear to provide the magnificent medieval century centuries with pears.
We should like to thank Frans Bunnik for sharing his preliminary research and for his advice regarding the optimal locations. We also thank José Schreurs for drawing our attention to the Swalmen-Nieuwenhof excavation which triggered the start of our work. Finally, many thanks to Kelly Fennema for the amelioration of our English.

References


