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Ornamental perennials in small rural settlements: a case study from the Czech Republic

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Abstract: The history of a site includes not only preserved historical buildings, but also areas with an assortment of plants, which have been preserved for many years. Rural settlements make up 80% of all the municipalities in the Czech Republic, with greenery covering 50–70% of their area. There are dominant trees and shrubs and an herb layer. The herb layer has high species diversity and species typical of the area, but at the same time, its long-term survival is in jeopardy. The continuity of rural settlements has been disturbed since the second half of the 20th century. Rural spaces often become uniform and impersonal, without links to the surrounding countryside, traditions, and history. This study included a total of 124 perennial families within three studied regions.

Keywords: rural landscape; plants; local identity; suburbanisation; Central Europe

The cultural landscape and its particular features have become appreciated as common components of human heritage (Lowenthal 2007). Several tools for the identification of historical and cultural landscape values have been developed (Šantrůčková, Weber 2016). A typical plant community structure and traditional plants contribute to the regional identity of the local people (Chromý et al. 2014). Traditional plant varieties are important not only for local history, but also for their ecological value. Traditional plants are native or acclimatised and protect the genetic diversity (Camacho Villa et al. 2006). Fruit trees are the most studied group because of their economic value and long life (Zeven 1998; Kellerhals et al. 2012), but the diversity of perennial and annual plants has also increased. This diversity is now endangered by the uniform production of big plant nurseries (Camacho Villa et al. 2006). The aim of this study is to complete this information for perennials to expand the findings on village greenery. The focus of this paper is on the traditional perennial plants in the Bohemian and Moravian countryside. Both private and public spaces are highly variable; mainly, we focused on private front gardens, gardens and central green public spaces. The question is, which perennials are typical for the Czech countryside and if there are regional differences according to the natural conditions (Kendal et al. 2012).

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MATERIAL AND METHODS

Study areas. The research was focused on rural areas in the Czech Republic (Chromý et al. 2011). Three different study areas, which are sufficiently far apart within the Czech Republic (Figure 1), were chosen based on their natural and social conditions (Perlín et al. 2010; Jančák et al. 2008).

The traditional Bohemian countryside is represented by the area **Čertovo břemeno** (Devil's Burden) within the borders of the Central Bohemia and South Bohemia regions. Čertovo břemeno is a hilly landscape created by granite with many boulders, the annual average temperature is approximately 7 °C, and the annual average precipitation is between 600–700 mm (Quitt 1971). The potential natural vegetation is *Luzulo albidae-Quercetum*, *Luzulo-Fagetum* and *Tilio cordatae-Fagetum* (Mikyška et al. 1968). The settlements are generally small, and the number of inhabitants has continuously decreased in comparison to the cities outside the study area.

The second study area represents the Moravian countryside, north of the Moravian metropolis Brno. The area is named **Moravský kras** (Moravian Karst). The landscape is hilly with limestone and a typical karst relief. The climate is moderate with an annual average temperature of approximately 7 °C and an annual average precipitation of 550–650 mm (Quitt 1971). The potential natural vegetation is (from the lowest to highest elevation from sea level) *Melampyro nemorosi-Carpinetum*, *Carici pilosae-Carpinetum*, *Carici pilosae-Fagetum*, *Luzulo-Fagetum*, and *Melico-Fagetum*. The vegetation of the karst valleys is full of *Aceri-Carpinetum, Lunario-Aceretum, Mercuriali-Fraxinetum, Scolopendrio-Fraxinetum, Pruno mahaleb-Quercetum pubescentis,* and *Corno-Quercetum* (Mikyška et al. 1968). The settlement, as well as the number of inhabitants, is stable or slightly increasing, mainly in the southern part which is within the suburbs of Brno.

The third area, called **České středohoří** (Czech Middle Mountains), is located in Northern Bohemia and represents a traditional, but disrupted, countryside area. The relatively flat relief of the Czech plateau was created by sandstone changes in the north to a hilly landscape with volcanic cones. The climate is warm and moderate with an annual average temperature of 6–8.5 °C and an annual average precipitation of 550–700 mm (Quitt 1971). The potential natural vegetation is *Pruno-Fraxinetum*, *Querco-Populetum*, *Melampyro nemorosi-Carpinetum* and *Dentario enneaphylli-Fagetum* (Mikyška et al. 1968). The continuity of the study area was disrupted after the Second World War; the German inhabitants left their houses and new Czech inhabitants came from different parts of Czechoslovakia. The displacement of the inhabitants profoundly affected the local memory and traditions.

Data collection. The basis of this research was a long-term field study, which was initiated after all the available materials for each area, e.g., field maps, information about the settlement, including their history, social and natural conditions,

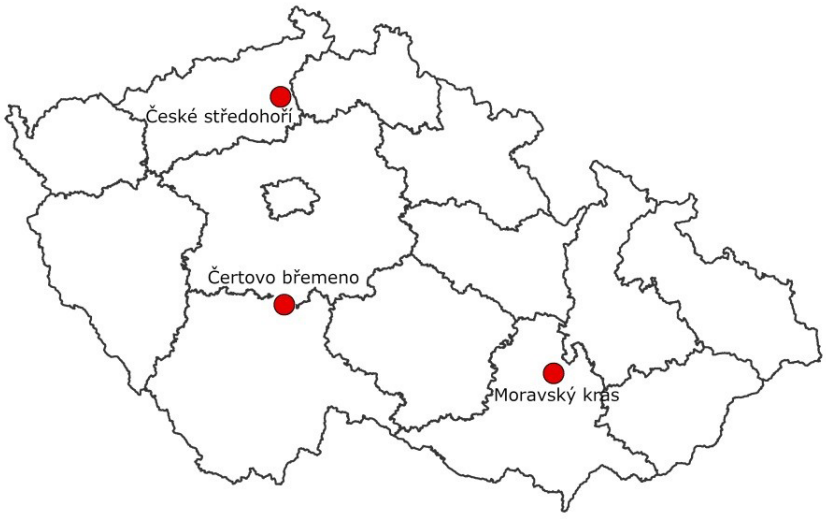

Figure 1. Locations of the studies areas: Čertovo břemeno (Devil´s Burden), Moravský kras (Moravian Karst), České středohoří (Czech Middle Mountains)

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were gathered. The field study was key for obtaining accurate data for this study and was conducted in all 76 settlements in the three study areas. All the settlements in the studied areas were visited three times during the growing season, namely, spring, early summer and late summer up to early autumn. Three visits are the minimum number required to properly identify the taxa of the perennials. However, it was not possible to reliably determine all the taxa. In particular, these were species that spontaneously outcross with each other, for example, members of the genus *Aster* L. and *Phlox paniculata* L., so that the next generation of these plants did not have the characteristics of their original parents. Eventually, genera with very similar varieties, such as *Iris* L., *Paeonia* L., *Leucanthemum* L. and so on, became difficult to distinguish. The plants were recorded in publicly accessible areas, front gardens and visible private gardens. Therefore, it was not always possible to reliably determine the taxa from a distance, so some of the records included only the families. Closed courtyards or inaccessible places were not studied. The nomenclature of the plants has been unified according to the international standard, the internationally renowned "List of Names of Perennials" (Hoffman 2016). In this paper, the old nomenclature of the genus *Aster* L., currently divided into eleven new genera as *Symphiotrium* Nees, *Eurybia* (Cass.) S.F. Gray, etc., were used for simplicity.

Data analysis. The data were compared and analysed using statistical methods. The occurrence of the individual taxa has been recorded according to the frequency of occurrence at the site (1 – present / 0 – absent). To compare the data, important monitored factors (the monitored study area and plant taxa) were selected and were statistically evaluated by the t-test for independent samples. The significance level was set to $P = 0.05$. The *t*-test compared the statistically significant differences between the measured values of the monitored groups (parameters). For the *t*-test, the statistics program Statistika 12 was used.

RESULTS AND DISCUSSION

In total, 124 genera of ornamental perennials were identified, which were found in all three studied regions. The frequency of the occurrence of the individual genera in the given regions was determined, and this frequency was compared among the regions. For the three different locations, the following genera of perennials were uniformly prevalent (Table 1): *Paeonia* (*P. lactiflora* Pall.), *Phlox* (especially *Phlox paniculata* L., with *P. subu-*

Table 1. Frequency of individual perennial genera for all regions. The 1% of genera, which were most often found in the studied localities

Plant name	Total frequency	Representation of taxa
Paeonia L.	61	4.34%
Phlox L.	61	4.34%
Iris L.	59	4.20%
Hemerocallis L.	54	3.84%
Lilium L.	51	3.63%
Bergenia Moench	41	2.92%
Leucanthemum Mill.	39	2.77%
Hosta Tratt.	37	2.63%
Aquilegia L.	35	2.49%
Yucca L.	35	2.49%
Lysimachia L.	34	2.42%
*Sedum L. (*incl. *genus Hylotelephium* H.Ohba)	33	2.35%
Centaurea L.	29	2.06%
Aster L.	27	1.92%
Asparagus L.	26	1.85%
Heliopsis Pers.	26	1.85%
Lavandula L.	25	1.78%
Lychnis L.	25	1.78%
Cerastium L.	24	1.71%
Dicentra Bernh.	24	1.71%
Rudbeckia L. not Adans.	23	1.64%
Chrysanthemum L.	22	1.56%
Dianthus L.	21	1.49%
Convallaria L.	20	1.42%
Heuchera L.	19	1.35%
Stachys L.	19	1.35%
Campanula L.	18	1.28%
Achillea L.	17	1.21%
Delphinium L.	17	1.21%
Echinacea Moench	17	1.21%
Gypsophila L.	17	1.21%
Anaphalis DC.	16	1.14%
Erigeron L.	15	1.07%
Salvia L.	15	1.07%
Aruncus L.	14	1.00%
Papaver L.	14	1.00%

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lata L. in the minority), and *Iris* (*I.* × *barbata* hort., *I.* × *germanica* L., *I. sibirica* L., *I. spuria* L., and *I. pseudacorus* L.). High frequencies (up to 2% of the total number of perennials) were also found for the genera *Hemerocallis* (*H.* sp., *H. fulva* (L.) L., and *H. lilioasphodelus* L.), *Lilium* (*L.* sp., *L. candidum* L., *L. martagon* L., and *L. bulbiferum* L.), *Bergenia* (*B.* sp.), *Leucanthemum* (*L.* × *superbum* (Bergmans ex J.W. Ingram) D.H. Kent and *L. vulgare* (Vaill.) Lam)), *Hosta* (*H.* sp.), *Aquilegia* (*A. vulgaris* L.), *Yucca* (*Y. fillamentosa* L.), *Lysimachia* (*L. punctata* L.), *Sedum* (*Hylotelephium telephium* (L.) H. Ohba, *Sedum spurium* M. Bieb., *S.* sp., and *Sedum sexangulare* L.), and *Centaurea* (*C. montana* L., *C. dealbata* Willd., and *C. macrocephala* Muss. Puschk. ex Willd.). These species were very universal, without specific requirements, and, thus, create authenticity for the Czech villages.

Nevertheless, each area had its own specifics. Although there were many species which were the same for the studied regions, there were also species whose representation varied between regions. From the above results, it was also possible to infer which genera were restricted to a particular region and its natural conditions (Table 2). For Čertovo břemeno (Devil´s Burden), the following genera did not occur elsewhere: Polygonum Mill., Symphytum L., Trollius L., Dryopteris Adans., Valer*iana* L., *Saponaria* L., *Telekia* Baumg., *Lamium* L., *Polemonium* L., and so on. For the Moravský kras (Moravian Karst) location, examples of uniquely occurring genera included: *Solidago* L. not Mill., *Dictamnus* L., *Epimedium* L., *Helianthemum* Mill., *Inula* L., *Acanthus* L., *Anthericum* L., *Ceratostigma* Bunge, and others. The České středohoří (Czech Middle Mountains) area differed from the others in these specific genera: *Asclepias* L., *Tragopogon* L., *Aubrieta* Adans., *Phjopsis* (Trin.) Hook. f. ex B.D. Jacks, *Satureja* L. and so on.

Despite the different natural conditions, which are mainly influenced by the geological subsoil and high variation in the local topography, the variability of the families of perennials in each area (Czech Middle Mountains, Devil´s Burden, and Moravian Karst) compared with a t-test was not significantly different. The variability of the taxa of the perennials was comparable among the regions. Despite the small taxonomic differences in the individual regions shown in Table 2, the list of genera in Table 1 (classified to the species within the genera) represents the typical rural assortment of perennials for gardens, front gardens and public areas in the studied regions.

DISCUSSION

The results of this study confirmed the occurrence of the large numbers of species that are generally reported for the Czech Republic (Pergl et al. 2016). The three most common genera, namely, *Paeonia* L., *Phlox* L and *Iris* L, are traditionally used long-lived perennials (Köhlein, 2005). These genera have also been abundantly cultivated for centuries, so that hundreds of varieties are now known (Zerling 2007; Kingsbury 2016).

The fourth most frequently cultivated genus is *Hemerocallis* L., mostly represented by the species *H. fulva* (L.) L. This species is a very unassuming, long-lived perennial, which is massive, easily divided and has bright flowers. The fifth most frequently occurring genus is *Lilium* L.. Lilies are traditional flowers grown worldwide (Hobhouse 1992; Zerling 2007) and also have bright, big blooms. Our results also support the contention that an important feature of the ornamental flora is the high proportion of the species occurring at low frequencies (Pergl et al. 2016). However, some regional differences could be seen in the frequency and representation of the perennials in the study areas. The frequency, representation and the total amount of taxa used in České středohoří (Czech Middle Mountains) differed from those in Čertovo břemeno (Devil's Burden) and Moravský kras (Moravian Karst) (Table 2). Furthermore, 97 taxa were found in Čertovo břemeno (Devil's Burden) and Moravský kras (Moravian Karst), but only 76 taxa were found in České středohoří (Czech Middle Mountains). The frequency and representation of the most often used perennials were highest in Čertovo břemeno (Devil's Burden) (twelve taxa represent more than 1%), followed by Moravský kras (Moravian Karst) (five taxa represent more than 1%) and České středohoří (Czech Middle Mountains) (only one taxon represents more than 1%).

According to Kendal et al. (2012), the difference in the mean annual temperature was the most significant variable related to the dissimilarity of the cultivated plants. Despite selecting the study areas from different temperature zones (Quitt 1971), the difference in the annual temperatures was only 2 °C. This difference is too small to influence the cultivated perennials.

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Table 2. Total representation of genera broken down by studied regions

Plant name	Čertovo břemeno (Devil´s Burden)			Plant name	České středohoří (Czech Middle Mountains)			Plant name	Moravský kras (Moravian Karst)		
	Occurence frequency	Represented taxa (%)	Represented taxa in the region		Occurence frequency	Represented Taxa (%)	Represented taxa in the region (%)		Occurence frequency	Represented taxa (%)	Represented taxa in the region (%)
Phlox L.	32	2.28%	52.46%	*Iris* L.	14	1.00%	23.73%	*Phlox* L.	21	1.49%	34.43%
Paeonia L.	29	2.06%	47.54%	*Sedum* L.	13	0.92%	39.39%	*Paeonia* L.	19	1.35%	31.15%
Lilium L.	28	1.99%	54.90%	*Hemerocallis* L.	13	0.92%	24.07%	*Iris* L.	18	1.28%	30.51%
Iris L.	27	1.92%	45.76%	*Paeonia* L.	13	0.92%	21.31%	*Hemerocallis* L.	16	1.14%	29.63%
Hemerocallis L.	25	1.78%	46.30%	*Cerastium* L.	11	0.78%	45.83%	*Bergenia* Moench	15	1.07%	36.59%
Aquilegia L.	21	1.49%	60.00%	*Lysimachia* L.	11	0.78%	32.35%	*Aquilegia* L.	13	0.92%	37.14%
Leucanthemum Mill.	20	1.42%	51.28%	*Yucca* L.	11	0.78%	31.43%	*Gypsophila* L.	12	0.85%	70.59%
Hosta Tratt.	19	1.35%	51.35%	*Lilium* L.	11	0.78%	21.57%	*Rudbeckia* L. not Adans.	12	0.85%	52.17%
Bergenia Moench	19	1.35%	46.34%	*Centaurea* L.	10	0.71%	34.48%	*Aster* L.	12	0.85%	44.44%
Asparagus L.	16	1.14%	61.54%	*Lavandula* L.	9	0.64%	36.00%	*Leucanthemum* L.	12	0.85%	30.77%
Lysimachia L.	15	1.07%	44.12%	*Phlox* L.	8	0.57%	13.11%	*Lilium* L.	12	0.85%	23.53%
Heliopsis Pers.	14	1.00%	53.85%	*Salvia* L.	7	0.50%	46.67%	*Sedum* L.	11	0.78%	33.33%
Cerastium L.	13	0.92%	54.17%	*Hosta* Tratt.	7	0.50%	18.92%	*Yucca* L.	11	0.78%	31.43%
Yucca L.	13	0.92%	37.14%	*Leucanthemum* Mill.	7	0.50%	17.95%	*Hosta* Tratt.	11	0.78%	29.73%
Lychnis L.	12	0.85%	48.00%	*Bergenia* Moench	7	0.50%	17.07%	*Cerastium* L.	10	0.71%	90.91%
Aster L.	12	0.85%	44.44%	*Heuchera* L.	6	0.43%	31.58%	*Dianthus* L.	10	0.71%	47.62%
Chrysanthemum L.	11	0.78%	50.00%	*Stachys* L.	6	0.43%	31.58%	*Chrysanthemum* L.	10	0.71%	45.45%
Centaurea L.	11	0.78%	37.93%	*Dianthus* L.	6	0.43%	28.57%	*Anaphalis* DC.	9	0.64%	56.25%
Aruncus L.	9	0.64%	64.29%	*Dicentra* Bernh.	6	0.43%	25.00%	*Achillea* L.	9	0.64%	52.94%
Delphinium L.	9	0.64%	52.94%	*Lychnis* L.	6	0.43%	24.00%	*Heuchera* L.	9	0.64%	47.37%
Dicentra Bernh.	9	0.64%	37.50%	*Oenothera* L.	5	0.36%	45.45%	*Stachys* L.	9	0.64%	47.37%
Lavandula L.	9	0.64%	36.00%	*Tradescantia* Ruppius	5	0.36%	45.45%	*Convallaria* L.	9	0.64%	45.00%
Sedum L.	9	0.64%	27.27%	*Echinacea* Moench	5	0.36%	29.41%	*Dicentra* Bernh.	9	0.64%	37.50%
Achillea L.	8	0.57%	47.06%	*Campanula* L.	5	0.36%	27.78%	*Coreopsis* L.	8	0.57%	66.67%
Alcea L.	7	0.50%	87.50%	*Convallaria* L.	5	0.36%	25.00%	*Asparagus* L.	8	0.57%	30.77%

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Table 2 to be continued: Total representation of genera broken down by studied regions

Plant name	Čertovo břemeno (Devil´s Burden)			Plant name	České středohoří (Czech Middle Mountains)			Plant name	Moravský kras (Moravian Karst)		
	Occurence frequency	Represented taxa (%)	Represented taxa in the region		Occurence frequency	Represented Taxa (%)	Represented taxa in the region (%)		Occurence frequency	Represented taxa (%)	Represented taxa in the region (%)
Astilbe Buch.-Ham. ex D.Don	7	0.50%	58.33%	*Geranium* L.	4	0.28%	44.44%	*Heliopsis* Pers.	8	0.57%	30.77%
Erigeron L.	7	0.50%	46.67%	*Erigeron* L.	4	0.28%	26.67%	*Centaurea* L.	8	0.57%	27.59%
Anaphalis DC.	7	0.50%	43.75%	*Rudbeckia* L. not Adans.	4	0.28%	17.39%	*Lysimachia* L.	8	0.57%	23.53%
Campanula L.	7	0.50%	38.89%	*Heliopsis* Pers.	4	0.28%	15.38%	*Papaver* L.	7	0.50%	50.00%
Rudbeckia L. not Adans.	7	0.50%	30.43%	*Levisticum* Hill	3	0.21%	75.00%	*Echinacea* Moench	7	0.50%	41.18%
Aconitum L.	6	0.43%	75.00%	*Coreopsis* L.	3	0.21%	25.00%	*Lavandula* L.	7	0.50%	28.00%
Phalaris L.	6	0.43%	75.00%	*Tanacetum* L.	3	0.21%	25.00%	*Lychnis* L.	7	0.50%	28.00%
Lupinus L.	6	0.43%	50.00%	*Delphinium* L.	3	0.21%	17.65%	*Liatris* Gaertn. ex Schreb.	6	0.43%	85.71%
Convallaria L.	6	0.43%	30.00%	*Aster* L.	3	0.21%	11.11%	*Physalis* L.	6	0.43%	60.00%
Limonium Mill.	5	0.36%	83.33%	*Asclepias* L.	2	0.14%	100.00%	*Tanacetum* L.	6	0.43%	50.00%
Digitalis L.	5	0.36%	55.56%	*Tragopogon* L.	2	0.14%	100.00%	*Campanula* L.	6	0.43%	33.33%
Oenothera L.	5	0.36%	45.45%	*Linum* L.	2	0.14%	66.67%	*Gaillardia* Foug.	5	0.36%	83.33%
Vinca L.	5	0.36%	45.45%	*Sempervivum* L.	2	0.14%	66.67%	*Helenium* L. not Mill.	5	0.36%	83.33%
Papaver L.	5	0.36%	35.71%	*Lunaria* L.	2	0.14%	50.00%	*Vinca* L.	5	0.36%	45.45%
Echinacea Moench	5	0.36%	29.41%	*Thymus* L.	2	0.14%	50.00%	*Lupinus* L.	5	0.36%	41.67%
Dianthus L.	5	0.36%	23.81%	*Pulsatilla* Mill.	2	0.14%	33.33%	*Aruncus* L.	5	0.36%	35.71%
Dryopteris Adans.	4	0.28%	100.00%	*Helleborus* L.	2	0.14%	28.57%	*Salvia* L.	5	0.36%	33.33%
Valeriana L.	4	0.28%	100.00%	*Platycodon* A.DC.	2	0.14%	28.57%	*Delphinium* L.	5	0.36%	29.41%
Solidago L. not Mill.	4	0.28%	66.67%	*Origanum* L.	2	0.14%	25.00%	*Solidago* L.	4	0.28%	100.00%
Helleborus L.	4	0.28%	57.14%	*Phalaris* L.	2	0.14%	25.00%	*Anemone* L.	4	0.28%	57.14%
Gypsophila L.	4	0.28%	23.53%	*Euphorbia* L.	2	0.14%	22.22%	*Euphorbia* L.	4	0.28%	44.44%
Heuchera L.	4	0.28%	21.05%	*Papaver* L.	2	0.14%	14.29%	*Astilbe* Buch.-Ham. ex D.Don	4	0.28%	33.33%
Stachys L.	4	0.28%	21.05%	*Asparagus* L.	2	0.14%	7.69%	*Erigeron* L.	4	0.28%	26.67%
Saponaria L.	3	0.21%	100.00%	*Aubrieta* Adans.	1	0.07%	100.00%	*Armoracia* G.Gaertn., B.Mey. & Scherb.	3	0.21%	60.00%

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Table 2 to be continued: Total representation of genera broken down by studied regions

Plant name	Čertovo břemeno (Devil´s Burden)			Plant name	České středohoří (Czech Middle Mountains)			Plant name	Moravský kras (Moravian Karst)		
	Occurence frequency	Represented taxa (%)	Represented taxa in the region		Occurence frequency	Represented Taxa (%)	Represented taxa in the region (%)		Occurence frequency	Represented taxa (%)	Represented taxa in the region (%)
Telekia Baumg.	3	0.21%	100.00%	*Cichorium* L.	1	0.07%	100.00%	*Monarda* L.	3	0.21%	60.00%
Pulmonaria L.	3	0.21%	75.00%	*Melissa* L.	1	0.07%	100.00%	*Doronicum* L. sp.	3	0.21%	42.86%
Miscanthus Andersson	3	0.21%	60.00%	*Phujopsis* (Trin.) Hook.f. ex B.D.Jacks	1	0.07%	100.00%	*Origanum* L.	3	0.21%	37.50%
Anemone L.	3	0.21%	42.86%	*Satureja* L.	1	0.07%	100.00%	*Digitalis* L.	3	0.21%	33.33%
Doronicum L.	3	0.21%	42.86%	*Eremurus* M.Bieb.	1	0.07%	50.00%	*Geranium* L.	3	0.21%	33.33%
Platycodon A.DC.	3	0.21%	42.86%	*Hieracium* L.	1	0.07%	50.00%	*Tradescantia* Ruppius	3	0.21%	27.27%
Origanum L.	3	0.21%	37.50%	*Iberis* L.	1	0.07%	50.00%	*Dictamnus* L.	2	0.14%	100.00%
Euphorbia L.	3	0.21%	33.33%	*Armeria* Willd.	1	0.07%	33.33%	*Epimedium* L.	2	0.14%	100.00%
Physalis L.	3	0.21%	30.00%	*Hyssopus* L.	1	0.07%	33.33%	*Helianthemum Mill.*	2	0.14%	100.00%
Tradescantia Ruppius	3	0.21%	27.27%	*Lythrum* L.	1	0.07%	25.00%	*Inula* L.	2	0.14%	100.00%
Tanacetum L.	3	0.21%	25.00%	*Mentha* L.	1	0.07%	25.00%	*Alchemilla* L.	2	0.14%	66.67%
Salvia L.	3	0.21%	20.00%	*Pulmonaria* L.	1	0.07%	25.00%	*Physostegia* Benth.	2	0.14%	66.67%
Lamium L.	2	0.14%	100.00%	*Hesperis* L.	1	0.07%	20.00%	*Polygonatum* Mill.	2	0.14%	66.67%
Helianthus L.	2	0.14%	100.00%	*Miscanthus* Andersson	1	0.07%	20.00%	*Rheum* L.	2	0.14%	66.67%
Liatris Gaertn. ex Schreb.	2	0.14%	100.00%	*Primula* L.	1	0.07%	20.00%	*Allysum* L.	2	0.14%	50.00%
Polemonium L.	2	0.14%	100.00%	*Gailardia* Foug.	1	0.07%	16.67%	*Lythrum* L.	2	0.14%	50.00%
Veronica L.	2	0.14%	66.67%	*Solidago* L. not Mill.	1	0.07%	16.67%	*Mentha* L.	2	0.14%	50.00%
Alyssum L.	2	0.14%	50.00%	*Doronicum* L.	1	0.07%	14.29%	*Thymus* L.	2	0.14%	50.00%
Lunaria L.	2	0.14%	50.00%	*Digitalis* L.	1	0.07%	11.11%	*Hesperis* L.	2	0.14%	40.00%
Armoracia G.Gaertn., B.Mey. & Scherb.	2	0.14%	40.00%	*Physalis* L.	1	0.07%	10.00%	*Primula* L.	2	0.14%	40.00%
Hesperis L.	2	0.14%	40.00%	*Vinca* L.	1	0.07%	9.09%	*Pulsatilla* Mill.	2	0.14%	33.33%
Monarda L.	2	0.14%	40.00%	*Astilbe* Buch.-Ham. ex D.Don	1	0.07%	8.33%	*Platycodon* A.DC.	2	0.14%	28.57%
Primula L.	2	0.14%	40.00%	*Lupinus* L.	1	0.07%	8.33%	*Aconitum* L.	2	0.14%	25.00%

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Table 2 to be continued: Total representation of genera broken down by studied regions

Plant name	Čertovo břemeno (Devil´s Burden)			Plant name	České středohoří (Czech Middle Mountains)			Plant name	Moravský kras (Moravian Karst)		
	Occurence frequency	Represented taxa (%)	Represented taxa in the region		Occurence frequency	Represented Taxa (%)	Represented taxa in the region (%)		Occurence frequency	Represented taxa (%)	Represented taxa in the region (%)
Pulsatilla Mill.	2	0.14%	33.33%	*Gypsophila* L.	1	0.07%	5.88%	*Acanthus* L.	1	0.07%	100.00%
Geranium L.	2	0.14%	22.22%	*Chrysanthemum* L.	1	0.07%	4.55%	*Anthericum* L.	1	0.07%	100.00%
Anthemis L.	1	0.07%	100.00%	*Aquilegia* L.	1	0.07%	2.86%	*Ceratostigma* Bunge	1	0.07%	100.00%
Asphodeline Rchb.	1	0.07%	100.00%					*Corydalis* DC.	1	0.07%	100.00%
Eranthis Salisb.	1	0.07%	100.00%					*Hypericum* L.	1	0.07%	100.00%
Geum L.	1	0.07%	100.00%					*Ligularia* Cass.	1	0.07%	100.00%
Polygonum L.	1	0.07%	100.00%					*Nepeta* L.	1	0.07%	100.00%
Symphytum L.	1	0.07%	100.00%					*Potentilla* L.	1	0.07%	100.00%
Trollius L.	1	0.07%	100.00%					*Ruta* L.	1	0.07%	100.00%
Echinops L.	1	0.07%	50.00%					*Teucrium* L.	1	0.07%	100.00%
Hieracium L.	1	0.07%	50.00%					*Echinops* L.	1	0.07%	50.00%
Iberis L.	1	0.07%	50.00%					*Eremurus* M.Bieb.	1	0.07%	50.00%
Malva L.	1	0.07%	50.00%					*Malva* L.	1	0.07%	50.00%
Alchemilla L.	1	0.07%	33.33%					*Armeria* Willd.	1	0.07%	33.33%
Armeria Willd.	1	0.07%	33.33%					*Hyssopus* L.	1	0.07%	33.33%
Hyssopus L.	1	0.07%	33.33%					*Linum* L.	1	0.07%	33.33%
Physostegia Benth.	1	0.07%	33.33%					*Sempervivum* L.	1	0.07%	33.33%
Polygonatum Mill.	1	0.07%	33.33%					*Veronica* L.	1	0.07%	33.33%
Rheum L.	1	0.07%	33.33%					*Levisticum* Hill	1	0.07%	25.00%
Lythrum L.	1	0.07%	25.00%					*Miscanthus* Anders-son	1	0.07%	20.00%
Mentha L.	1	0.07%	25.00%					*Limonium* Mill.	1	0.07%	16.67%
Helenium L. not Mill.	1	0.07%	16.67%					*Solidago* L. not Mill.	1	0.07%	16.67%
Liatris Gaertn. ex Schreb.	1	0.07%	14.29%					*Helleborus* L.	1	0.07%	14.29%
Cerastium L.	1	0.07%	9.09%					*Alcea* L.	1	0.07%	12.50%
Coreopsis L.	1	0.07%	8.33%					*Oenothera* L.	1	0.07%	9.09%

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CONCLUSION

Many locations and their historical value have lost, i.e., a lack of memories and connection with the past; so, the variety of the species of typical ornamental plants have slowly disappeared when the plants have not been transmitted from one generation of residents to the next. However, these plants are the basis for creating the picturesque landscape and identity of rural villages. The results of this research have clearly demonstrated what genera and, in particular, what species of persistent ornamental perennials are creating this identity. For the three different regions, we can determine which species are the most representative in all the regions and create an identity for the image of rural greenery within the Czech Republic. These results imply that landscape architecture should pay attention to the development of gardens, front-gardens and public spaces, so that these rural spaces will continuously be planted by perennial species which create the unique character of the Czech countryside.

REFERENCES

Camacho Villa T.C., Maxted N., Scholten M., Ford-Lloyd B. (2006): Defining and identifying crop landraces. Plant Genetic Resources, 3: 373–384.

Chromý P., Jančák V., Marada M., Havlíček T. (2011): Venkov – žitý prostor: regionální diferenciace percepce venkova představiteli venkovských obcí v Česku. Geografie, 116: 23–45.

Chromý P., Semian M., Kučera Z. (2014): Regional Awareness and Regional Identity in Czechia: Case Study of the Bohemian Paradise. Geografie, 119: 259–277.

Hobhouse P. (1992): Plants in Garden History. London, Pavilion Books Limited.

Hoffman, M.H.A (2016): List of names of Perennials. International Standard 2016–2020. Naktuinbouw, Roelofarendsveen.

Jančák V., Havlíček T., Chromý P., Marada M. (2008): Regional differentiation of selected conditions for the development of human and social capitol in Czechia. Geografie, 113: 269–284.

Kellerhals M., Szalatnay D., Hunziker K., Duffy B., Nybom H., Ahmadi-Afzadi M., Höfer M., Richter K., Lateur M. (2012): European pome fruit genetic resources evaluated for disease resistence. Trees 26: 179–189.

Kendal D., Williams N.C.G., Williams K.J.H. (2012): A cultivated environment: Exploring the global distribution of plants in gardens, parks and treetscapes. Urban Ecosystems, 15: 637–652.

Kingsbury N. (2016): Garden Flora. The Natural and Cultural History of the Plants in Your Garden. Oregon, Timber Press.

Köhlein F. (2005): Dauerhafte Garten durch langlebige Stauden. Obst und Gartenbauverlag. München.

Lowenthal D. (2007): Living with and looking at landscape. Landscape Research, 32: 635–656.

Pergl J., Sádlo J., Petřík P., Danihelka, J., Chrtek J., Hejda1 M., Moravcová L., Perglová I., Štajerová K., Pyšek P. (2016): Dark side of the fence: ornamental plants as a source of wild-growing flora in the Czech Republic. Preslia, 88: 163–184.

Perlín R., Kučerová S., Kučera Z. (2010): Typologie venkovského prostoru Česka. Geografie, 115: 161–187.

Quitt E. (1971): Klimatické oblasti Československa. Studia Geographica 16. Brno, Geografický ústav ČSAV.

Šantrůčková M., Weber M. (2016): Identification of values of the designed landscapes: Two case studies from the Czech Republic. In: Agnoletti M., Emanueli F. (eds.), Biocultural Diversity in Europe. Switzerland: Springer: 487–510.

Mikyška R. et al. (1968): Geobotanická mapa ČSSR. Praha, Academia.

Zerling C. (2007): Lexikon der Pflanzensymbolik. München, Synergia.

Zeven A.C. (1998): Landraces: A review of definitions and classifications. Euphytica, 104: 127–139.

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