What role does symbolism still play on German graveyards? A case study from Saxony, Germany

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Research

Abstract

Background: In terms of the history of sepulchral culture in Germany, the customisation of gravesites with plants is a relatively recent but widespread practice in German-speaking countries. The diverse, temporally changing and regionally varying connections between plant and grave, and in particular the current relationship in relation to the original symbolism of plants in the Christian sense, have not been researched in detail and are the aim of this study.

Methods: Between November and January 2022/2023, 458 graves were randomly selected at eleven cemeteries of the German city Dresden and their planting was photographed and determined. Plants from wreaths and flower arrangements as well as plant representations on grave markers were included in the survey. In addition, 29 relatives were interviewed about their intentions for the planting and 9 experts of garden centers were asked about trends they had observed.

Results: A total of 152 plant species were identified. On average, the graves were planted with 3.8 species. *Calluna*, *Hedera* and *Abies* were used particularly frequently. Plant representations were found on approx. 1/3 of the grave markers, of which roses were the most common.

Conclusions: The study shows a change in grave planting. Traditional Christian or more generally symbolic plants associated with death are in decline compared to longer-lasting, easier to care for, but also more colourful plants. The cemetery and the grave are becoming aesthetic places of active remembrance and togetherness with the deceased.

Keywords: graveyard, cemeteries, Saxony, Germany, decoration, plants, symbols, Christianity

Background

The individual design of grave sites with plants is a widespread practice in German-speaking countries (VFFK 2023), but with regard to the history of the sepulchral culture in Germany it is relatively young. Up until the 18th century, neither an explicit planting of the burial place nor a planned aesthetic design of the churchyard was usual. Exceptions are the occasional hedges instead of a wall and the planting of used fruit trees (Leisner 2009, Sörries 2002, Fig. 1). It was not until the 18th century that cemeteries were systematically planted, which was intended exclusively for hygienic purposes of "cleaning the air" from harmful necrotic miasmas (Happe 2003, Sörries 2002). The increased allocation of individual graves, i.e. personal and marked burial sites from the middle of the 19th century finally formed the prerequisite for an individual design of the graves with plants and flowers, either because of their scent (e.g. *Artemisia absinthium* L.) against the miasmas was ascribed, or they were available from the cottage gardens. A corresponding symbolism was only ascribed to most of these plants in the course of their use in the burial context (Sörries 2002), which allows a differentiated classification into mourning plants, grave plants and "Totenblumen". These classifications and attributions, in turn, increased the use of certain plants in cemeteries. Images of plants (reliefs, sculptures) already played a symbolic role in connection with the development of architectural tombstone forms from the Renaissance onwards. In the 19th century in particular, a development from religious to personal and general symbolism of mortality can be observed in this context (Sörries 2002, 2009). The diverse, temporally changing and regionally different connections between plant and grave have not yet been researched in detail (Sörries 2002). In this brief historical outline two aspects are decisive: First, that the connection between plants and the burial context has changed over time. And second, that a distinction must be made between cemetery and grave plants, as well as between planting of the grave and depicting plants on the gravestones or monuments. The following study deals with the current design of graves, both with regard to their planting and with regard to plant representations on gravestones in Dresden, Germany. It examines which plant species are used how often and discusses the question of which aspects are important to select. Ultimately, by recording the current plant occurrence, the study enables a comparison with traditional customs and can thus contribute to answering questions more precisely, such as: Which traditions are adopted unchanged? Which traditions are being changed and in which way? Which innovations can be noticed?

Figure 1. Historical view of the old Frauenkirche in Dresden from 1714 with surrounding cemetery (Wikimedia Commons 2023).

Materials and Methods

Study area and population

Dresden is the capital of the federal state of Saxony in eastern Germany. At the end of 2022, almost 570,000 people lived in Dresden (Dresden 2023a). Between 2012 and 2021, an average of 5502 people died annually (Statista 2023a). There are a total of 58 churchyards and cemeteries in the urban area of the state capital Dresden, of which five are municipal cemeteries and 53 are denominational cemeteries (49 Evangelical Lutheran, 2 Roman Catholic, 2 Jewish). Due to the reprisals against the churches and a non-religious socialist doctrine, the number of church members in East Germany dropped very sharply with the founding of the German Democratic Republic in 1949 (Wohlrab-Sahr *et al.* 2009). Currently, 75% of Saxony's inhabitants are non-denominational. (Statista 2023b), so that a quarter of the population belongs to a religious community, about 16 percent are Protestant-Lutheran, about five percent Catholic (Dresden 2023b).

Data-collection

Within the framework of an interdisciplinary course at the TU Dresden, which was open to all study groups, 13 students were assigned to examine graves in various cemeteries in the urban area of Dresden. The plant symbolism on the grave markers and the grave planting in the winter aspect were examined. To keep the study clear, it concentrates on the winter aspect, for which fewer plant species are expected to be used. Grave markers usually include headstones, but also other markers like for example wooden crosses. Each student analysed between 20 and 50 graves. The study was conducted from 11 November 2022 to 16 January 2023 at 11 cemeteries in the Dresden city area. The period was preferably placed around or after the two commemorations of the dead, All Souls' Day (Catholic holiday) on 2 November 2022 and Sunday of the Dead (Protestant holiday) in 2022 on November 20th.

The plants of each grave were photographed and identified using the plant identification apps PlantNet and Google Lens. All plants were later double-checked and assigned only to the plant genus or family in case of missing characteristics. The number of individuals was not recorded, only the occurrence on the respective grave. In addition to the planted plants, the laid funeral wreaths were also analysed on some graves. It was also investigated whether floral elements were used on the respective gravestones. These were determined and listed if possible. All data were transferred to a common Excel spreadsheet and analysed.

Interviews were conducted together with the analysis of the grave plants and the ornamental-floral grave decorations. In total, 38 people were interviewed: 29 people, who care for graves as family members, and nine people who sell plants for grave maintenance. The interviews with the relatives were divided into a general part, which asked about age, gender, and number of years of grave care, and a content-related part. In the specific section on winter planting, questions were asked about specific plant species, their source of supply, the reasons for their choice, as well as religious affiliation and thoughts on death. The interviews were conducted using the semi-structured interview method and left plenty of room for follow-up questions. Furthermore, the respondents who look after the family graves were divided into two age groups. This was to record possible preferences of younger and older people: the younger age group with 14 people between the ages of 20 and 59 (y-group, 11 female, 3 male), and the older age group with 15 people between the ages of 60 and 89 (o-group, 10 female, 5 male). Half of the respondents describe themselves as religious (57% y-group, 47% o-group). The interviews were random and therefore do not provide a statistically comprehensive picture but serve to supplement the plant analyses on the graves by asking about motivations, backgrounds and trends in grave design.

The places where the plants for the graves are bought are differentiated into "close to nature" shops (plant nursery, flower shop, own garden) and "far from nature" shops (hardware store, supermarket). On a scale of 1 to 5, the respondents were also asked about the importance of the characteristics colour, form, durability, intensity of care and symbolism in their choice of plants. Plant names are only known to the population as local names. However, to avoid uncertainties with regard to the scientific names, only genus names were used in the analyses.

Results

Grave planting

Almost all of the 458 graves (456) surveyed showed planting (Fig. 2). The average number of species per grave was 3.8 ($\pm$2.4), with 44% of the graves having only 2 or 3 species, but the total varying between 0 and 14 species (Fig. 3).

A total of 152 plant species were found (150 spermatophytes, 1 fern, 1 lichen). The most important plant families are Rosaceae (16 species), Asteraceae (15 species), Cupressaceae (11 species), Ericaceae (9 species) and Pinaceae and

Caprifoliaceae (7 species each) (Suppl. 1). By far the most planted species is *Calluna vulgaris* (L.) Hull. It appears on 54% of the graves. With 25%, *Hedera helix* L. is in second place (Table 1).

Figure 2. Selection of characteristic winter grave decorations in the city of Dresden. Fotos taken by Buß/Otero (A), Pöhnert (B & E), Demir (C), Pramschüfer (F & G), Hinsching/May (D), Bretschneider (H).
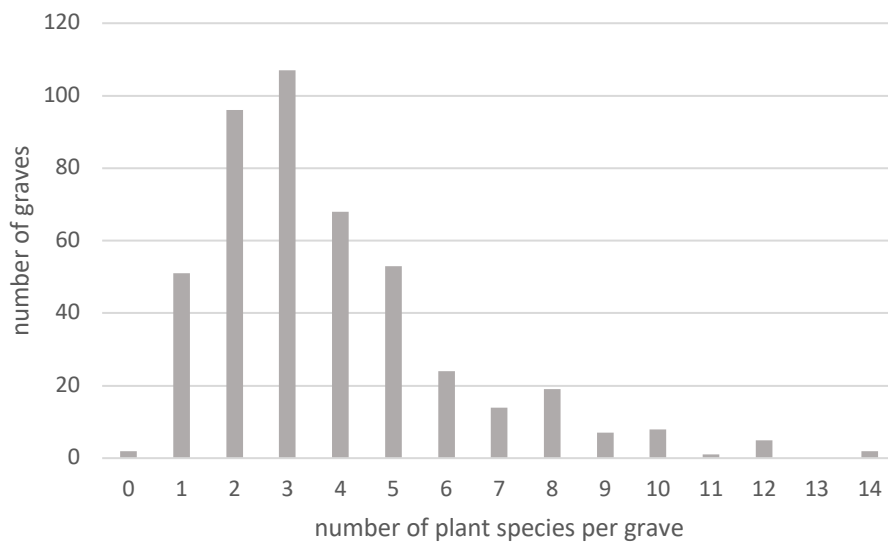
Figure 3. Number of plant species per grave. Total number of studied graves: 458.

Table 1. Twenty-one most frequently found plant species. In bold the species used in wreaths. NC number of citations. Vernacular names include German and English common names.

NC	Species	Vernacular name	Family
249	*Calluna vulgaris* (L.) Hull	Besenheide heather	Ericaceae
115	*Hedera helix* L.	Efeu ivy	Araliaceae
109	***Abies nordmanniana* (Steven) Spach**	Nordmann-Tanne Nordmann fir	Pinaceae
106	*Euonymus fortunei* (Turcz.) Hand.-Mazz.	Kriechspindel Winter creeper	Celastraceae
92	***Picea pungens* Engelm.**	Blaufichte, Stechfichte Blue spruce	Pinaceae
89	*Thuja occidentalis* L.	Thuja, Lebensbaum Northern white-cedar	Cupressaceae
53	*Rosa* spec.	Rose Rose	Rosaceae
50	*Jacobaea maritima* (L.) Pelser & Meijden	Weißfilziges Greiskraut Silver ragwort	Asteraceae
49	*Leucophyta brownii* Cass.	Silberkörbchen/Stacheldraht Cushion bush	Asteraceae
34	*Buxus sempervirens* L.	Buchsbaum Common box	Buxaceae
33	*Erica carnea* L.	Schneeheide Winter heath	Ericaceae
30	*Cyclamen persicum* Mill.	Zimmer-Alpenveilchen Persian cyclamen	Primulaceae
30	*Heuchera* spec.	Purpurglöckchen Coral bell	Saxifragaceae
30	***Ruscus aculeatus* L.**	Stechender Mäusedorn Butcher´s-broom	Asparagaceae
27	*Gaultheria procumbens* L.	Niedere Scheinbeere Checkerberry	Ericaceae

25	*Luffa aegyptiaca* **Mill.**	Luffa-Schwamm Sponge gourd	Cucurbitaceae
25	*Protea* **spec.**	Federbusch Sugarbush	Proteaceae
22	*Cotoneaster dammeri* C.K.Schneid.	Teppich-Zwergmispel Bearberry cotoneaster	Rosaceae
22	*Helleborus niger* L.	Christrose/Nieswurz Christmas rose	Ranunculaceae
20	*Dipsacus sativus* **(L.) Honck.**	Weberkarde Teasel	Caprifoliaceae
20	*Arecaceae*	Fächerpalme Fan palm	Arecaceae

Grave floral elements

Of the 458 grave markers, 37% showed a floral element or plant symbol (Fig. 4). By far the most frequently waved symbol is the rose with 45%. The palm leaf is found on 9% of the gravestones, followed by ivy with 7% and the tree with 6%. Some plant symbols could not be clearly assigned. Other less frequently recurring plants are the olive branch (3%), laurel (3%), the anthurium or calla (3%), which can hardly be distinguished schematically, as well as wine, poppy, ginkgo and sunflower with 2%.
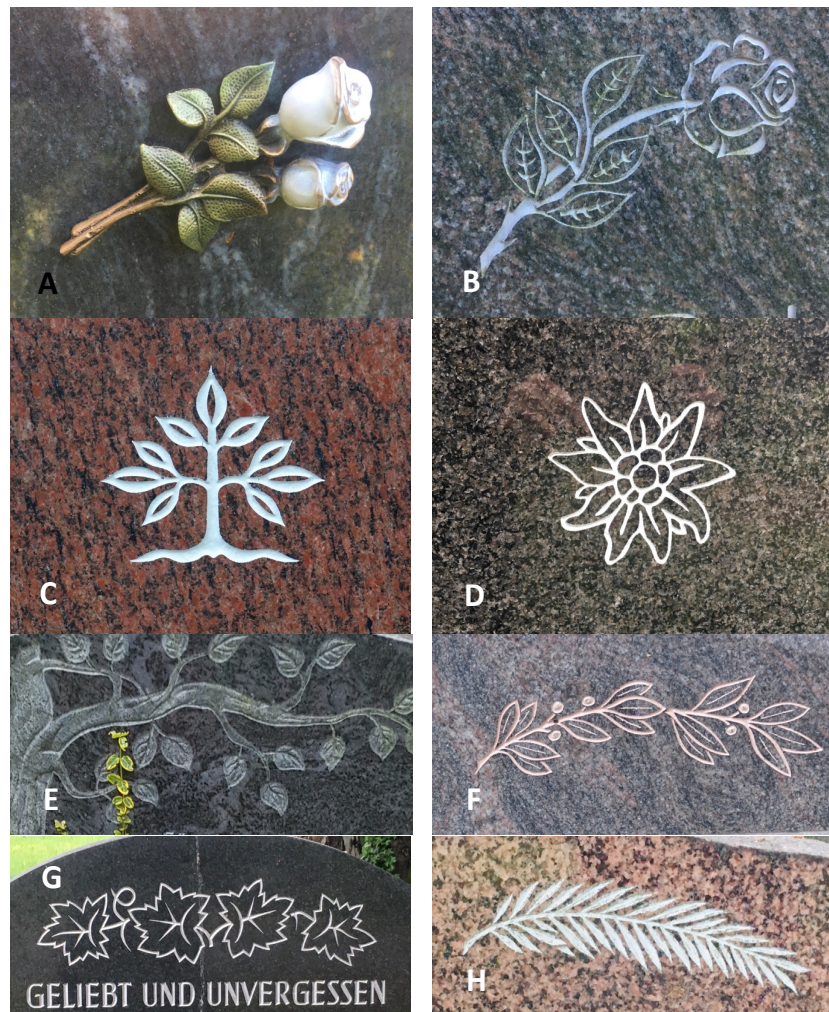

Figure 4. Selection of plant ornamentals on gravestones in the city of Dresden. Roses (A, B), tree (C, E), edelweiss (D), olive (F), vine (G), palm leaf (H). All photos taken by Lautenschläger except Demir (C) and Pöhnert (E).

I

Interviews

The results of the interview evaluation of the different interviewed groups are divided into the selection of plant species, their reason for use and their possible symbolic meaning. The 10 most frequently mentioned plants are listed and compared in Table 2. The total number of species mentioned differs from 15 resp. 20 (florists) to 22 resp. 23 (young and old group). Since the German word Heidekraut is used for both genera *Erica* and *Calluna*, they can only be considered together. They are the most frequently stated plants in all interview groups. The rose is an important plant in both age classes, but less mentioned by nurseries. The same applies to a lesser extent to ivy (*Hedera*). *Buxus* was only frequently mentioned by the older group. Since 2006, there has also been severe damage by the larvae of the boxwood borer in Germany (Krüger 2008). This trend may have led to a sharp decline in sales, so that the plant is not mentioned at all by the younger group. Pansies (*Viola*) are mentioned as the second most important species by the nurseries and is bought by both groups equally.

Table 2. Citations of the ten most important plants mentioned by the 3 interviewed groups to be used at cemeteries. Nurseries include the data of the nine people working as gardeners or florists; family members are divided into the young group (14 persons) and the old group (15 persons). Family members were only asked for listing 5 plant species.

Species	Nurseries		Family members	
	economically	symbolically	*young group*	*old group*
Erica/Calluna	7	2	9	8
Rosa	1	3	9	5
Hedera	2	4	9	3
Buxus	1	1	-	5
Helleborus	2	2	1	4
Viola	5	3	4	4
Begonia	4	1	-	2
Cotoneaster	4	-	-	1
Euonymus	4	1	-	-
Chrysanthemum	2	-	3	1
Total no. of plant	20	15	23	22

Not surprisingly, the survey of relatives who care for the graves of the deceased revealed that the duration of grave care increases with age. In the y-group, the average time of care is 5.5 years, in the o-group it is 11.3 years on average. Interestingly, 72% of the older interview group still get their plants from "close to nature" shops, while only 54% of the younger group get their plants there. This indicates a tendency towards using wholesale markets. Colour (4.0), durability (3.9) and low maintenance intensity (3.8) play the most important role in the selection of plants. The form (3.0) is rather subordinate. The symbolism of the plants is least important to the respondents (2.8). But nevertheless, the symbolism of the plants of the younger group is significantly higher than that of the older group (Fig. 5). No correlation with religious affiliation could be found in either age group. When asked what was important for the grave, there were also differences in the age groups: All respondents of the y-group considered the appearance important, in contrast to only 60% of the o-group.

Another important statement that emerged in the interviews is the idea one associates with death. While 86% of the younger group believe in a post-mortem existence, only 40% of the older group do. This is a big difference and should be backed up with data in follow-up studies.
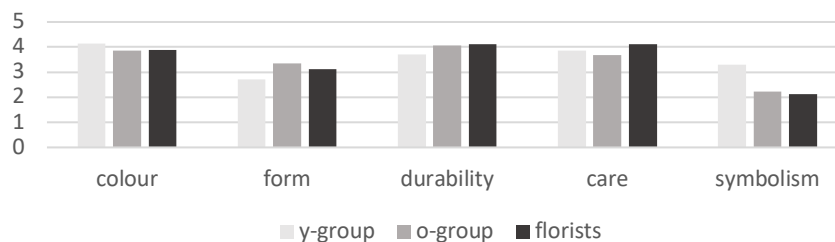

Figure 5. Importance of attributes in the selection of plants on a scale from 1 (unimportant) to 5 (very important); y-group 14 interviewees, o-group 15 interviewees, florists 9 interviewees.

The detailed data collection during the expert interviews with the nurseries/florists shed new light on some of the aspects. 78% of the interviewed gardeners work in Dresden and within a radius of 25 km. 56% supply one cemetery each, 44% supply several cemeteries in one region. The average professional experience of the respondents is 16 years.

When asked what trends are visible in planting, 7 out of the 9 respondents mentioned the decrease in cost or effort that family members are willing to pay. Further mentions are the adaptation to climate change (2), the increase towards closeness to nature (1) as well as contradictory statements on symbolism (1x increasing, 1x decreasing). While gender does not seem to play a role (7), the age of the deceased does seem to have an influence (7): Children's graves are often more colourful and open than those of older people, who may be more marked by attributes related to profession and hobby. Differences in grave design are also determined by the size of the grave. Smaller graves are often completely decorated with flowering plants, whereas larger graves only have flowering accents. There are also differences in the customer groups, which were named during the interviews. In general, younger customers tend to break with tradition and design their graves more individually, while older customers choose well-tried classical plants. The data of the assessment of the characteristics colour, form, durability, care and symbolism correspond well with those of the family carers (Fig. 5). Florists also consider the symbolism of the plants to be clearly secondary in the selection process. Nevertheless, some of them mention 15 plant species that have a symbolic background, with *Hedera* in first place (4), followed by *Rosa* and *Viola* (each 3) (Table 2). *Hedera* is attributed by the gardeners with the concepts of faithfulness, immortality, life and resurrection. *Viola* is a symbol of modesty and the Trinity and the rose of infinite love.

Discussion

The plant ornamentation of the studied grave markers shows little variability with regard to the number of plant species and their representations. On the one hand, the reasons for this can be sought in the fixed repertoire and "supply monopoly" of individual stonemasonry workshops for the cemeteries. On the other hand, however, the motifs are also dependent on demand, which is limited to only a few plants. From this point of view, one can speak of a "thinning out" of symbolic traditions. Decidedly religious (Christian) references (e.g. *Helleborus* – Christ, *Lilium* – Mary, three-lobed leaf – Trinity) are still known in some cases, but these take a back seat to more general references (e.g. memory, love, life). Therefore, we can also speak of a change in symbolic traditions, which, however, is not new, but can be observed at the latest since the 19th century (Sachs *et al*. 2005, Sörries 2002). Most common are representations of the rose (Rose), which is also often mentioned in interviews as a well-known grave and symbolic plant. Over time, this traditional Marian plant has been attributed a particularly wide range of meanings, such as love, but also pain and transience. Its popularity is also evident in the plantings, where it ranks 7th among the 157 species identified. A similar convergence can be seen with ivy (Efeu), which as an evergreen, climbing plant is associated with immortality and loyalty (Sörries 2002). Conclusions from the depicted plant to an explicitly religious background of the buried person are therefore hardly possible and must be supplemented by other clues, e.g. Bible quotations or the Christian cross. With regard to the other plants depicted, on the other hand, a divergence from the plantings can be observed. The reason is to be found in the anchoring of the species in cultural memory as symbolic plants on the one hand, and in their impracticality as planting and price intensity on the other. Palm (Palme), olive (Olive) and laurel (Lorbeer) are hardly suitable for grave planting because of their sensitivity to frost and their size. However, they can certainly be used in temporary arrangements. Vine (traditional symbol for the union with Christ (Nobbmann n.d.)) would be possible as a plant, but it needs a framework and has to be pruned regularly, which increases the maintenance effort. Furthermore, the use of fruit and vegetable plants in cemeteries is still largely considered taboo, although some Protestant regional churches are already taking a different position (Annenfriedhof Dresden 2023, Landeskirche Hannover 2023).

When speaking of a "thinning out" of symbolic traditions, the cross-check must be made and asked whether an establishment of new symbolic traditions can be observed. Indeed, with the ginkgo leaf and the sunflower, newer, less traditional floral elements can be found in the cemetery context. Both are rather non-religious-symbolically charged, which fits the general observation of the decline of decidedly religious symbolism. The ginkgo leaf symbolizes hope, long life, but also friendship and affection (Beuchert 2005). The sunflower (Sonnenblume) is associated with ideas of light and a positive attitude to life (Fleurop 2023). Even if new plants are occasionally used in the decoration, they remain behind the traditional symbolic plants in terms of the number of species and the frequency of representation, so that it is hardly possible to speak of a new development of plant symbolic references.

A corresponding result is also shown by the study of grave planting. Since the focus of this study was placed here, more detailed and differentiated results are available in this context. The current design of the burial grounds is recognized by architecturally simple graves, but with more planting, some of which changes seasonally or is (partially) renewed at intervals. The planting is done either by the relatives themselves or by a cemetery gardening firm commissioned by them. Together

with the grave marker, it should convey an aesthetically harmonious overall impression of the gravesite. This is clearly shown in the interviews, where a beautiful appearance of the grave plays by far the greatest role for the relatives. This basic observation needs to be looked at more closely. With regard to planting, a "beautiful appearance" depends on factors such as colour, growth form and care, i.e. removal of unwanted weeds, watering and, if necessary, pruning. Several observations can be made here: Thus, "beautiful appearance" is understood from the aspect of the colour of the plants, which plays the greatest role in the y-group and is still in second place in the o-group, whereby here not necessarily bright primary colours but also, for example, variegated leaves can be used. In the first place, the durability of the plants is mentioned here. This fits in with the observation made above that headstones are less costly to design because more durable plants rarely have to be replaced by newly purchased ones. The growth habit of the plants plays the least important role for all two age groups. The gravestone architecture is therefore not simply replaced by plant forms, but a change from shape to colour or colour accents can be observed here. As expected in the context of mourning and commemoration, muted colours are not necessarily preferred. Possibly precisely because of the "bare" winter season, shades of green (e.g. as evergreen ground covers or covers and arrangements made of conifers) as well as strong shades of red or yellow or white (e.g. Heidekraut, Weißfilziges Greiskraut, Silberkörbchen) are popular; extra coloured plant parts (e.g. red coloured palm leaves) can be detected in arrangements. Here, a cross-check would have to be carried out in the summer season. Furthermore, the symbolic aspects of the plants take a back seat to the colourful design. It cannot be determined that individual plant species are considered exclusive grave plants. Although *Calluna vulgaris*, for example, can be found on every second grave, it is still not considered a taboo plant for balconies and terraces (Mein grüner Balkon 2023). *Cotoneaster*, which is also frequently used for grave greening, was also used for a long time for greening areas and slopes in public parks. In the meantime, *Cotoneaster* species are also more frequently seen in home gardens as ground covers or hedges (Mein schöner Garten 2023a). And although *Hedera helix* was still so typical as a grave planting in the 1920s/30s that it was not used in the garden, it can now even be found as an indoor plant (Mein schöner Garten 2023b, Sörries 2002).

Decided symbolic intentions in the choice of plants are also not evident in the interviews. As with the grave signs, a dwindling knowledge of symbolic traditions can be observed. All in all, the gardeners interviewed associate only 14 of the more than 150 species recognized on the grave sites with symbolic references. For example, ivy (Efeu), rose (Rose), pansy (Stiefmütterchen), erica (Heidekraut), yew (Eibe) and Christmas rose (Christrose) are mentioned, whereby erica, ivy and rose are actually frequently detectable as plants. The symbolic meanings of the plants mentioned include firstly ideas of a post-mortal existence (immortality/life, peace, light), then also aspects of positive interpersonal relationships (love, family, happiness) and human qualities or experiences (modesty, loyalty, pain). Decidedly Christian references (Christ, Trinity, Resurrection) are mentioned comparatively rarely, as are connections to transience. Surprisingly, it became clear in the interviews that symbolism plays a greater role for the y-group than for the o-group. The question here is how this fits in with the observation of a "thinning out" of symbolic traditions. An initial assumption that symbolism in the younger generations had "migrated" from general and abstract ideas to a kind of representation of the deceased (e.g. by means of his or her favourite flowers) cannot be verified, as there is no significant species diversity in the grave planting for this. The personal reference to the deceased in the design of the gravesite ranks on the same level for the o-group, possibly even slightly higher, so that no convincing answer to this paradox can be found here and it thus remains an object of research. Either species preferences are often shared, or the reference to the deceased is rather expressed by special grave accessories (e.g. portrait photos) or grave signs.

In addition to aesthetic considerations, practical aspects also play a major role in planting, which primarily means the amount of maintenance required. The work involved includes planting, watering, hoeing, weeding and pruning. The amount of work required depends on the size of the grave as well as the types of plants selected. Smaller grave areas can be planted with more manual, "colourful" species, as the maintenance work for these areas is less overall. For larger graves, the maintenance effort can be kept low with perennial ground covers and only individual floral accents in between. This shows an aspect that plays an important role in grave care in addition to the typical horticultural care measures: the durability of the plants, i.e. a lasting fresh green or a long flowering phase. Thus, the durability of the plants is the most frequently mentioned aspect of planting in the o-group, the care aspect ranks third after the colour aspect. For the y-group, care and duration are in second and third place after colour. The low ranking of these aspects compared to the o-group may be due to a better physical fitness of the younger ones, which allows more frequent work on the grave. The results of the plant surveys correlate well with these interview results. *Calluna/Erica* are in first place in both age groups and the plant photos on the graves confirm this. With low growth and low maintenance, they also delight in the cold season with long-lasting flowering in different colours depending on the species and variety. In the case of *Hedera*, the second most common plant, its easy-care properties and evergreen appearance certainly play a role in the selection. This may also be true of *Thuja* and *Buxus*, although the latter has become problematic due to the invasive spread of the pests *Cydalima perspectalis* and *Puccinia buxi*. *Abies*, *Picea* and

Ruscus are popular as durable evergreen branches in wreaths. *Gaultheria*, as a dwarf evergreen shrub, provides popular colour contrasts in autumn with its bright red (or white) berries. Obviously, the low, horst-forming and evergreen *Heuchera* species or varieties, whose foliage colours range from green to orange and red to violet and bronze, or the silver-grey leaf colouring of *Calocephalus*, are also considered attractive. These examples among the plants most frequently found and identified on the grave sites may suffice to confirm and illustrate the interview statements regarding the preferred selection aspects of durability, ease of care as well as colourfulness. The fact that *Gaultheria*, *Heuchera* and *Calocephalus* were not named as common species by the interviewees contradicts the findings of the plant survey but can possibly be explained by a lack of species knowledge among the interviewees: the need for naming plays no or only a very minor role and takes a back seat to the actual selection criteria. The reverse phenomenon, i.e. that species are frequently named in the interviews but are rarely found in the actual planting, can be explained by the fact that the plants were recorded in the winter months of November-January, but the interviewees were not explicitly encouraged to name only winter plants. For example, *Viola × wittrockiana* and *Begonia* spec. are mentioned relatively frequently but are only suitable for the warmer period of the year. This finding is essentially in line with the gardeners' associations' statements regarding the plants they consider to be the most sold and selection aspects. Here too, *Erica/Calluna* are in first place, followed by *Viola* and *Begonia*, which are typically planted as annuals, followed by the popular perennials *Cotoneaster* and *Euonymus*. Hedera seems to be declining in sales, thus waning in popularity, while the sale of grasses is increasing. In their view, durability and maintenance are the most important selection criteria, followed by colour and shape. From the nurseries' point of view, the symbolism of the plants is of least importance.

If we take a look at the twenty-one most frequently found plant species (Table 1), we notice that only 25% of the species found are native to Central Europe. The species in the wreaths are even fewer (out of 7 species, only one!), which leads to the question of where the grave plants are sourced. In fact, 91% of the respondents say they buy the plants in shops, only 9% use plants from their own garden. Of course, this does not mean that species planted in gardens are exclusively native, but it does show that one's own garden has become considerably less important as a plant fund and reservoir. If we look at Sörries' brief summary of the history of cemetery planting, we can see a change in this context, because in the 19th century, "initially those flowers were chosen for grave planting that were available in the cottage garden, increasingly with a view to symbolic plants" (Sörries 2002). However, the y-group is also surprising here. Compared to 5.5% of the o-group, 11.5% of these respondents get their plants from the garden again. This may reflect a tendency of the younger generations towards more sustainability and "self-sufficiency". When buying plants, both groups attach importance to regionality, possibly also to advice and good experiences with traders. Thus, 55% of the respondents give preference to buying in a nursery or flower shop over wholesale markets. Another factor to consider is the proximity of the shops to the cemetery and thus their easy accessibility for relatives. If we look at the o- and y-groups separately, we find that the o-group significantly prefers smaller retailers, while the y-group buys almost equally from smaller and larger retailers. Although this contradicts the above-mentioned tendency towards more sustainability, it could be explained by greater convenience and a different price consciousness, because the plants are often more expensive at smaller traders. The cheapest option would then also be to buy from one's own garden. Ecological aspects, such as the adaptation of plant selection to climate change, can at most be determined indirectly, for example if more drought-resistant plants are preferred to water-intensive ones. However, the focus here is not decidedly on the reaction to climate change, but on the adaptation of the maintenance effort. Surprisingly, the growth requirements of the plants are never mentioned as a selection aspect.

That climate change plays a role in grave planting and is closely related to the maintenance effort is shown by the statements of the nurseries. Asked about the general trends in grave planting, 78% mention the decrease in maintenance effort and money invested and 22% mention adaptation to climate change.

The question to what extent the general selection criteria of the relatives and the tendencies observed by the nurseries lead to the actual frequently sold plant species can only be answered here in a rudimentary way. Since the desired plants are usually purchased in the trade, it can be assumed that there is a reciprocal relationship between cultivation/propagation effort, customer wishes and price. Wholesalers obviously still offer the plants at the lowest prices, so that 44% of the nurseries surveyed stated that the wholesale markets and the customers themselves determine the range of plants offered. The nurseries' own influence on trends, for example through the design of model graves at state or national garden shows, is considered to be comparatively low (22%). This may be due to the fact that the professional and aesthetic level at these exhibitions is very high and can only be realised to a certain extent by laymen with their own horticultural know-how, time and costs.

In summary, it can be said that plants and flowers continue to play a major role in the funeral context. Preference is given to low-maintenance plants characterised by distinctive and lasting colour of leaves, flowers or fruits. Plants to which one

attributes an abstract allegorical or symbolic meaning or whose yield (fruit, vegetables) one takes home from the cemetery play a lesser role. The grave should convey an overall aesthetic impression, whereby a well-kept, colourful appearance is more precisely understood. The preferred shades of green, yellow or red create a lively atmosphere, which is underlined by regular maintenance. The cemetery and the grave thus become places of active remembrance and togetherness with the deceased, who - according to most of the relatives interviewed - are now granted a positive post-mortem existence compared to their past lives, which were often experienced as ambivalent.

Conclusion

The random survey of grave planting in Dresden cemeteries confirms the widespread custom of decorating graves with floral elements. This practice is popular with men and women of all ages and religious affiliations. For the first time, the study enables more precise distinctions to be made with regard to the depiction of plants on grave markers, the use of plants as temporary grave decorations (such as bouquets, arrangements and wreaths) and the direct planting of graves.

Around a third of the grave markers show floral representations, with the species depicted mostly reflecting symbolic associations due to climatic or organisational reasons. Decidedly Christian plant symbolism is rare; instead, plants such as the vine/grape, rose and palm leaf are used. Ivy, laurel, ginkgo and sunflowers, on the other hand, have more general associations such as connectedness, life or light.

The decoration of grave sites with bouquets, flower arrangements and wreaths varies depending on the season. Bouquets dominate in summer, while wreaths and arrangements are favoured in winter. These serve as an aesthetically pleasing substitute for missing plants during the winter months and are intended to decorate the graves, especially during the traditional month of remembrance in November.

The study shows that the choice of plants for grave planting is often characterised by aesthetic considerations and ease of care. Traditional symbolic associations take a back seat, while the planting is intended to express a lasting relationship with the deceased. Future developments should increasingly consider aspects of sustainability, species protection and adaptation to climate change, as many plants are pre-cultivated at great expense and disposed of after a short time. Nurseries could play a key role here by offering expertise and advice.

Declarations

List of abbreviations: e.g. - exempli gratia; i.e. - id est; y-group - young group; o-group - old group
Ethics approval and consent to participate: This study did not involve the export of any animal or plant material. Information was obtained from the participants. All informants were orally consented.
Consent for publication: All authors have approved the manuscript and agree with its submission to Journal Ethnobotany Research and Applications.
Availability of data and materials: All data are included in the article or in the supplementary materials.
Competing interests: The authors declare that they have no competing interests.
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Author contributions: TL and VL carried out fieldwork, analysed the collected data and drafted the manuscript. Both authors read and approved the final manuscript.

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Supplement 1. Plant species used for graveyard decoration in winter, listed according to the number of citations (NC). Vernacular names in German. Species in bold are mainly used in funeral wreaths, species in grey are weeds.

NC	Species	Vernacular name	Family
249	*Calluna vulgaris* (L.) Hull	Besenheide	Ericaceae
115	*Hedera helix* L.	Efeu	Araliaceae
109	*Abies nordmanniana* (Steven) Spach	Nordmann-Tanne	Pinaceae
106	*Euonymus fortunei* (Turcz.) Hand.-Mazz.	Kriechspindel	Celastraceae
92	*Picea pungens* Engelm.	Blau-, Stechfichte	Pinaceae
89	*Thuja occidentalis* L.	Thuja, Lebensbaum	Cupressaceae
53	*Rosa* spec.	Rose	Rosaceae
50	*Jacobaea maritima* (L.) Pelser & Meijden	Weißfilziges Greiskraut	Asteraceae
49	*Leucophyta brownii* Cass.	Silberkörbchen/Stacheldraht	Asteraceae
34	*Buxus sempervirens* L.	Buchsbaum	Buxaceae
33	*Erica carnea* L.	Schneeheide	Ericaceae
30	*Cyclamen persicum* Mill.	Zimmer-Alpenveilchen	Primulaceae
30	*Heuchera* spec.	Purpurglöckchen	Saxifragaceae
30	*Ruscus aculeatus* L.	Stechender Mäusedorn	Asparagaceae
27	*Gaultheria procumbens* L.	Niedere Scheinbeere	Ericaceae
25	*Luffa aegyptiaca* Mill.	Luffa- Schwamm	Cucurbitaceae
25	*Protea* spec.	Federbusch	Proteaceae
22	*Cotoneaster dammeri* C.K.Schneid.	Teppich-Zwergmispel	Rosaceae
22	*Helleborus niger* L.	Christrose/Nieswurz	Ranunculaceae
20	*Dipsacus sativus* (L.) Honck.	Weberkarde	Caprifoliaceae
20	*Arecaceae*	Fächerpalme	Arecaceae
19	*Begonia × semperflorens-cultorum*	Eis-Begonie	Begoniaceae
18	*Chrysanthemum* spec.	Garten-Chrysantheme	Asteraceae
17	*Limonium sinuatum* (L.) Mill./*L. vulgare Mill.*	gefüllter Strandflieder	Plumbaginaceae
17	*Rhododendron* spec.	Rhododendron	Ericaceae
17	*Taxus baccata* L.	Eibe	Taxaceae
16	*Muehlenbeckia* spec.	Mühlenbeckie	Polygonaceae
15	*Lavandula angustifolia* Mill.	Schmalblättriger Lavendel	Lamiaceae
14	*Erica tetralix* L./ *E. cinerea* L.	Glocken-Heide	Ericaceae
13	*Typha* spec.	Schilfrohr (Rohrkolben)	Typhaceae
13	*Vinca minor* L.	Immergrün	Apocynaceae
12	*Helleborus orientalis* Lam.	Christrose/Nieswurz	Ranunculaceae
12	*Symphoricarpos orbiculatus* Moench	Korallenbeere	Caprifoliaceae
11	*Achillea filipendulina* Lam.	Goldgarbe	Asteraceae
11	*Sedum* spec.	Fetthenne	Crassulaceae
10	*Goniolimon tataricum* (L.) Boiss.	Strandflieder/Meerlavendel	Plumbaginaceae
9	*Juniperus squamata* D.Don	Blauzeder-Wacholder	Cupressaceae
9	*Pachysandra terminalis* Siebold & Zucc.	Japanischer Ysander	Buxaceae
9	*Pinus* spec.	Kiefer	Pinaceae
8	*Cotoneaster atropurpureus* ´Variegatus´	Zwergmispel	Rosaceae
8	*Cotoneaster horizontalis* Decne.	Fächerzwergmispel	Rosaceae
8	*Santolina decumbens* Mill.	Heiligenblume	Asteraceae
7	*Cynodon dactylon* (L.) Pers.	Gewöhnliches Hundszahngras	Poaceae
7	*Lonicera ligustrina* var. *yunnanensis* Franch.	Heckenmyrte	Caprifoliaceae
7	*Viola × wittrockiana* Gams	Garten-Stiefmütterchen	Violaceae

6	*Cotoneaster microphyllus* Wall. ex Lindl.	Kleinblättrige Zwergmispel	Rosaceae
6	*Veronica × andersonii* Hérincq	Strauchveronika	Plantaginaceae
6	*Hydrangea macrophylla* (Thunb.) Ser.	Gartenhortensie	Hydrangeaceae
6	*Ilex aquifolium* L.	Stechpalme	Aquifoliaceae
6	*Pelargonium* spec.	Pelargonie	Geraniaceae
6	*Sempervivum* spec.	Hauswurz	Crassulaceae
6	*Waldsteinia ternata* Fritsch, *W. geoides* Willd.	Gelapptblättrige Waldsteinie	Rosaceae
5	*Cotoneaster* spec.	Zwergmispel	Rosaceae
5	*Cotoneaster × suecicus*	(schwedische) Zwergmispel	Rosaceae
5	*Festuca glauca* Vill.	Blauschwingel	Poaceae
5	*Microbiota decussata* Kom.	Sibirischer Zwerg-Lebensbaum	Cupressaceae
4	*Chamaecyparis lawsoniana* Parl.	Hinoki-Scheinzypresse	Cupressaceae
4	*Juniperus chinensis* L.	Chinesischer Wacholder	Cupressaceae
4	*Berberis aquifolium* Pursh	gewöhnliche Mahonie	Berberidaceae
4	*Phedimus spurius* (M.Bieb.) 't Hart	Kaukasische Fetthenne	Crassulaceae
4	*Picea omorika* (Pančić) Purk.	Serbische Fichte	Pinaceae
4	*Primula vulgaris* Huds.	Erdprimel	Primulaceae
4	*Salix caprea* L.	Weidenkätzchen	Salicaceae
4	*Skimmia japonica* Thunb.	Japanische Blütenskimmie	Rutaceae
4	*Symphyotrichum* spec.	Herbstaster	Asteraceae
3	*Bergenia* spec.	Bergenie	Saxifragaceae
3	*Cladonia rangiferina* (L.) Weber ex F.H.Wigg.	Rentier-Flechte	Cladoniacae
3	× *Hesperotropsis leylandii* (A.B.Jacks. & Dallim.)	Bastardzypresse	Cupressaceae
3	*Euonymus japonicus* Thunb.	Japanischer Spindelstrauch	Celastraceae
3	*Euphorbia pulcherrima* Willd. ex Klotzsch	Weihnachtsstern	Euphorbiaceae
3	*Hydrangea* spec.	Hortensie	Hydrangeaceae
3	*Juniperus horizontalis* Moench	kriechende Wacholder	Cupressaceae
3	*Kalanchoe blossfeldiana* Poelln.	Flammendes Käthchen	Crassulaceae
3	*Leucanthemum × superbum* (Bergmans ex *J.W.Ingram*)	Garten-Margerite	Asteraceae
3	*Phlox subulata* L.	Moos-Phlox	Polemoniaceae
3	*Picea abies* (L.) H.Karst.	Gemeine Fichte	Pinaceae
3	*Pieris japonica* (Thunb.) D.Don ex G.Don	Japanische Lavendelheide	Ericaceae
2	*Alchemilla mollis* (Buser) Rothm.	Weicher Frauenmantel	Rosaceae
2	*Brunnera macrophylla* (Adams) I.M.Johnst.	Kaukasusvergissmeinnicht	Boraginaceae
2	*Calendula officinalis* L.	Garten-Ringelblume	Asteraceae
2	*Carex morrowii* Boott	Japanische Segge	Cyperaceae
2	*Chelidonium majus* L.	Schöllkraut	Papaveraceae
2	*Cuphea hyssopifolia* Kunth	Scheinmyrthe/Falsches Heidekraut	Lytraceae
2	*Dasiphora fruticosa* (L.) Rydb.	Echtes Strauchfingerkraut	Rosaceae
2	*Dianthus caryophyllus* L.	Garten-Nelke	Caryophyllaceae
2	*Geranium pusillum* L.	Kleiner Strorchschnabel	Geraniaceae
2	*Geum urbanum* L.	Echte Nelkwurz	Rosaceae
2	*Hypochaeris glabra* L.	Kahles Ferkelkraut	Asteraceae
2	*Juniperus communis* L.	Gemeiner Wacholder	Cupressaceae
2	*Lamium hybridum* Vill.	Bastard-Taubnessel	Lamiaceae
2	*Lonicera ligustrina* Wall.	Immergrüne Kriech-Heckenkirsche	Caprifoliaceae
2	*Malus* spec.	Zierapfel	Rosaceae
2	*Malva sylvestris* L.	Wilde Malve	Malvaceae
2	*Myosotis sylvatica* Ehrh. ex Hoffm.	Wald-Vergissmeinnicht	Boraginaceae

2	*Nelumbo nucifera* Gaertn.	Lotusfrucht	Nelumbonaceae
2	*Lonicera xylosteum* L.	Rote Heckenkirsche	Caprifoliaceae
2	*Ophiopogon japonicus* (Thunb.) Ker Gawl.	Japanischer Schlangenbart	Asparagaceae
2	*Paeonia* spec.	Pfingstrose	Paeoniaceae
2	*Prunus* L.	Kirschlorbeer	Rosaceae
2	*Salix repens* L.	Kriechweide	Salicaceae
2	*Sanvitalia procumbens* Lam.	Husarenknopf	Asteraceae
2	*Sterculia* spec.	Landlotus	Malvaceae
1	*Abelia × grandiflora* (Rovelli ex André) Rehder	großblütige abelie	Caprifoliaceae
1	*Alchemilla conjuncta* Bab.	Verwachsener Frauenmantel	Rosaceae
1	*Amaryllis* spec.	Amaryllis	Amaryllidaceae
1	*Avenella flexuosa* (L.) Drejer	Draht-Schmiele	Poaceae
1	*Begonia boliviensis* A.DC.	Hängebegonie	Begoniaceae
1	*Bellis perennis* L.	Gänseblümchen	Asteraceae
1	*Berzelia albiflora* (E.Phillips) Class.-Bockh. & *E.G.H.Oliv.*	Brunia	Bruniaceae
1	*Campanula cochleariifolia* Lam.	Zwerg-Glockenblume	Campanulaceae
1	*Campanula poscharskyana* Degen	Hängepolster-Glockenblume	Campanulaceae
1	*Chamaecyparis obtusa* (Siebold & Zucc.) Endl.	Feuerscheinzypresse	Cupressaceae
1	*Hesperocyparis macrocarpa* (Hartw.) Bartel	Monterey-Zypresse	Cupressaceae
1	*Dryopteris filix-mas* (L.) Schott	Wurmfarn	Polypodiaceae
1	*Empetrum nigrum* L.	Schwarze Krähenbeere	Ericaceae
1	*Erica arborea* L.	Baumheide	Ericaceae
1	*Eucalyptus* spec.	Eucalyptusfrüchte	Myrtaceae
1	*Euphorbia characias* L.	Palisaden-Wolfsmilch	Euphorbiaceae
1	*Fuchsia magellanica* Lam.	Scharlach-Fuchsie	Onagraceae
1	*Gazania* spec.	Gazanie	Asteraceae
1	*Geranium cinereum* Cav.	Grauer Storchenschnabel	Geraniaceae
1	*Veronica armstrongii* Johnson ex J.B.Armstr.	Strauchveronika	Plantaginaceae
1	*Veronica cupressoides* Hook.f.	Strauchveronika	Plantaginaceae
1	*Hylotelephium telephium* (L.) H.Ohba	Große Fetthenne	Crassulaceae
1	*Hypericum androsaemum* L.	Blut-Johanniskraut	Hypericaceae
1	*Ilex verticillata* (L.) A.Gray	Amerikanische Winterbeere	Aquifoliaceae
1	*Impatiens walleriana* Hook.f.	Fleißiges Lieschen	Balsaminaceae
1	*Iris* spec.	Schwertlilie	Iridaceae
1	*Juniperus sabina* L.	Sadebaum	Cupressaceae
1	*Leontopodium nivale* (Ten.) A.Huet ex Hand.-*Mazz.*	Alpen-Edelweiß	Asteraceae
1	*Leucophyllum frutescens* (Berland.) I.M.Johnst.	Texas Silberblatt	Scrophulariaceae
1	*Lonicera ligustrina* var. *pileata* (Oliv.) Franch.	Böschungsmyrte	Caprifoliaceae
1	*Myrica gale* L.	Gagelstrauch	Myricaceae
1	*Phillyrea latifolia* L.	Breitblättrige Steinlinde L.	Oleaceae
1	*Alkekengi officinarum* Moench	Lampionblume	Solanaceae
1	*Picea laxa* (Münchh.) Sarg.	Zuckerhut-Fichte	Pinaceae
1	*Picea rubens* Sarg.	Rotfichte	Pinaceae
1	*Pyracantha coccinea* M.Roem.	Feuerdorn	Rosaceae
1	*Salvia rosmarinus* Spenn.	Rosmarin	Lamiaceae
1	*Rumex acetosa* L.	Sauerampfer	Polygonaceae
1	*Saxifraga paniculata* Mill.	Rispen-Steinbrech	Saxifragaceae
1	*Saxifraga rotundifolia* L.	rundblättriger Steinbrech	Saxifragaceae
1	*Senecio elegans* L.	Zierliches Greiskraut	Asteraceae

1	*Solanum laxum* Spreng.	Jasminblütiger Nachtschatten	Solanaceae
1	*Tanacetum parthenium* (L.) Sch.Bip.	Mutterkraut	Asteraceae
1	*Trifolium pratense* L.	Wiesenklee	Fabaceae