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HERB GARDEN AS A HARMONIOUS COMBINATION OF AESTHETICS AND RESILIENCE TO CHANGING ENVIRONMENTAL CONDITIONS

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ABSTRACT

Motives: Herb gardens are a valuable part of rural gardens, contributing to the unique look of the countryside. The cultivation of herbs in households has a long tradition. These plants have uses in daily life, and are also visually appealing. Additionally, they are resistant to unfavorable temperature and humidity conditions. The herb garden, which is part of the household garden, undoubtedly enriches the rural landscape.
Aim: The main purpose of the article was to develop a model design solution for a herb garden in a layout with an ornamental function, and then to analyze the implementation possibilities of the herb garden on the example of the village of Świekatowo.
Results: Pre-design studies in the form of greenery and surface shading analysis revealed several potential locations for it on the property, among which a site in front of a residential building was chosen. The design of the herb garden's layout was based on the geometric form practiced in the past, dividing the space into sections for different herbs. More than 20 species of herbaceous plants were proposed, employing container growing techniques. Taking into account the variable spatial conditions of households, the study demonstrated a high implementation potential for the herb garden in the village of Świekatowo.

Keywords: gardening, herb garden, village garden, rural space, cultural landscape, landscape architecture

INTRODUCTION

The Polish countryside is constantly changing, and gardens are an integral part of these transformations. New trends in green space development are emerging and have a direct impact on the appearance and atmosphere of rural properties. Although these changes may seem minor, they are significantly altering the overall rural landscape. Traditional flower gardens are increasingly being replaced by coniferous trees and shrubs surrounded by manicured lawns (Dudkiewicz et al., 2014). The difference between current gardens and those of the past is large (Uruszczak, 2012). In an era of growing environmental awareness and interest in healthy living, rural herb gardens that are part of a rustic garden are gaining

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importance both in terms of utility and aesthetics. Herb gardens, for centuries have been an indispensable part of the rural landscape. Even today, they play an important role in providing access to fresh, aromatic herbs that are used not only in cooking, but also in natural medicine and cosmetics. It is even assumed that country gardens have their origins in the Middle Ages, where they were originally intended to grow medicinal or spice plants such as rue (*Ruta* L.), mint (*Mentha* L.) and others, accompanied by vegetables (Kapczyńska et al., 2005). When designing green spaces, it is essential to consider the environmental conditions in which they will function. National-level research on environmental pressure and status indicates that despite the development of conservation policies and their positive impact on the economy and society, environmental degradation continues to deepen. Climate change, including global warming, leads to an increasing risk associated with extreme high temperatures. At the same time, many areas of the country are expected to experience an intensification of drought problems, both in terms of their frequency and severity (Hajto et al., 2024). In light of the disappearance of traditional herb gardens in rural areas, ongoing environmental changes, and the prevailing approach in contemporary landscape design that primarily emphasizes aesthetic values, a crucial research question arises: Can a functional garden simultaneously serve a decorative purpose and become an integral part of spatial composition, addressing the challenges posed by increasing temperature pressure and water scarcity?

The aim of this article was to develop a design solution to demonstrate that a rural herb garden can be both practical and aesthetically pleasing while maintaining good condition despite changing climatic conditions. Modern trends in landscaping strive for a harmonious combination of functionality and visual appeal, which in the case of herb gardens opens up many design possibilities. Through careful space planning, the selection of appropriate plant species and the use of a variety of construction materials, it is possible to create a space that not only meets the practical needs of residents, but also provides an attractive element of the backyard garden. The article also aims to analyze the possibility of implementing the developed model solution to a larger number of households in the village of Świekatowo.

LITERATURE REVIEW

Experiencing the charm of a country garden today is not as common as it might seem. There are very few traditional gardens anymore. They can still be found where farm work, the cultivation of old traditions and a commitment to simplicity and nature remain the most important elements of life. The old Polish peasant garden was initially characterized by vegetables. Flowers began to appear later, starting with poppy (*Papaver* L.), flax (*Linum* L.) or fruit trees. Over time, plants from the surrounding meadows and forests, began to appear in the gardens. Later, herbs began to be cultivated to improve health and enrich the taste of prepared foods. The gardens served not only a utilitarian and ornamental function, but also a ceremonial one. Over the years, introduced species have appeared in gardens. Their presence dates back to medieval times, so they have become a distinctive element of the rural landscape. In the 16th and 17th centuries, plants from the Mediterranean found their way into country gardens. Ornamental and useful plants were planted in simple bed forms near the windows of the house, forming row compositions. An important element of the spatial structure was the caretaker of the village garden – solitary deciduous species such as maple (*Acer* L.), oak (*Quercus* L.), ash (*Fraxinus* L.) or linden (*Tilia* L.). Its caring role was not limited to giving shade or being a benefit to insects. It was intended to protect buildings from lightning strikes and, in the event of a fire, slow its expansion. In the 18th century, vegetables, herbs and fruiting woody plants continued to be planted. The 19th and 20th centuries saw a noticeable increase in the diversity of species, resulting in plants from all over the world, such as levconias (*Matthiola* R. Brown in W. T. Aiton), foxgloves (*Digitalis* L.), hollyhocks (*Delphinium* L.), asters (*Aster* L.) and many others (Kowalik & Kowalska, 2013). The home garden

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of the 21st century serves primarily aesthetic and recreational functions. The process of arranging it usually focuses on the selection of plants with showy flowers in a variety of colors, properly formed shrubs, a carefully maintained lawn and the setting aside of space for family activities such as barbecues. Over time, however, the potential of the garden as a utilitarian space is increasingly recognized, with growing one's own vegetables and herbs providing a valuable complement to the functional aspects of the place (Błaszczyńska, 2014).

Focusing in detail on the herb garden as one of the elements of a village garden, we see that the oldest records mentioning herbal plants date back to around 3000 BC and come from Mesopotamia. They were used in Ancient Egypt. Herbs were also present in other parts of the world, such as Greece and Rome. Their history is rich. Apothecaries are considered the pioneers of herbalism in Poland. They acquired herbs not only from natural sites, but also grew domestic and exotic plants in gardens near the pharmacy. Nowadays, the cultivation of plants from different climate zones is prominent. At the same time, numerous native species are being cultivated. Interest in herbs is not waning, due to their many uses (Dyduch, 2014). These plants can be successfully used in nutrition, medicine and cosmetics (Dzida et al., 2013; Nowak, 2019). They are distinguished by their taste, smell and medicinal properties (Chivon & Mardy, 2023). Medicinal herbs, used in the form of infusions and herbal teas, exhibit various biological properties, supporting the function of the respiratory, digestive, and nervous systems, as well as providing analgesic and detoxifying effects. Their effectiveness results from the presence of bioactive compounds (Kośmicki, 2010). Bioactive compounds present in plants exhibit hypolipidemic, antitumor, antiplatelet, and immunomodulatory effects, making them a potentially valuable support in reducing the risk of cardiovascular and cancerous diseases. Furthermore, numerous plant species contain high concentrations of substances with antioxidant properties, which play a crucial role in protecting the body against the development of chronic diseases (Craig, 1999).

Herb gardens are referred to as utility gardens. These gardens usually had a geometric plan with regular plantings, which made them easy to use (Santos et al., 2022; Zachariasz, 2012). They can also take the form of pot crops or raised beds (Błaszczyńska, 2014; Nowak, 2019). Herbaceous plants are an excellent example of species with interesting ornamental qualities. Their diversity includes numerous examples that differ in the type and color of flowers that appear at different times, the shape and texture of the leaves, and the habit they take. This abundance of forms and colors opens up great opportunities for landscape architects to create unique arrangements of spatial composition. Herbs can easily become intriguing elements of flower beds, enrich rock gardens, and be grown in containers, adding a unique character to various areas of the garden space (Dudkiewicz & Łuka, 2022). An additional advantage is their high aromaticity (Kiewlicz, 2017). Their versatile use makes them a valuable component both in the design of private spaces, such as home gardens, and in the design of open green spaces. In the context of contemporary trends in landscape architecture, herbs are used to create aesthetically and functionally diverse compositions that, while enriching the visual qualities of spaces, promote healthy lifestyles and sustainable development (Dudkiewicz & Łuka, 2022).

As research indicates, garden design should be based on a well-considered spatial layout, in which attention to detail plays a crucial role (Lipińska et al., 2009). According to Mazik (2015), only such an approach can ensure both satisfactory visual effects and optimal yield. A garden designed in a harmonious and functional way may even be regarded as a work of art (Czałczyńska-Podolska, 2012). From a practical perspective, the use of raised beds is a particularly effective solution, as it significantly facilitates plant care and everyday use of the garden (Latkowska & Miernik, 2012). Additionally, the application of mineral paths not only enhances the aesthetic quality of the space but also supports effective water management. It allows for rapid infiltration of rainwater into deeper soil layers, which is especially

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important under conditions of an increasingly unstable climate (Karczmarczyk & Mosiej, 2011).

Most herbs are plants that require high sunlight exposure, which affects their growth quality and aroma (Kiewlicz, 2017). The highest amount of essential oils is produced when the plant is exposed to light for a time period of 6 to 8 hours (Trinklein, 2012). A herb garden is characterized by low maintenance needs and moderate watering requirements (Mazik, 2015). Most herbs prefer well-drained soil (Copsey & Lerner, 2002). According to researchers, in the face of rising temperatures in Eastern Europe, herb cultivation may serve as an alternative to ornamental perennial plants with high water demands. The direct impact of climate change includes various phenomena, such as extreme weather events, including droughts, floods, and wildfires. These processes result in unpredictable precipitation fluctuations and rising temperatures, intensifying challenges related to water management and harsh thermal conditions (Bolan et al., 2024). Szczęśniak et al. (2024) point out that the issue of climate change in Poland and worldwide is no longer in question. As noted by Marsz and Styszyńska (2024), research conducted by European scientists indicates an increasing number of days and nights with extreme high temperatures across Europe, including Poland. This phenomenon leads to several-day or even weeks-long periods of extreme heat, referred to as heat waves. According to Świątek (2024), climate changes affecting Poland are also associated with a significant risk of water resource depletion. This is due to the fact that rising air temperatures intensify evaporation processes, while total precipitation does not show a proportional increase. The problem of water shortage has intensified particularly since 2018. According to the authors of the publication, climate change will have multiple impacts on Poland. Green infrastructure that reduces the heating effect would ideally be drought-resistant and capable of surviving summer heat. This is precisely the case with herb gardens.

When hearing the term herb garden, the first thing that comes to mind is a separate area of a country garden with beds planted with useful plants. This is a valid association, but should not be the only one. In public green spaces, these plants create a landscape that works on many senses. Examples of such gardens can be found in Kraków pocket parks, where they aim to enhance sensory experiences by creating spaces that affect as many senses as possible. The *Bird Garden II* herb garden takes the form of container farming, which means that herbs grow in raised beds. In Kraków, one can also find a combination of herb and vegetable gardens, an example of which is the *Neighborhood Garden* (Sołtysik, 2023). Research is also underway into the use of herb gardens in health resorts, where plants are expected to become an integral part of hortitherapy. In addition, attempts are being made to develop design concepts that introduce plants with high attractiveness and utility into the spaces of convalescent people (Dzida et al., 2013). The growing interest in herbs has led to the emergence of herbal tourism. The increasing popularity of rural leisure is due to the need to find peace, tranquility and contact with nature. Herbal tourism is developing on the foundation of the long-established tradition of the Polish countryside, where the use of nature's gifts in cooking and folk medicine is common. Herbal plants and their practical applications were known and used by local herbalists, who supported the healing processes of villagers (Woś, 2017). In the cities, herbs were also valuable for traditional medical practices (Bhatt et al., 2023).

MATERIALS AND METHODS

Area of Study

The design solution was developed for a plot located in the picturesque rural areas of the Świekatowo municipality, situated in Świecie County, within the Kuyavian-Pomeranian Voivodeship. This predominantly agricultural area is characterized by a moderate, warm, and transitional climate. The average annual precipitation is approximately 559 mm, while the average annual temperature in this region is 6.8°C. The prevailing winds typically come from the west or southwest (Mazurczak & Witkowska, 2020).

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The area designated for the project is located in the village of Świekatowo. The selection of this locality was driven by its dynamic spatial development. Over the past twenty years, the number of households has increased by approximately 26%, from 345 in 2002, as reported by the Główny Urząd Statystyczny (2015), to 466 in 2025, according to the results of the author's own research. The selected household for the project comprises several cadastral plots with a total area of approximately 6,700 m². It is situated on the western side of Lake Świekatowskie. The terrain does not exhibit significant elevation differences over short distances. The arrangement of residential, utility, and garage buildings forms a space roughly square in shape, located at the center of the property. This layout is typical of developments from the early 20th century, with buildings positioned along all its edges. A notable feature on the plot is a tree that might once have served a protective role, despite the buildings maintaining a certain distance from one another. This tree is a common beech (*Fagus sylvatica* L.), located near the northern entrance to the property.

Shading analysis

A three-dimensional terrain model was developed for the analyzed property, incorporating existing architectural objects such as the residential building, barn, utility buildings, and garages. These structures create complete shading of adjacent surfaces. Geolocation was set for the studied site, and variable dates and times were applied, enabling the simulation of lighting conditions at different times of the year and day. The following date and time scenarios were adopted for the analysis:

1) march 21 – 9:00 AM, 12:00 PM, 3:00 PM,
2) june 22 – 9:00 AM, 12:00 PM, 3:00 PM,
3) september 23 – 9:00 AM, 12:00 PM, 3:00 PM,
4) december 22 – 9:00 AM, 12:00 PM, 3:00 PM.

The results of the study are presented in the form of graphical plans showing the variability of shadow direction.

Greenery analysis

The prepared terrain model was enriched with a detailed structure of woody vegetation. It accounted for the actual sizes reached by trees and large shrubs, allowing for an accurate representation of their impact on shaping the terrain's appearance. The results of the analysis were presented in the form of a site plan and vertical views from various directions. This effort aimed to identify areas on the property that are free from buildings and tall vegetation, which could be utilized for further design work.

Implementation feasibility analysis

The study was conducted to evaluate and classify residential plots with single-family housing in terms of their current spatial development and design features. The objective of this process was to determine the readiness and potential adaptability of households for the introduction of herb gardens with customizable elevated bed compositions. The analysis included the classification and quantitative listing of plots into five categories, each reflecting a specific level and type of spatial organization and development:

1) category A – Plots developed in a thoughtful manner, with a clear and recognizable design motif,
2) category B – Plots developed but lacking a clear or cohesive design motif,
3) category C – Undeveloped plots characterized by a large number of spatial elements and limited open space,
4) category D – Undeveloped plots with a moderate number of spatial elements and the presence of open spaces,
5) category E – Undeveloped plots with few or no spatial elements and significant open space availability.

The classification process involved field studies, aerial photo analysis, and a review of cadastral documentation. Each plot was visually assessed based on its spatial configuration and design characteristics. Subsequently, all classified plots were marked on a map of the locality to provide a comprehensive visualization of development patterns in the studied

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area. The collected quantitative data aimed to identify dominant spatial patterns and demonstrate favorable or unfavorable implementation possibilities.

RESULTS

Shading analysis

The study conducted on the analyzed area revealed that sunlit areas dominate over shaded ones (Fig. 1). The greatest shading occurs during winter, which aligns with expectations, as the sun is lower on the horizon during these months, light falls at a smaller angle, and shadows become longer. The dominance of sunlit areas is advantageous in the context of designing a herb garden since most herbs require ample light for proper growth. The existing structures do not pose significant limitations when selecting a location for the design concept.

Greenery analysis

Trees and shrubs are concentrated in the eastern part of the study area (Fig. 2). Most of them do not exceed 10 meters in height. This vegetation layout is a remnant of an old orchard. The woody vegetation includes species such as hazel (*Corylus avellana* L.), apple (*Malus domestica* Borkh.), cherry (*Prunus avium* L.), walnut (*Juglans regia* L.), pear (*Pyrus communis* L.), and elder (*Sambucus nigra* L.). Based on the location of the vegetation, three proposals for the placement of a herb garden on the property were identified, taking into account optimal lighting conditions and the compositional values of the plot. Additionally, it was observed that the western part of the plot features several scattered trees that do not form clusters, maintaining a balanced visual harmony with the vegetated eastern area. This locational diversity of vegetation lends a dynamic character to

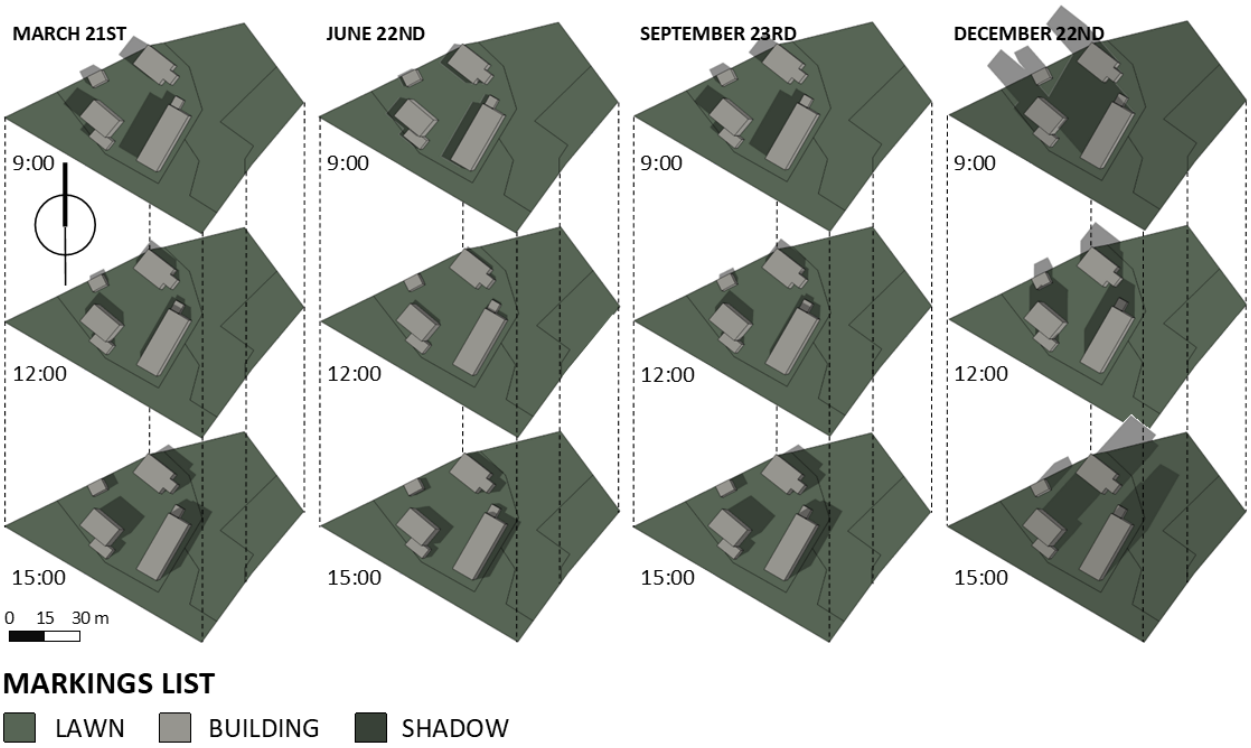

Fig. 1. Length and direction of shadow on the surface of the property
Source: own elaboration.

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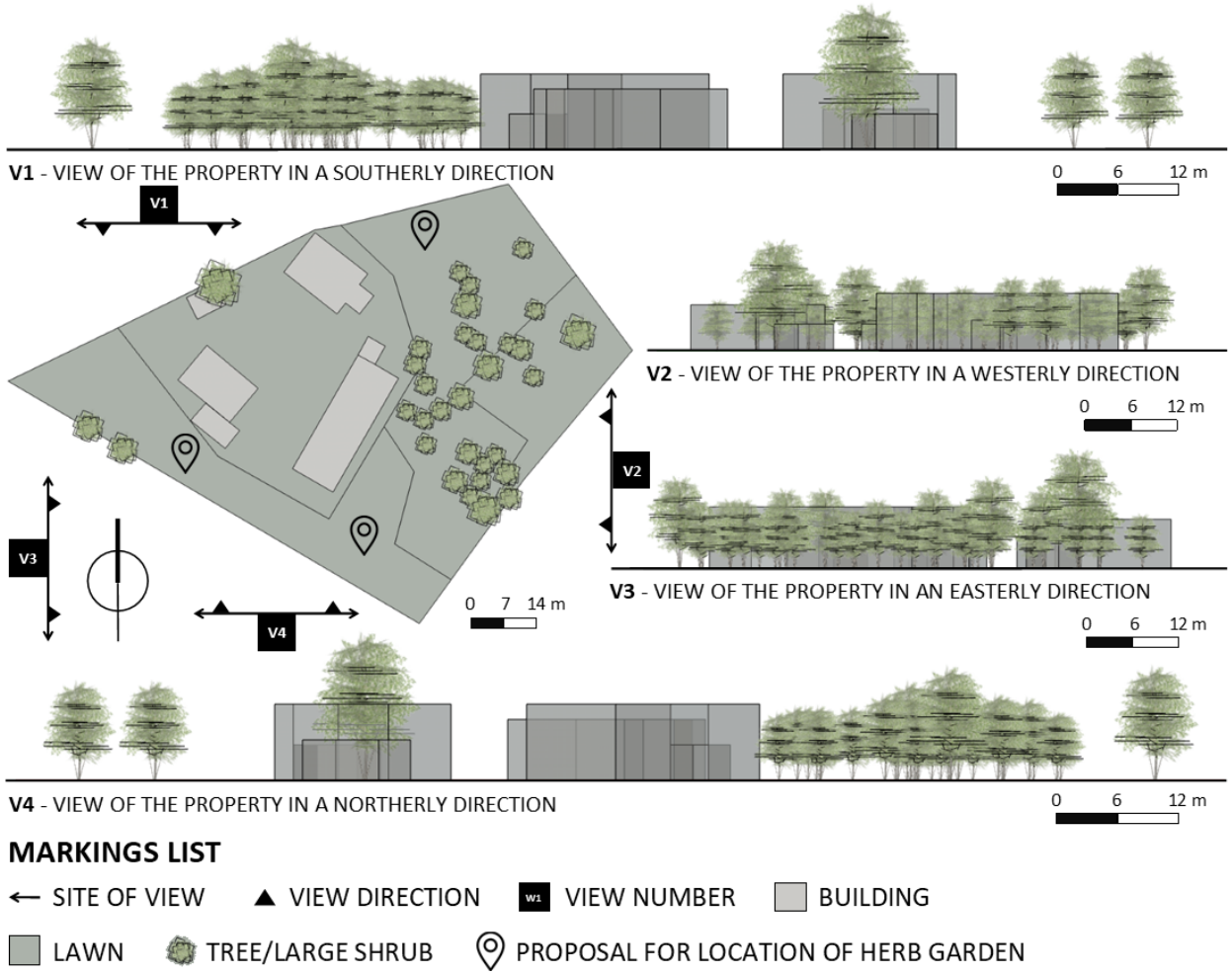

Fig. 2. Distribution of woody vegetation
Source: own elaboration.

the site and allows for diverse shaping of the home garden within a comprehensive design scope.

Implementation feasibility analysis

In Świekatowo, 466 plots associated with single-family housing were identified (Fig. 3). The analysis of their development revealed diversity in the presence and characteristics of spatial elements. The average number of plots per one of the five examined categories is approximately 93. Plots that are thoughtfully developed with a clear design motif account for 23.39% of the total. Meanwhile, plots that are developed but lack a clear or cohesive design motif represent 14.81%. Another group includes 9.44% of plots that, despite being undeveloped, are characterized by the presence of numerous spatial elements, which limits free space. In contrast, 18.45% of the plots remain undeveloped with fewer spatial elements, leading to noticeable zones of open space. The largest category consists of undeveloped plots with minimal or no spatial elements, distinguished by the presence of large open areas. This group comprises 33.91% of all analyzed plots.

The majority of the analyzed plots in Świekatowo (61.80%, or 288 plots) were classified as undeveloped

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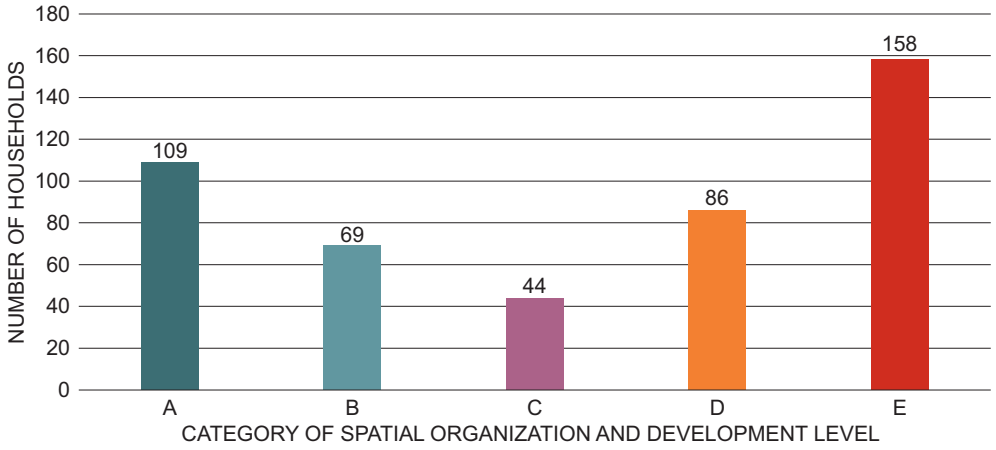

Fig. 3. Number of households in the surveyed classification categories
Source: own elaboration.

(categories C-E), indicating significant spatial potential for further arrangements. In particular, the largest group consists of plots with minimal spatial elements or none at all (33.91% of the total), meaning that these areas (category E) offer high flexibility for potential changes, such as the introduction of herb gardens. These plots are scattered among all the households in the locality (Fig. 4).

Additionally, Świekatowo features areas with purposes different from those analyzed in the study. These include multi-family housing in the form of apartment buildings, religious structures represented by the local church and cemetery, as well as commercial buildings, including markets. The locality also contains facilities related to production, services, and administration, such as a sawmill, mechanical workshop, gas station, post office, family clinic, primary school, municipal office, and a volunteer fire department building.

Project Concept

The herb garden, with a surface area of 64 m², has been designed to harmoniously blend with the rural surroundings. Following Dudkiewicz et al. (2014), the focus was placed on the northern location, positioning the utilitarian garden in front of the residential building's facade while integrating it into the decorative part of the home garden. Its space has been divided into four typical functional areas, proposing plant species that generally prefer warm, sunny locations and moderate moisture conditions. The layout is complemented by a zone of insect-repelling herbs and a greenhouse, enabling early spring preparation of plant seedlings (Fig. 5).

The beds for culinary herbs, occupying a significant portion of the garden, provide fresh plant ingredients that enhance the flavor of prepared dishes. The garden also includes plants with medicinal properties, valued for their health and relaxation benefits, particularly during times of deteriorating health. The cosmetic section contains plants such as yarrow (*Achillea* L.) and horsetail (*Equisetum* L.), which can be used to produce natural cosmetics and for skin care. The insect-repellent herb section features plants such as lavender (*Lavandula* L.) and geranium (*Geranium* L.), which, thanks to their natural chemical compounds, act as repellents. These compounds interfere with insects' olfactory receptors, making it difficult for them to locate hosts or breeding sites. The design concept includes more than 20 plant species, which are listed in Table 1 (Atlas Roślin, 2024; Gajewska-Okonek, 2023; Hołubowicz-Kliza, 2016; Paola & Polettini, 2018; Spohn et al., 2021; Związek Szkółkarzy Polskich, 2024). Paths within the garden are laid out in regular rectangular shapes, ensuring clarity of composition and easy access to individual plant sections. An accent in the garden is a greenhouse with a steel structure and glass covering. In addi-

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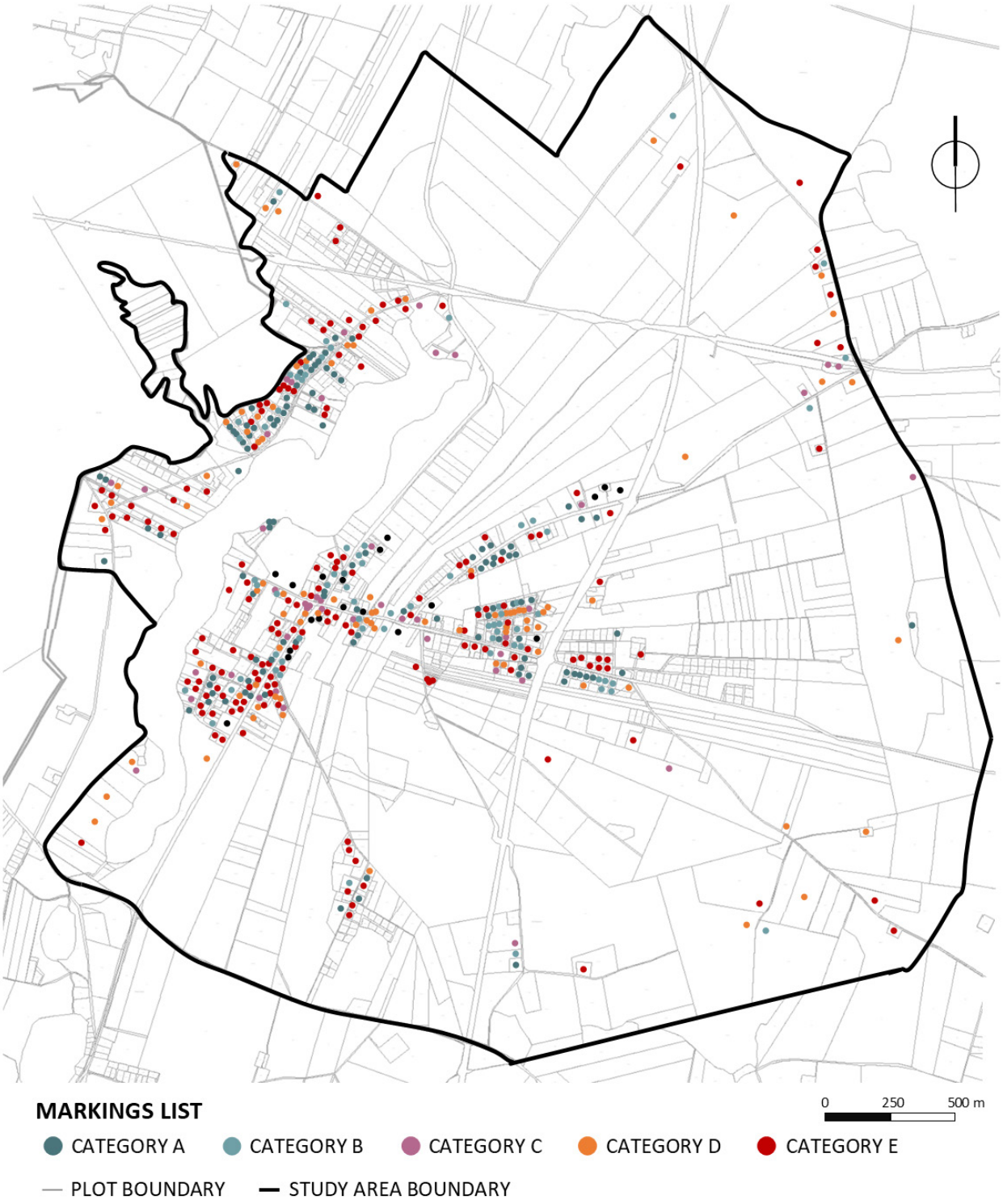

Fig. 4. Number of households in the surveyed classification categories
Source: own elaboration.

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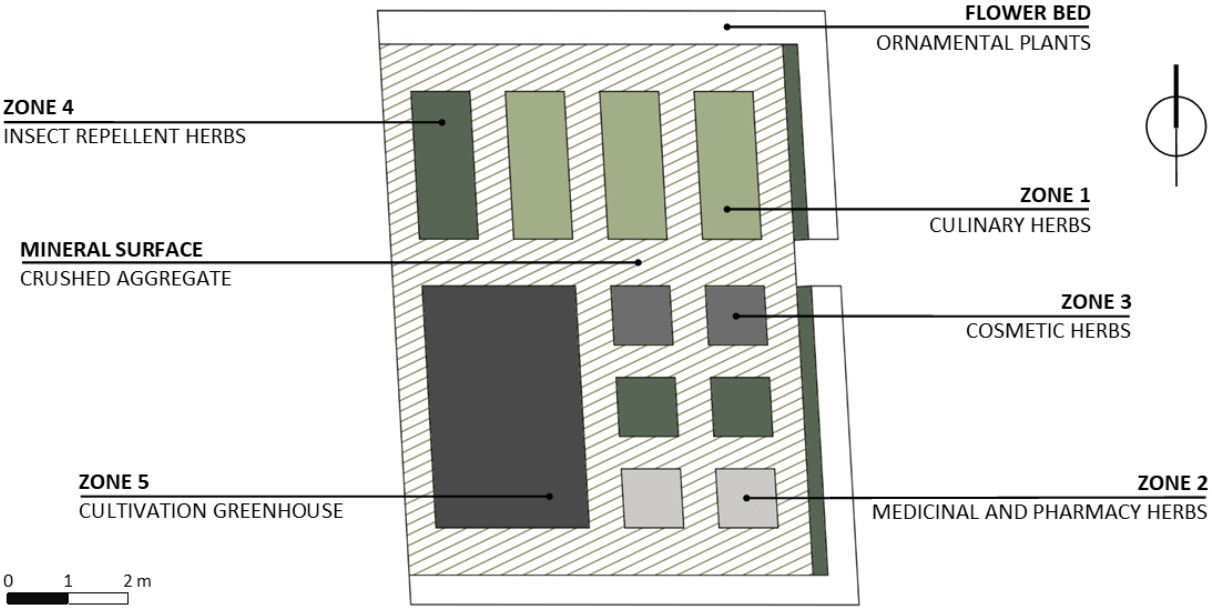

Fig. 5. Functional and spatial scheme of a rural herb garden
Source: own elaboration.

Table 1. List of projected herbaceous plants

No.	English name	Latin name
1	2	3
	Culinary herbs	
1.	Common basil	*Ocimum basilicum* L.
2.	Ascalonian garlic	*Allium ascalonicum* L.
3.	Chives	*Allium schoenoprasum* L.
4.	Coriander	*Coriandrum sativum* L.
5.	Lebiodine marjoram	*Origanum majorana* L.
6.	Lebiodine vulgaris	*Origanum vulgare* L.
7.	Thyme matricaria	*Thymus vulgaris* L.
8.	Peppermint	*Mentha* x*piperita* L.
9.	Rosemary	*Salvia rosmarinus* Spenn.
	Medicinal and pharmaceutical herbs	
10.	Ribwort plantain	*Plantago lanceolata* L.
11.	Small-flowered mullein	*Verbascum thapsus* L.
12.	St. John's wort	*Hypericum perforatum* L.
13.	Lemon balm	*Melissa officinalis* L.
14.	Coltsfoot	*Tussilago farfara* L.
	Cosmetic herbs	
15.	Grey-leaved cistus	*Cistus* x*incanus* L.
16.	Common yarrow	*Achillea millefolium* L.
17.	Californian nettle	*Eschscholzia californica* Cham.
18.	Soft lady's mantle	*Alchemilla mollis* (Buser) Rothm.
19.	Variegated horsetail	*Equisetum variegatum* Schleich. ex Weber & Mohr

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cont. Table 1

1	2	3
	Insect-repelling herbs	
20.	Wormwood	*Artemisia absinthium* L.
21.	Bloody geranium	*Geranium macrorrhizum* L.
22.	Catnip proper	*Nepeta cataria* L.
23.	French lavender	*Lavandula stoechas* L.
24.	Dalmatian goldenseal	*Tanacetum cinerariifolium* (Trevir.) Sch. Bip.

Source: own elaboration.

tion to providing a space for seedling production, the greenhouse creates optimal conditions for cultivating more demanding herb species, protecting them from adverse weather and extending their growing season. The garden is surrounded by a low wooden fence that separates this space from the rest of the property, adding charm and aligning with the rural style of the overall layout. The herb garden design also includes a bench, allowing full enjoyment of the sensory richness of the space (Fig. 6–7).

Fig. 6. Design solution of the herb garden in Świekatowo
Source: own elaboration.

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Fig. 7. Visualization of the herb garden in the residential space of Świekatowo
Source: own elaboration.

The primary garden elements, raised beds, are proposed to be made of durable composite boards, supported by metal brackets securely fastened with screws. This solution ensures stability and an aesthetic appearance. The boxes are filled in layers with various components to create a humus-rich and permeable growth medium for the plants.

DISCUSSION

The authors of the publication note that designing herb gardens with a decorative function in the rural landscape requires consideration of environmental and aesthetic factors. Site analysis and the selection of plant species with high ornamental value played a key role in the presented study. The results indicate that the use of appropriate construction materials and surface layout will enhance the decorative function, emphasizing the garden's aesthetics while maintaining its practical character.

The conducted pre-design studies enabled the identification of three potential locations for a model herb garden in different parts of the property. The environmental analysis excluded areas unsuitable for cultivating plants that prefer bright and sunny conditions. This approach demonstrates how a precise diagnosis of local conditions can contribute to successful cultivation while highlighting the possibility of harmoniously combining aesthetics with functionality in rural space design. The study results confirm the significance of spatial planning at the site scale, particularly in the context of home gardens, where the optimal arrangement of plants and small architectural elements allows for achieving the intended visual and functional effects.

One of the key elements of the project was the use of classical geometric forms. The use of raised bed cultivation has increased the accessibility of plants for users, which is consistent with the literature on the subject (Latkowska & Miernik, 2012). The introduction of grouped plants into functional compositions has

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created an interesting visual effect while also providing broad possibilities for their use in the household. This approach highlights how a functional garden can become a work of art, which is reflected in the opinion of Czałczyńska-Podolska (2012).

The significance of the decorative plant arrangement is further emphasized by the use of gravel surfaces. Such materials not only enhance user comfort but also help maintain the soil's surface infiltration properties, which, according to Karczmarczyk & Mosiej (2011), is valuable for environmental protection. The modular container cultivation system applied in the project provides flexibility and adaptability to various locations, including small residential plots such as those in Świekatowo. The importance of introducing herbs into private spaces is reinforced by the fact that these plants, traditionally associated with the rural landscape and evoking a idyllic atmosphere, are increasingly being used in public spaces (Dudkiewicz & Łuka 2022). This occurs due to their excellent adaptation to changing atmospheric conditions (Botes & Breed, 2021; Rabah et al., 2017). Excellent examples of such herbs, as proposed by the authors, include common thyme (*Thymus vulgaris* L.) and rosemary (*Salvia rosmarinus* Spenn.). The use of herbs in decorative compositions is justified due to their environmental adaptability, as Prandecki and Kotyński (2024) state that climate change is considered one of the key global environmental threats.

The outcome of the design efforts focused on a carefully planned spatial composition, with particular attention given to details, as emphasized by Lipińska et al. (2009). Managing an herb garden based on the prepared design documentation allows for the optimal use of the available space and effective control of the crop rotation process. This has a direct impact on achieving a satisfactory yield and an indirect influence on creating interesting artistic and visual effects (Mazik, 2015).

Field and cartographic studies have revealed a significant need for the implementation of organized gardens in rural areas. Only about 23% of households exhibit characteristics of well-planned land use with a distinct design motif. This small percentage highlights the necessity of promoting design initiatives that enhance both the aesthetics and functionality of rural spaces. The category of developed plots without a clear design motif accounted for nearly 15%, indicating the existence of areas that could be relatively easily transformed into organized green spaces, including designated areas for herb gardens. Plots in category D (approximately 18%) and category E (around 34%) represent the most attractive sites for design initiatives. These areas hold considerable potential for introducing herb gardens in Świekatowo, offering opportunities for comprehensive land-use planning. Plots in category C (about 10%), despite lacking formal land development, are characterized by the presence of numerous spatial elements. These areas pose the greatest challenge in terms of functional transformations, as their adaptive potential is limited by the lack of available space.

Despite the centuries-long presence of medicinal plants in human surroundings, their role in the design of home gardens remains relatively underexplored in both national and international scientific literature. However, recent studies have addressed issues such as the impact of herb gardens on mental well-being, exemplified by medical students (Patel et al., 2024), the use of herb gardens in the conservation and promotion of medicinal plants through ex-situ methods (Shravan et al., 2024), morphological and microscopic analyses of selected herb species (Shamilov et al., 2023), and the chemical characteristics of medicinal plants (Makevych & Kutsyk, 2023). A review of global literature indicates that functional gardens, including herb gardens, have been recognized as valuable tools for educating individuals about food cultivation processes. In this context, the University of Idaho Extension developed the SEED (Science, Education, Environment, Dietary) program to introduce such gardens into educational institutions. The program aimed to provide students with direct engagement in plant cultivation processes. Between 2022 and 2023, it was implemented in 70 classrooms, reaching a total of 1,426 students (Lee et al., 2024). An herb garden can play a significant educational role by allowing students to explore traditional medical knowledge

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and discover the rich heritage of medicinal plants. The cultivation of various easy-to-grow herb species fosters hands-on learning about sustainability and ecology while simultaneously raising awareness of the ecosystem functions of plants (Ní Cassaithe & Kavanagh, 2024). These examples highlight the validity and importance of incorporating herbs directly into the human environment, not only for their aesthetic and ecological value but also for their practical significance. These plants seem to be highly versatile and exhibit a broad functional significance.

CONCLUSIONS

The presented design solution is one of many possible spatial compositions for a herb garden. However, based on the adopted concept and its implementation, it is evident that aesthetics and functionality can be effectively combined, creating a successful outcome and a new reality. The herb garden design represents an adaptive approach to changing climatic conditions. According to the literature, medicinal plants are characterized by low habitat requirements and high tolerance to adverse climatic phenomena. In the face of increasing frequency of extreme weather conditions, such as prolonged dry periods and elevated temperatures, an herb garden can serve as a sustainable and resilient solution in green space planning. This is particularly important in today's context, where rural gardens are often devoid of functional spaces or include them only on a micro-scale. The adopted concept incorporates a modular container cultivation system, making it universal and easily adaptable to various locations, including single-family plots in Świekatowo, regardless of their existing development.

The implementation of an herb garden in Świekatowo is highly feasible, given both the spatial conditions and the adaptive potential of the area. The establishment of multiple such gardens would contribute to a significant and positive landscape transformation of the studied locality within the municipality, enriching its ecological structure and enhancing local biodiversity. The implementation process aligns with the principles of sustainable landscape planning, emphasizing the role of functional plants in shaping multifunctional, climate-resilient spaces.

In addition to introducing a new design concept for herb gardens, the article presents a study covering the evolution from traditional rural home gardens to their modern applications in diverse spatial contexts. The history and significance of herbs in gardens were analyzed. Key design aspects were presented, and the occurrence of adverse climate changes in Poland was discussed, along with the specific requirements of such establishments. This work contributes to expanding knowledge on the design and adaptation of herb gardens in various locations, providing both theoretical and practical foundations for further research in this field.

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