ANNALS OF THE UNIVERSITY OF CRAIOVA

Series: ✓*Biology*
✓*Horticulture*
✓*Food products processing technology*
✓*Environmental engineering*

Vol. XXIX (LXV) - 2024

THE PALETTE OF COLORS IN THE AUTUMN LANDSCAPE OF ROMANESCU PARK

Melinescu Andreea[1*]

[1*]University of Craiova, Faculty of Horticulture, Department of Horticulture and Food Science, no. 13, A.I. Cuza Street, 200585, Craiova, Romania

** Correspondence author. E-mail*: melinescu93@gmail.com

Keywords*: color design, landscape design, autumn color, color characteristic*

ABSTRACT

This study explores the influence of autumn colors on the aesthetic and emotional impact of the landscape in Nicolae Romanescu Park, Craiova, Romania. Using digital photography and Adobe Photoshop, a color palette was generated to analyze the hue, saturation, brightness (HSB), and CIELab parameters of the vegetation. Results show that the autumn palette is dominated by green and yellow hues, with a visible gradient in leaf colors reflecting seasonal changes. Warm colors provide visual energy and create a sense of movement, while green tones maintain balance and tranquility. These findings demonstrate how color can shape the aesthetic appeal of landscapes and affect the emotional well-being of visitors.*

INTRODUCTION

Landscape design studies have increasingly focused on the relationship between aesthetic preference and the landscape. Exposure to green spaces and plants has been shown to boost positive emotions, such as relaxation, comfort, and cheerfulness, while reducing negative feelings like tension, depression, and stress (Elsadek, et. al.2020, Xie et. al., 2021). The quality of vegetation color within a landscape plays a significant role in shaping the aesthetic function, but also the recreational function. When people first encounter an object, about 80% of their attention is drawn to its color, thus, color is the primary feature that captures their visual attention (Luo et. al., 2023). Color has the ability to transform negative feelings into positive ones, balance emotions, and create specific moods (Behe et. al., 1999). The ornamental color of plants during both the growing and dormant seasons contributes to the rhythm of the landscape (Wang, 2021). In the autumn season, people generally show a greater preference for vividly colored landscape features, such as the leaves of *Acer platanoides* (Yin et. al., 2024).

Autumn is the season when plants undergo the most significant seasonal changes (Luo et. al., 2023). Therefore, the purpose of this study was to generate an autumn color pallet of the landscape in Nicolae Romanescu Park from Craiova, to determine the aesthetic effect and how they can influence the viewer.

MATERIAL AND METHODS

To achieve the proposed of the study a series of photographs were made in Romanescu Park, Craiova, Romania (44.29765°, 23.80876°), with a digital camera

during October. To generate a color palette for each photo sample, Adobe Photoshop software was used to digitally process the colors of the vegetation, measuring the hue (H), saturation (S) and brightness (B), color property indicators, but also measuring the CIEL*a*b* parameters. The lightness component is L*, which ranges from 0 (black) to 100 (white). The a* and b* are two chromatic components, each ranging from -120 to 120. The a* parameter represents the color variation from green (−a) to red (a), while the b* parameter represents the variation from blue (−b) to yellow (b) (Yam & Papadakis, 2004). The average of CIEL*a*b* parameters was calculated in Microsoft Excel for each photo sample.

RESULTS AND DISCUSSIONS

Romanescu Park is a landmark for the residents of Craiova, serving as a space for relaxation, contemplation, and recreation. Color plays a vital role in landscape design, enhancing the park's aesthetic appeal while also influencing human behavior, as well as physical and mental well-being, through the colors perceived by visitors.

The palette of colors in Romanescu Park in October is presented in Table 1, green shades still being very present, followed by yellow. A gradient in the color of the tree leaves can be observed, reflecting their evolution, which highlights the aesthetic effect and how colors in nature can influence our perceptions and emotions, contributing to a sense of tranquility and well-being.

The landscape with the highest lightness (L*) is found in the RMO3 landscape, the yellow shades are the most predominant (b*: 46.63). Landscape RMO1 is the one getting close to red shades, according to the average a* parameter (-1.05). The color palette contributes to a dynamic landscape, creating a sense of movement, vitality, and joy.

The warm colors generated in the palette have a high wavelength, resulting in greater visual energy, making them easily noticeable from a distance. Due to these properties, they create a convergence effect, causing spaces to appear smaller and making distant or large areas seem closer than they actually are Eren et. al., 2022). However, excessive use of these colors can be overwhelming, making green shades ideal for maintaining balance and providing a calming effect for the viewer. Green wide range of tonal variations during autumn allows it to create an appealing and inviting spatial atmosphere and it plays a crucial role in harmonizing all the colors from the autumn palette.

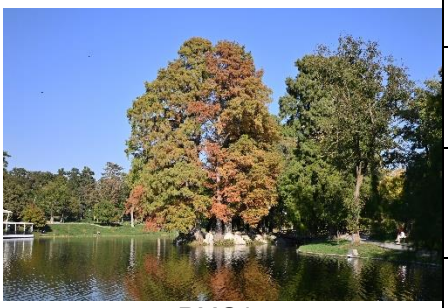
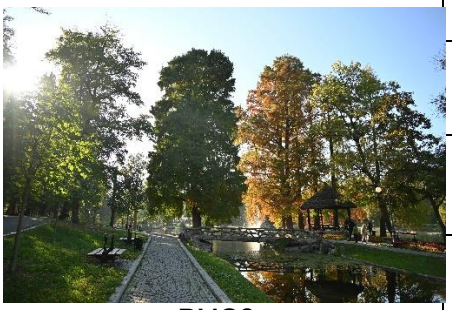
Humans feel comfortable in spaces with green plants, as the color green can induce positive emotions, reduce negative feelings, and stabilize the autonomic nervous system through increased parasympathetic activity (Kim & Lee, 2023).

Yellow is the first color perceived by the human eye, making it ideal for highlighting specific areas and prolonged exposure to yellow is believed to have positive effects on the neural and circulatory systems (Ender, et. al., 2016). Colors and landscape.

Describing and analyzing colors can be challenging, as they are influenced by the atmospheric light, weather, that can also change the viewer's perception and the aesthetic effect of the landscape.

Table 1

Palette of colors in Romanescu Park in October

Sample Photo	Color Palette	Color Property Values	CIEL*a*b*	Average CIEL*a*b*
 RMO1		H:53º S:57% B:55%	L*: 54.26 a*: -5.87 b*: 39.1	L*: 50.42 a*: -1.05 b*: 37
		H:17º S:65% B:71%	L*: 50.75 a*: 30.87 b*: 34.08	
		H:68º S:70% B:48%	L*: 48.71 a*: -16.72 b*: 43.48	
		H:43º S:66% B:58%	L*: 52.45 a*: 2.11 b*: 41.72	
		H:80º S:45% B:45%	L*: 45.93 a*: -15.66 b*: 26.64	
 RMO2		H:40º S:61% B:75%	L*: 64.99 a*: 5.76 b*: 45.28	L*: 42.80 a*: -1.23 b*: 31.712
		H:93º S:46% B:19%	L*: 18.2 a*: -10.06 b*: 12.47	
		H:60º S:61% B:35%	L*: 36.72 a*: -8.18 b*: 30.62	
		H:34º S:73% B:77%	L*: 60.95 a*: 16.96 b*: 50.95	
		H:77º S:43% B:32%	L*: 33.17 a*: -10.65 b*: 19.24	
		H:44º S:67% B:100%	L*: 85.51 a*: 3.87 b*: 65.51	L*: 59.57 a*: -3.3 b*: 46.63
		H:60º S:84% B:60%	L*: 61.24 a*: -14.68 b*: 60.03	
		H:83º S:60% B:36%	L*: 36.63 a*: -18.07 b*: 29.1	

 RMO3		H:26º S:53% B:76%	L*: 61.27 a*: 17.67 b*: 32.58	
		H:37º S:74% B:87%	L*: 70.04 a*: 14.83 b*: 58.97	
		H:87º S:62% B:43%	L*: 42.74 a*: -23.44 b*: 33.64	

CONCLUSIONS

The study highlights the significant role of color in shaping the aesthetic and emotional experiences within Nicolae Romanescu Park during autumn. The analysis of the autumn color palette revealed that green and yellow shades dominate, creating a harmonious balance between vibrant and calming elements. The presence of a gradient in leaf colors not only adds to the visual appeal but also mirrors the seasonal evolution of nature.

The seasonal changes in leaf colors create a dynamic rhythm within the landscape, reflecting nature's transformation and offering visual diversity that enriches the experience of the park. However, further in-depth studies are needed to better understand the complex interactions between color, environmental conditions, and human perception. Such research could provide valuable insights for landscape architects to design spaces that optimize both visual appeal and emotional well-being.

REFERENCES

Behe, B., Nelson, R., Barton, S., Hall, C., Safley, C. D., & Turner, S. (1999). Consumer preferences for geranium flower color, leaf variegation, and price. HortScience, 34(4), 740-742.

Elsadek, M., Liu, B., & Xie, J. (2020). Window view and relaxation: Viewing green space from a high-rise estate improves urban dwellers' wellbeing. Urban Forestry & Urban Greening, 55, 126846.

Ender, E., Akdeniz, N. S., & Zencirkıran, M. (2016). Colors and landscape.

Eren, E. T., Alpak, E. M., & Düzenli, T. (2022). Color associations in landscape design and subscription levels to these associations. Environmental Science and Pollution Research, 29(47), 70842-70861.

Kim, E., & Lee, H. (2023). Seasonal Forest Changes of Color and Temperature: Effects on the Mood and Physiological State of University Students. International Journal of Environmental Research and Public Health, 20(14), 6338.

Luo, Y., He, J., Long, Y., Xu, L., Zhang, L., Tang, Z., ... & Xiong, X. (2023). The relationship between the color landscape characteristics of autumn plant communities and public aesthetics in urban parks in changsha, China. Sustainability, 15(4), 3119.

Wang, D. (2021). Seasonal color matching method of ornamental plants in urban landscape construction. Open Geosciences, 13(1), 594-605.

Xie, J., Liu, B., & Elsadek, M. (2021). How can flowers and their colors promote individuals' physiological and psychological states during the COVID-19 lockdown?. International Journal of Environmental Research and Public Health, 18(19), 10258.

Yam, K. L., & Papadakis, S. E. (2004). A simple digital imaging method for measuring and analyzing color of food surfaces. Journal of food engineering, 61(1), 137-142.

Yin, M., Li, K., Xu, Z., Jiao, R., & Yang, W. (2024). Exploring the impact of autumn color and bare tree landscapes in virtual environments on human well-being and therapeutic effects across different sensory modalities. Plos one, 19(4), e0301422.