

## LANDSCAPE DESIGN PROCESSES FOR DETACHED RESIDENTIAL GARDEN FOR PET OWNERS

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**ABSTRACT.** This study examines the landscape design process of a detached residential garden to make pet owners' gardens both safe and aesthetic. Focusing specifically on the types of plants that are beneficial and harmful to animals, this study details the important considerations in plant selection. Comprehensive information is provided on methods of avoiding toxic plants that threaten the health of pets and plant species that are beneficial for them. It also discusses how plant selection can be optimized to suit the needs of animals, such as grass areas, play and exercise zones, shade areas and water sources. The positive effects of environmentally friendly and sustainable landscaping practices on pet health are also emphasized. This is a comprehensive guide that offers practical suggestions for pet owners to design their gardens in a way that is both aesthetically pleasing and safe.

**Keywords:** *Pets, landscape design, plant selection, detached residential gardens*

### INTRODUCTION

Housing is one of the basic needs of human beings and the concept of housing cannot be considered independently from its immediate surroundings (Bilir Z.I., 2019). The areas outside the buildings and under the ownership of the building are called "gardens" in the urban context (Yılmaz, S., 2011). Residential gardens are known for their aesthetic value and the natural beauty they add to living spaces. With their large areas and various plant species, these gardens offer ideal living spaces for both humans and domestic animals. In order for people to live happily, comfortably and safely in their residences, it is important to organize not only the residence but also its surroundings (Şahin, C., & Çalık, H., 2021). Residential garden design aims for functional use as well as the visual appeal of the space. All areas where landscape design is realized are meaningful living spaces that meet the needs of users such as comfort, rest, active / passive participation and exploration, designed for these needs, and appeal to all users (Sağlık, E., Sağlık, A., & Temiz, M., 2020). This process requires taking into account many factors from the topographical characteristics of the garden to climatic conditions and user needs. In this context, landscape design studies need to be in close relationship with other space-organizing disciplines. These disciplines include architecture, urbanism, regional planning, ecology, botany, geology, soil science, geography, horticulture, forestry, agriculture, fine arts and sociology (Gül, A., 2009). The design of a detached residential garden generally consists

of three main phases: planning, implementation and maintenance. In the planning phase, it is essential to determine the general structure of the garden and the plant species to be used. At this stage, details such as which areas of the garden will be covered with grass, which areas will be planted with trees and shrubs, and how water features will be placed are emphasized. In the implementation phase, the necessary landscaping works are carried out to realize the determined plan. Finally, the maintenance phase involves regular maintenance to maintain the continuity and beauty of the garden. Detached residential garden design criteria are shaped according to the needs of the users and the natural characteristics of the garden. First, a balance must be struck between aesthetics and functionality. As important as it is to make the garden visually appealing, it is also important to create a space where users can move freely and carry out various activities. Secondly, sustainability should be considered. The selection of plant species that minimize water consumption, the use of organic fertilizers and the preference for natural landscape elements are critical for a sustainable garden. Thirdly, climate conditions and soil structure should be taken into account. By selecting plant species suitable for the climate of the region, the garden can be long-lasting and healthy.

In the Turkish legal system, everything other than human beings is characterized as "goods" or "property". However, this human-centered approach has been abandoned in many countries. Although animals do not have legally definable rights, it is generally accepted that they have universal values close to the rights enjoyed by humans (Özgür, A., 2010). Gardens specially designed for pet owners should be planned according to certain criteria both to ensure the safety of animals and to support their natural behavior. Such gardens should include security measures to prevent pets from escaping, areas free from poisonous plants, and arrangements to meet the play and exercise needs of animals. For example, climbing areas for cats, running paths for dogs, and various play equipment are important for making the garden animal-friendly. Choosing suitable plant species for animals is one of the most critical stages of garden design. Some plants can be poisonous to pets, while others are beneficial to their health. As a result, villa garden design for pet owners is a process of carefully balancing aesthetics, functionality and safety. In this study, villa garden design processes, plant selection criteria and how to create gardens specially designed for animals will be discussed in detail. In this context, pet owners will be provided with comprehensive information on how to make their gardens safer and more enjoyable for themselves and their beloved animals.

## **MATERIALS AND METHODS**

In this study, a multifaceted methodological approach was adopted to analyze the landscape design processes of pet-friendly detached residential gardens and to develop recommendations. The main basis of the study was based on existing literature reviews, field analyses and sample design scenarios. Focusing on the health, safety and behavioral needs of pets, the elements that should be taken into consideration in the design processes were identified. In addition, the integration of environmentally friendly and sustainable approaches into these processes is discussed in detail.

### ***Literature Review***

In the first phase of the study, national and international literature on pet-friendly garden design was reviewed. Academic studies, reports and guidance documents focusing on topics such as the effects of plant species on pet health, toxic and beneficial plant

species, sustainable landscaping practices, planning of play and exercise areas were examined. The following themes were particularly emphasized in the literature review:

- **Pet Safety:** Toxic properties of plants commonly used in gardens, their negative effects on pets and strategies for avoiding toxic plants.
- **Useful Plant Species:** Plant species that can contribute to the health of pets, positively influence their behavior and play a functional role in the garden.
- **Design Approaches:** Design criteria for play, exercise, shelter and rest areas that aim to meet the physical and mental needs of animals.
- **Sustainability:** Integration of environmentally sensitive material use and water management practices that support the conservation of natural resources into landscape design.

### *Field Analysis*

In the second phase of the study, typical residential gardens were analyzed. In this context, gardens of different sizes and characteristics were assessed in terms of existing facilities for pets, potential problems and opportunities for improvement. The following criteria were considered during the site analysis:

- **Plant Selection and Placement:** Existing plant species in the garden and their potential impact on pets.
- **Ground Characteristics:** The suitability of the ground coverings used in the garden for pets (e.g. grass, stone, wood).
- **Design Elements:** Availability of shade, location of water sources, fencing and boundary arrangements, and adequacy of play and exercise areas.

These analyses have been instructive in identifying common problems in existing gardens and opportunities for solutions.

### *Example Design Scenarios*

Based on the findings from the field analysis, design scenarios were developed for different pet species (e.g. dogs, cats, birds) and garden sizes. These scenarios aimed to combine both functionality and aesthetics. The following elements were prioritized in the sample designs:

- **Play and Exercise Areas:** The design of large and safe areas where animals can release their energy and perform their movements freely.
- **Shelter and Shade Zones:** Creating areas where pets can rest and be protected from extreme hot or cold weather conditions.
- **Natural Materials:** The use of environmentally friendly materials to create a suitable ground for both sustainability and animal welfare.

### *Evaluation and Interpretation of Data*

The collected data were evaluated using both quantitative and qualitative analysis methods. The identified problems and proposed solutions were interpreted in terms of feasibility, cost and environmental impacts in terms of landscape design. In addition, the contributions of innovative design approaches to meet the needs of domestic animals to user satisfaction and animal welfare were analyzed.

### ***Integration of Sustainability Principles***

In the study, the applicability of environmentally friendly and sustainable landscaping practices in pet-friendly gardens was also discussed in detail. In this context:

- **Natural Water Management:** Rainwater harvesting systems in gardens and the use of low water consumption plant species.
- **Use of Organic Fertilizers:** Promote organic fertilizers to reduce the negative effects of chemicals.
- **Energy Efficiency:** Integration of solar-powered lighting and irrigation systems.

### ***Useful Plants for Animals and Reasons Why***

Plants that contribute to the health of pets not only enhance the aesthetics of the garden, but also improve their overall quality of life. These plants are usually non-toxic, easy to care for and offer some health benefits. Below are some plants that are beneficial for pets and why:

Lavender (*Lavandula angustifolia*): Lavender is known for its soothing effect when consumed for animals and can help reduce stress in pets. It also makes an aesthetic contribution to the garden with its pleasant scent and attractive flowers (Fig. 1).



***Fig. 1. Lavandula angustifolia [11]***

Rosemary (*Rosmarinus officinalis*): Rosemary is known for its antioxidant properties and supports digestion. It is also a safe herb to consume for pets (Fig. 2).



*Fig. 2. Rosmarinus officinalis [12]*

Mint (*Mentha* spp.): Mint is known for its digestive properties when consumed by animals and is good for stomach ailments. It also adds a fresh scent to the garden (Fig. 3).



*Fig. 3. Mentha spp. [13]*

Cat Grass (*Nepeta cataria*): This plant is particularly attractive to cats, fulfilling their need for play and relaxation (Figure 4).



*Figure 4. Nepeta cataria [14]*

### ***Plants Harmful to Animals and Causes***

Some plants can be toxic to pets and cause serious health problems. Poisonous plants are defined as plants that can cause illness or death in humans and animals when consumed due to the toxic substances they contain (Aplin, 1976, cited in Yılmaz, H., Akpınar, E., & Yılmaz, H., 2009). Therefore, it is important not to keep these plants in gardens or to manage them carefully. Below are some plants that are harmful to pets and the reasons why:

Lily (*Lilium* spp.): The lily is highly toxic, especially to cats, and can cause kidney failure if consumed (Fig. 5).



***Fig 5. Lilium spp. [15]***

Aloe Vera (*Aloe barbadensis* miller): Aloe Vera can cause symptoms such as vomiting, diarrhea and tremors in pets when consumed (Fig. 6).



***Fig 6. Aloe barbadensis miller [16]***

Hydrangea (*Hydrangea* spp.): Hydrangea can cause stomach upset and vomiting in pets due to its cyanogenic glycosides (Fig. 7).



*Figure 7. Hydrangea spp. [17]*

Tobacco Plant (*Nicotiana* spp.): This plant is toxic to animals due to its nicotine content and can cause nervous system disorders (Fig. 8).



*Figure 8. Nicotiana spp. [18]*

### ***Plant Uses***

The correct placement of plants used in gardens is important both for the healthy growth of plants and for the safety of pets. In order to minimize the negative effects on animal health, the process of detecting and identifying poisonous plants should be considered as a priority step (Töngel, M. Ö., & Ayan, İ., 2005). Plant use patterns should be determined according to the following criteria:

**Zoning:** Different areas of the garden should be zoned according to the needs of the plants and the usage habits of the pets. For example, lawn areas can be reserved for play and exercise, while border areas can be used for flowers and ornamentals.

Height and Density: High and dense plant species that are not easily accessible to pets are suitable for pest plants. These plants can be placed in remote corners of the garden or behind fences.

Indoor Areas: Toxic plants can be kept indoors or in raised pots out of the reach of pets.

### ***Garden Design Proposal***

The ideal garden design for pet owners should take into account both aesthetic and functional features. Here are some recommended design criteria for this purpose:

Security: The perimeter of the garden should be securely fenced to prevent pets from escaping. Also, toxic plants should be kept out of the reach of animals.

Play and Exercise Areas: Large grassy areas and running paths for dogs, climbing areas and hiding places for cats.

Shaded Areas: Shady areas should be provided for pets to rest. Trees and large shrubs can be used for this purpose.

Water Sources: Small pools or bowls of water should be placed in appropriate places in the garden for pets to cool off and drink.

Isolation of Harmful Plants: Toxic plants should be placed in pet-free areas of the garden or removed completely.

## **FINDINGS AND DISCUSSION**

### ***Findings***

As a result of the analysis and design scenarios carried out within the scope of the study, the main problems encountered in pet-friendly detached residential gardens and solutions to these problems were identified. The findings were evaluated in terms of both plant selection and placement and the effects of design elements on pet health.

### ***Plant Selection and Placement:***

It has been found that a significant number of plants used in gardens can pose a potential danger to domestic animals. The losses caused by poisonous plants are not limited to animal deaths. They also include reproductive problems such as slowed body weight gain, excessive emaciation, photosensitization, decreased wool and milk yield and quality, infertility and birth anomalies, and shortened life span of herds (Yılmaz, O., 1990). In particular, it has been observed that toxic plants such as lily, difenbahia, oleander and ivy can cause serious health problems if accidentally consumed by pets.

On the other hand, some plants such as catnip, lavender, oatgrass and mint have been found to contribute positively to both the physical and psychological health of animals.

### ***Design Elements:***

Lack of play and exercise areas can cause pets to lack energy and increase their stress levels. Furthermore, the lack of shaded areas puts animals at risk of overheating and dehydration, especially during the hot summer months. In the field analyses, it was found that water sources are located in an unplanned manner in most gardens, which is insufficient to meet the water needs of animals.

### ***Floor Coverings:***

Flooring materials used in gardens have been shown to have a direct impact on the health and comfort of pets. Hard and slippery surfaces (e.g. concrete or tiles) restrict animal movement and increase the risk of injury. In contrast, surfaces such as grass, natural stone and wood pavement have been found to offer an animal-friendly flooring alternative.

### ***Sustainability Practices:***

It was concluded that environmentally friendly practices such as rainwater collection systems, low water consumption plants and the use of organic fertilizers should be widespread in gardens. It was observed that such practices both positively affect the health of pets and contribute to the ecological balance of the gardens.

### ***Discussion***

Green areas are one of the main elements to be considered in the design of outdoor spaces in housing estates and public housing. In addition to various functions such as watching, reclining, sitting, climbing and providing fruit, plant materials make important contributions by providing protection from the negative effects of wind and sun (Şahin, C., & Çalık, H., 2021). In these designs, we need to take into account not only humans as users but also the living creatures that live with us. It is seen that pet-friendly garden design should be handled not only with an aesthetic goal, but also in line with the principles of functionality and sustainability. In this context, it is important to balance the needs of both pets and garden owners in the design process.

### ***Importance of Plant Selection and Placement:***

Plant selection is one of the most critical steps in designing a pet-friendly garden. Literature reviews and field analyzes draw attention to the prevalence of toxic plants in gardens. This situation reveals that pet owners are not sufficiently conscious about plant selection. In addition to strategies to avoid toxic plants, the introduction of beneficial plants for pets is a necessity at both academic and practical levels. In addition, it is recommended that the positioning of plants should be arranged in a way that supports the natural behavior of animals and does not restrict their movements.

### ***Effects of Design Elements:***

Unlike other elements and architecturally arranged design elements in gardens, the movements of pets in gardens are generally uncontrollable (Resuloğlu, Ç., 2019). The lack of play and exercise areas in gardens is one of the main problems that negatively affect the behavioral and physical health of pets. This is especially evident for high-energy dog breeds. The recommended solution is to prioritize the design of gardens with large and safe play areas where animals can release their energy. In addition, the lack of shaded areas prevents animals from resting comfortably under extreme heat.

Providing shade through natural means (e.g. broad-leaved trees or pergolas) is an effective approach to address this problem.

### ***Sustainability and Environmentally Friendly Practices:***

Sustainable landscaping practices not only provide environmental benefits, but can also positively affect the health of pets. For example, the use of organic fertilizers allows avoiding the negative effects of chemicals. Similarly, low water consumption plants and rainwater harvesting systems provide economic benefits for garden owners and contribute to the

conservation of natural resources. Such practices demonstrate that environmentally friendly landscape design can be integrated into pet-friendly gardens.

## CONCLUSION

This study examined in detail the landscape design processes and the importance of plant selection for pet owners in a detached residential garden. As a result of the scans and research, plants that are beneficial and harmful to the health of pets have been identified and suggestions on how to use these plants in the garden have been presented.

Research on beneficial plants and their effects has shown that certain plant species have positive effects on pets. Plants such as lavender, rosemary and peppermint are characterized by their ability to reduce pet stress, facilitate digestion and support their general health. Using these plants in gardens provides an aesthetic appearance and improves the well-being of pets. Plants such as catnip especially encourage the natural behavior of cats, meeting their need for play and relaxation. On the other hand, some plant species pose serious health risks to pets. Species such as lilies, aloe vera, hydrangea and tobacco plants can cause poisoning and various health problems in pets. It has been concluded that these plants should not be kept in gardens or should be carefully managed. For the safety of pets, it is important to limit or completely remove the areas where these plants are placed.

Another important finding of the study is the necessity of adopting pet-friendly approaches in garden design. Design criteria such as safety measures, play and exercise areas, shade and water sources contribute to a healthy and happy life for pets. Isolating or completely removing toxic plants ensures that animals can safely roam the garden. In conclusion, it is of utmost importance for pet owners to pay attention to plant selection when designing their gardens. Identifying both beneficial and harmful plants plays a critical role in ensuring the health and safety of pets. This study provides pet owners with a comprehensive guide on how to optimize their gardens both aesthetically and functionally. The right choices in garden design can improve the physical and psychological well-being of pets, leading to a happier and healthier life.

Removing toxic plants completely or limiting their accessibility during garden design is recommended as a fundamental measure for animal-friendly gardens. In addition, placing plants that are beneficial for animal health in easily accessible areas in gardens will support the natural consumption behaviors of animals. Raising awareness of garden owners about the issues to be considered in plant selection is of great importance in terms of preventing possible health risks. Although this study on pet-friendly garden design has made important contributions in both scientific and practical terms, more comprehensive research is needed in the future. In particular, customized design solutions, plant species and garden arrangements should be developed for different animal species and sizes. In addition, behavioral studies examining the effects of plant species and design elements on animal behavior will further deepen the knowledge in this field. Pet-friendly garden design is not only limited to creating an aesthetic space, but also a multidimensional process that should be handled with an environmentally friendly and sustainable approach that improves the quality of life of animals. This study provides guidance for pet owners to organize their gardens in a safe and functional way, while also being a valuable resource for landscape designers and the academic community. Gardens designed with the right plant selection, safe and functional design elements and sustainable approaches will create ideal environments for pets to lead a healthy life and build a stronger bond with their owners.

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