Lawns and garden meadows – an archaeological perspective

Anna Andréasson Sjögren

Trädgårdsarkeologin i Norden har kommit långt de senaste decennierna, men det finns fortfarande en rad trädgårdselement som är tämligen okända ur arkeologisk vinkel. Ett exempel är trädgårdarnas 'gröna golv'. För att identifiera och studera trädgårdslämningar behöver vi först formulera hypoteser om deras form och innehåll, liksom vilka metoder som bör vara mest användbara för att undersöka dem. Trädgårdslämningar får sin form i samband med anläggning, skötsel och bruk. Genom att analysera dessa aspekter för ett visst trädgårdselement är det möjligt att dra en hel del sannolika slutsatser om dess lämningars karakteristiska drag, som kan hjälpa oss att komma vidare.

I artikeln diskuteras två slags 'gröna golv' som förekom i trädgårdar på medeltiden: gräsmattor med kort frodigt gräs skapade genom läggning av grästorvor och trädgårdsängar. Fokus ligger skandinavisk medeltid men för kompletterande perspektiv diskuteras även yngre exempel, till och med tidigmodern period, och andra delar av Europa, huvudsakligen de nordliga. Eftersom medeltida gräsmattor och trädgårdsängar tycks ha haft vissa gemensamma drag, som mager jord, huvudsakligen gräsvegetation och att de regelbundet slogs med lie, bör även lämningarna uppvisa en del liknande drag, men också skillnader.

Garden archaeology in northern Europe has come a long way in the last decades, but there are still several aspects of historic gardens that require further study. Among them are different types of 'green garden floors' that deserve to be considered as elements in themselves, not just gaps between more important features such as paths and beds (cf. Cele 2024; Seiler 2024). To know more, we first need to identify and gain a greater understanding of these features. The main focus of this article is the Scandinavian Middle Ages (ca. 1050–ca. 1525) but the examples

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Figure 1. Examples of renderings of 1) short thick grass and 2) meadowlike grass mixed with other herbaceous plants in book illuminations dated to the 1460s, made for René duke of Anjou (Ms ÖNB 2617) and Philip duke of Burgundy (Ms Arsenal 5072).

used for additional perspectives are taken from several, mainly northern, parts of Europe, and from a longer time frame – up until the late Early modern period.

In the Middle Ages grass – more or less mixed with other herbaceous plants – was used in several ways in gardens. This discussion will focus on two basic types of green floors and what their remains may look like when excavated: 1) lawns with short grass created by laying turfs; 2) garden meadows (Figure 1). There are differences between them but they also seem to have shared several traits, including a lean soil, a predominance of grass vegetation, and regular maintenance through scything (Seiler 2024; Ignatieva et al. 2018; Viola et al. 2025; Woudstra & Hitchmough 2000).

If we assume that garden remains are shaped by construction, management and use, the remains of lawns and meadows should be the result of the same three aspects of gardening. But they were also affected by physical processes, such as rain, and the workings of non-human living garden elements, including worms, plants and micro-organisms, which thrive in these constructed and managed environments (Andréasson Sjögren 2025:11, 20–25). Since lawns and meadows share some traits, we can expect them to share some common denominators, as well as differences.

Lawns constructed with turfs

In Medieval and Pre-industrial Northern Europe, the most labour-intensive type of green garden floor were lawns created by laying turfs. Lawns of this variety were kept low and green through frequent rolling, scything and sweeping (Figure 2). Their size was probably limited, at least to some extent, by the cost

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Figure 2. Rolling, scything and sweeping at Gunnebo, Sweden. Gardener Daniel Lundberg using a roller (Photo Joakim Seiler) and gardener Joakim Seiler using a scythe and a birch broom (Photo Malin Arnesson, Daniel Lundberg). Rolling is done before scything to flatten irregularities, such as the mounds made by earthworms. Sweeping up and removing cut grass keeps the lawn neat and the soil lean.

of their creation and maintenance (Seiler 2020: 89–101, 105–114).

The earliest known medieval text relating to the making of a lawn with turfs was written by the Dominican friar Albertus Magnus in about 1260, around the same time as the royal palace and palace garden at Vadstena in Östergötland, Sweden, was constructed (Andréasson Sjögren 2025: 92–98). Albertus set out to collect all the knowledge of his time. Research indicates that he wrote the passage on *viridaria*, or gardens of health (lat. *viridis*, green), during a part of his life when he was primarily active within the Holy Roman empire, in both secular and ecclesiastical environments. He also had a close association with the Dominican convent of Cologne, which had a Studium Generale, or University, that he had played an important role in founding in 1248 (Wöllmer 2013: 222, 226, 262).

It has not been possible to locate any preserved copy of the passage on *viridaria* that can be proven to have been used in a Nordic country during the Middle Ages. However, if we switch focus to the personal connections of the contemporary local elite, it is possible to see clear links between the Nordic region and the environments within the Holy Roman empire in which Albertus was active. Such well-connected individuals include King Valdemar, for whom the Vadstena palace was constructed, Queen Sophia, daughter of the Danish king Eric IV (Plowpenny) and Jutta of Saxony, and the king's influential father Birger Jarl who in 1261 married Mechtild of Holstein. Ecclesiastical connections include the Dominican friar Petrus de Dacia, who studied in Cologne 1266–1269 (while Albertus was still active) and who, on his return to Sweden in the 1270s, became deeply involved in the founding of a nunnery in the town of Skänninge, 12 kilometres from Vadstena, with support from the local aristocracy

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(Andréasson Sjögren 2025: 55–58; Asztalos 1991).

According to Albertus Magnus, a central feature in a *viridarium* should be a square or rectangular lawn, since there is nothing more refreshing to view than green, thick, short grass. Around the lawn, fragrant plants and colourful flowers should be planted, as well as species of trees that provide healthy shade (for example apples and pears) spaced at a sufficient distance to encourage a healthy flow of air (Albertus Magnus 1867: 636).

The best sheer, thick grass, according to Albertus, grows on lean and compact soil: *humo macra et solida*. It is important to note that the often-used translation of this passage by architectural historian John Harvey (1981:6) is incorrect: *macra* means lean, not rich. The difference is significant, since it determines which plants can thrive in the constructed environment. To create the lawn, Albertus stated, you should first level the site, dig out all weeds and pour boiling water on the soil to kill any remaining seeds and roots. Next, you procure suitable turfs of fine grass and lay them out, tread on them and beat them down with broad wooden mallets (Figure 3) until they can hardly be distinguished from each other. Following this process, the grass will grow back beautifully and cover the ground like a green cloth (Albertus Magnus 1867: 636). To stay short and green the grass must be cut often, to prevent it from growing long and coarse with seed stalks (Seiler 2020: 107–108, 102–194, 222–223).

Figure 3. Experimental laying of pasture turf and use of a turf beater in the Mollet lawn, Gunnebo 2017 (Photo Joakim Seiler, cf. Seiler 2020: 98).

Laying turf of suitable grass, collected from where it was growing naturally, continued to be one of the most common methods of making lawns far into the Modern period (Seiler 2020: 89–97, 101). Another interesting passage on the process of lawn-making was written by the French gardener André Mollet in *The Garden of Pleasure* (1670). The first version of this work was printed in 1651 when Mollet was royal head gardener at the court of Queen Christina in Sweden. According to Mollet, suitable turf should be collected from pastures where sheep have been grazing. The pieces of turf should be cut with a slicer in straight lines, rolled up, and rejoined in the garden (Seiler 2020: 92–93; Mollet 1670; Mollet & Lundquist 2007). An experimental

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lawn following the instructions of Mollet was created at Gunnebo in Sweden in 2017 (Figure 3).

An interesting clue as to the type of grass Mollet was referring to with his mention of sheep pasture can be found in the naming of the species *Festuca ovina L.,* (lat. *ovium*, sheep), Sheep fescue (Sw. Fårsvingel), by Swedish botanist Carolus Linnaeus (Carl von Linné, 1707–1778) in the first edition of *Species Plantarum* (Linnaeus 1753: 73). About half a century later, in 1803, another Swedish botanist J. W. Palmstruch (1770–1811) noted that it is one of the shortest grasses, much liked by sheep, and that it prefers a dry lean soil. He also wrote that it has delicate narrow blades suitable for lawns and that it, when rooted, forms a thick turf that is easy to keep. In more moist and fertile pastures, however, this grass is easily overrun by other species (Palmstruch 1803:78).

Garden meadows and orchards

In a garden meadow the grass was taller, scythed less frequently and intermingled with other taller, primarily perennial, herbaceous plants (Figure 1). There seems to have been considerable variation within the category of garden meadows. In orchards, where fruit production was more prioritised than aesthetic values, it is likely that the meadow under the trees were managed like any other semi-wooded dry meadow of the time (by spring raking, scything and the removal of hay), which in the long run kept the soil lean. Orchard meadows would most likely have consisted of native and naturalised species (Cele & Nilsson 2024; Lennartsson & Westin 2019). In orchards where recreation was a priority, however, it is likely that more time and effort went into shaping and caring for the meadow, for example by adding domesticated, more or less exotic plants. One reason for the addition of such plants was the perceived health benefits of fragrance and beauty (Woudstra & Hitchmough 2000:30; Ignatieva et al. 2018; Rawcliffe 2008; Tyers 2018).

To keep the ground in an orchard as a meadow is practical, but there are also local medieval sources, including the revelations of Saint Birgitta, indicating that aesthetic considerations also played a part. The revelations, reflecting the everyday life of an aristocratic woman from Sweden c. 1300–1340, mention grafting in a way that implies that it is as better way to renew orchards than removing unfruitful trees altogether, since it avoids making the orchard "mykyt fwl aff grafwomen ok aff jordhinna opgrauilsom" – that is, very ugly from the digging and turning of the soil (Birgitta 2012: 62; Birgitta 2024: 124; Andréasson Sjögren 2025: 294). This passage indicates that the green vegetation under the trees played an important part in the perceived beauty of a garden to Birgitta and her contemporaries.

As current re-creation projects show, creating a flower-rich meadow

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is not as easy as one might assume, since the needs of the plants, including a lean soil, must be met (Cele & Nilsson 2024; Lennartsson & Westin 2019). On the other hand, Medieval and Early Modern gardens were surrounded by meadow vegetation to a much greater extent than their modern counterparts, and some areas chosen for orchards may already have been meadows. It is possible that the ground was left to self-seed, especially in gardens where aesthetic considerations were not of utmost importance. But it is also possible that turfs were used, at least to some extent, to quickly close gaps of open soil in gardens where aesthetic values were important. It is also possible that grass was sown, although the few written sources that mention sowing of garden grass all date from the eighteenth and nineteenth centuries (Dézallier 1728: 81–82; Seiler 2020: 94–97, 101–105; Ignatieva et al. 2018: 34).

It is likely that the choice of method was directly connected to the circumstances and purposes of the particular garden. At the same time there are sources indicating that the species, or quality of grass, was noted and valued differently in accordance with aesthetic considerations. Some Early Modern sources suggest that a way to encourage growth in productive meadows could be to sow seed swept from the floors of hay lofts (Lennartsson & Westin 2019: 113–115). However, this practice is directly discouraged, at least for lawns, by French naturalist and garden amateur Antoine-Joseph Dézallier D'Argenville (1680–1765) in his work *The Theory and Practice of Gardening* (second edition 1728), since it does not make a: "fine Green-plot". Using hayloft seed would: "never make handsome grass; but, on the contrary, come to nothing but Tufts of Weeds, very little better than that of the common Fields." (1728:81). Now, in a productive orchard this would most likely have been enought, but apparently not here. According to Dézallier, using the right seed, together with preparing the ground well by digging, dressing, evening out and raking the ground removing all clods and stones, was crucial when sowing lawns. He also explains the laying of lawns with turf in great detail, pointing out that the turf should be "the best […] either from Road-sides, or the Edges of Pastures and Meadows where Sheep and Cows feed" (1728:82). Clearly, Dézallier, just like Mollet and Albertus Magnus, differentiated between different types of grass, or rather grass/plant communities, and considered some more aesthetically pleasing than others. The sources demonstrate that grass was variable, and that components and qualities mattered.

By the eighteenth and nineteenth century, the sowing of green floors was also practiced in landscape parks. For example, the relict flora within about 700 existing or abandoned landscape parks throughout Sweden, studied by botanist Torbjörn Tyler, Lund university, indicates that large

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amounts of seed collected in Central Europe was imported and sown, to create pleasing green ground covers in these wooded environments. Similar floras have been reported from contemporary parks in other parts of the world (Tyler 2019; Tyler 2024; Ronse & Braithwaite 2012).

But let us return to the Medieval era. In Vreta kloster, Östergötland, the probable remains of an orchard with a green meadow floor created in the Middle ages, have been located through re-interpretation of archaeological results and a study of maps from the seventeenth and eighteenth centuries (Andréasson Sjögren 2025: 108–111). Several factors, including the location, indicate that this was a garden used both for recreation and the cultivation of fruit. The last nun at Vreta died in 1582, by which time the reformation was well under way, and the Vreta estate had been incorporated into the Kungsbro royal estate. According to preserved accounts, in 1554 the garden yielded eight barrels of apples and two barrels of pears. In 1619 it was given as a small separate fief by Queen Christina to an aristocrat with local ties and hist descendants. In a map from 1774 (Figure 5) it was called "Gamla Kloster Trägården", the Old Nunnery Garden, and divided into two parts by a narrow road, leading to a gate in the old enclosure wall. The northern part contained "Kåhl- och Kryddeland", beds for vegetables and herbs, and the southern part "gräswal med fruktträn", a meadow with fruit trees.

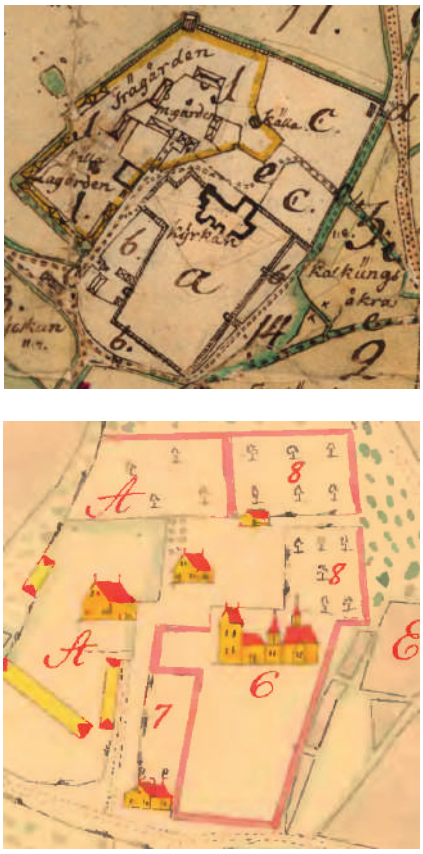

Figure 5. Maps showing the 'Old Nunnery Garden' of Vreta, Östergötland, Sweden, in 1696 marked as number 8 (05-vre-11) and in 1775 as C (05-vre-45). At this time, it belonged to countess Hedvig Mörner of Stiernorp Castle, northeast of Vreta.

In the Middle Ages the southern part, the orchard, was located next to a large two-story stone building, erected in the 1160s as living quarters for the highborn nuns when Vreta was turned into a nunnery. By this time Vreta already had a long history as a royal estate, and written sources mention an earlier monastic foundation here, in about 1100. The first abbess in the 1160s, Ingegerd

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Sverkersdotter, was the king's sister and daughter of the royal couple who in 1143 had founded the first Nordic Cistercian monastery, at Alvastra, Östergötland (Tagesson et al. 2010; Arcini et. a. 2022; Andréasson Sjögren 2025: 104–108, 140–141). It is likely that the building and the orchard were created at the same time, as parts of the same milieu. The needs of the nuns influenced the building project, which was also shaped by the aristocratic culture of the time. It is worth noting that Ingegerd, although a little younger and living in the far north, was a contemporary of Hildegard of Bingen (Bain 2021; Deusen 2023).

Although excavations within the garden area have been very limited, they clearly show that the remains within the two parts are quite different. In the northern section a thick garden cultivation layer was found, while in the southern area (the part that was still orchard with meadow in 1772) the soil was described as sandy humus and there were no traces of digging and fertilising (Tagesson 1990; Tagesson 2006). These findings agree with what could be expected in a space that has, throughout its history, been an orchard, where the ground was covered by meadow vegetation of the type that thrives on lean soil. Similar conditions were, for example, found during excavations in the 18th century garden of Fossesholm manor, Norway, where the soil in the beds of the formal garden contrasted with the thinner, leaner soils of the orchard, on the slope above (Andréasson 2010).

Further excavation has the potential to reveal more traces of the Vreta orchard, for example tree pits, that can be used to further our understanding of the context of the meadow, and how the garden was shaped and kept over the centuries. Considering the location and probable uses, it is likely that the spacing and care of the trees was affected by practical considerations as well as aesthetic and health-related ones, such as air-flow. In the orchard at Fossesholm, the tree pits contained soil that resembled the soil found in the beds in the contemporary formal garden, suggesting that the pits had been filled with more humus rich soil when the trees were planted (Andréasson 2010). The trees may also have been fertilised, although this cannot be taken for granted, not least because Albertus Magnus notes explicitly that less fruit is acceptable in a garden where pleasure and health is more sought after (Albertus Magnus 1867: 636). If the trees were fertilised, it is likely that it was done in ways that benefitted them without damaging the aesthetically pleasing meadow, for example, through the use of fluid manure watered down close to the tree roots.

The remains of green garden floors

Through the interdisciplinary research approaches of historical archaeology, garden features, includ-

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ing lawns and garden meadows, can be studied as the multifaceted, interwoven parts of garden environments they are, both physically and in regard to their design and usage.

First, however, we need to find these features. An efficient way to locate garden remains and plan excavation work within them is to use a combination of sources, such as maps and geophysical survey methods, such as GPR or Ground-penetrating Radar (Bevan & Dalan 2013; Conyers 2013). Interpretive approaches need to be further developed, but it is reasonable to assume that lawn and meadow remains can be identified, at least tentatively, through association with other features and particular characteristics – for example, those of the lean and highly compact soil of a turf lawn, created by beating and treading and maintained by rolling and scything (Figure 2). A medieval example might be seen in the courtyard or possible lawn located by geophysical survey within the Pleasance of Kenilworth Castle, England (Jamieson & Lane 2015: 263, 268; Linford et al. 2005: 10). Another example, where eighteenth and nineteenth century grass expanses were located through their relationships to other garden features and correlation with historic maps, is found in the GPR survey conducted 2010–2011 at the manor of Rosenlund in Jönköping, Sweden (Winroth et al. 2011; Franzén et al. 2019).

Secondly, we need to develop methods to study the features. Since, as noted above, lawns and garden meadows share some traits, like a comparatively lean soil, a predominance of grass vegetation, and maintenance through regular scything, we can expect to find some common denominators, as well as variability. A useful starting point, providing a deeper understanding of the physical characteristics of different green floors, as well as their construction, maintenance and use, can be found in practically oriented and experimental research, such as the work conducted by Dr Seiler and his team at Gunnebo and by the Craft Laboratory at the Department of Conservation, University of Gothenburg (Seiler 2020; https://www.gu.se/en/craftlab/gardening-crafts, 2025-06-04).

From an archaeological perspective, a lawn created using the method outlined by Albertus Magnus could be described as a highly compacted, one layer turf construction, in which the turfs were collected in another location (where the soil would have been different) and placed on a levelled, thoroughly homogenised and prepared but not fertilized soil horizon, created from the soil on site. In other words, the archaeological remains consist entirely of soil layers. To examine them, we need well adapted, contextual excavation methods, as well as interdisciplinary cooperation, and a selection of scientific methods to study the morphology, chemistry and archaeobotany of the different layers (Gleason 2013a).

As a starting point, we can use experience from excavating features

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Figure 4. Example of a one-layer turf construction underneath a floor constructed 1470–1480 in Nya Lödöse, Sweden (Photo Jonathan Pye, cf. Morner et al. 2021: 95).

with similar traits. Turfs have been used in many types of constructions throughout North European history, from burial mounds and fortifications to walls, roofs and foundations in houses, such as the single layer of 30x40 cm turfs (Figure 4) placed under the floor of a house in the late medieval town of Nya Lödöse, Sweden (Hall 2003; Huisman & Milek 2017; Morner et al. 2012: 94–95, 172–177; Romankiewicz 2023). There are, as yet, no excavated examples in Sweden of turf moved to gardens, but there are examples of large quantities of soil transported from other locations and laid as garden cultivation layers, for example at a town plot in Lund, Skåne (Gardelin 2013:25–26; Heimdahl 2009) and in the central cloister garth of Alvastra monastery, Östergötland (Regner 2005: 128–148, 167–176; Lindeblad 2010; Andréasson Sjögren 2025: 105–106, 121–122).

Meadows of types that were not constructed with turfs would not have the same layering, but the soil would still contain traces of construction, management and use. Among other things, the regular scything and removal of grass would have kept the soil lean, and there should not be any traces of thorough digging and adding compost and/or manure after the meadow was established, since this would not have benefited its characteristic grasses and plants, which thrive on lean compact soil. If well preserved, for example through water logging or being covered quickly by another compact layer stopping oxygen flow and bioturbation, the meadow soil could contain organic matter, such as seed and pollen, as well as less destructible biogenic silica, such as grass phytoliths, insects and diatoms, as well as shells of molluscs, mirroring the micro-environment of the meadow or lawn (Gleason

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2013b: 257–276; Murphy & Scaife 1991; Casares Porcel & Tito Rojo 2010: 733; Gleason 2019: 313; Ryan 2016; Horrocks 2013). Other important parts of the puzzle can be provided by geology and analysis of soil morphology (Heimdahl & Krupski 2024; Sageidet 2013; Foss 2013).

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Anna Andréasson Sjögren
PhD, Stockholm University & The Archaeologists, National Historical Museums
E-mail: Anna.andreasson@ark.su.se
ORCiD 0009-0002-0758-7222

Sources

Ms ÖNB 2671, page 53r, Österreichischen Nationalbibliothek, Vienna, digital faksimile: http://data.onb.ac.at/rec/AC13951365. The image, showing Emily in her garden, is attributed to Barthélemy van Eyck and belongs to a copy of Le Théséide, a French version of Giovanni Boccaccios Il Teseida delle nozze d'Émilia.

Ms Arsenal 5072, page 71v, Bibliothèque de l'Arsenal, Paris, digital faksimile: https://gallica.bnf.fr/ark:/12148/btv1b8426778v. The image, showing Maugis and Oriande in a garden, is attributed to Loyset Liédet, and belongs to a copy of Renaud de Montauban in a book made in Bruges.

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05–vre–45, Lantmäterimyndighternas arkiv, storskifte 1775, Vreta kloster.

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