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STRATEGIC INTEGRATION OF ORNAMENTAL PLANTS IN UNIVERSITY CAMPUSES: ENHANCING ENVIRONMENTAL IMPACT AND EDUCATIONAL ENGAGEMENT FOR SUSTAINABLE DEVELOPMENT.

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Abstract

Ornamental plants play a significant role in enhancing the environmental sustainability and aesthetic appeal of urban landscapes. Despite their importance, there is limited understanding of how ornamental plants are perceived and utilized within University campuses, particularly in developing countries. This study investigated the perception, knowledge, and impact of ornamental plants on the Igbariam campus of Chukwuemeka Odumegwu Ojukwu University in Nigeria. Through a structured questionnaire administered to a representative sample of the University community, the study identified key trends revealing that while the ecological benefits of ornamental plants are widely recognized, there is a notable gap in knowledge and educational engagement. This study highlighted the need for strategic placement, consistent maintenance, and educational initiatives to fully realize the ecological and social benefits of ornamental plants on University campuses. The findings inform recommendations for enhancing campus sustainability and student engagement through improved management and educational practices.

Keywords: Ornamental plants, University campuses, Environmental sustainability, Educational engagement, Ecological benefits, Campus green space.

Introduction

Increasingly, ornamental plants are more widely recognized as an essential part of urban forestry. They contribute immensely to the improvement of environmental sustainability and aesthetics of urban landscapes. The production and use of ornamental plants have significant potential for food and income security in Nigeria. As an agrarian society, approximately 70% of Nigeria's population is engaged in agricultural production (Ani *et al.*, 2018); most of which are focused on ornamental horticulture, especially in urban areas. Ornamental plants serve as food and natural remedies for various health challenges. In many societies, different species of ornamental plants are associated with specific events such as rose flowers (*Rosa rubiginosa*) used to

mark Valentine's season while the poinsettias flowers (*Euphorbia pulcherrima*) are associated with the yuletide period (Aquccah, 2002).

Ornamental plants are very important especially in the area of sports and recreation as turfs in the sports field, leisure gardens, and relaxation centres where people can converse and interact (Shade trees, ornamental shrubs, vines, and herbaceous perennials are also used as windbreaks, habit, and bedding plants (Li *et al.*, 2022). For indoor beautification, cut flowers, and dried flowers are often used (Chen, 2021). In arts, architecture, photography, textiles, money, stamps, flags, and coats, images of plants are often used for designs (Francini *et al.*, 2022). Ornamental plants, in addition to being appealing, provide essential ecological

services, such as air purification, carbon sequestration, climate regulation, and supporting biodiversity through habitat provisioning and as food sources for various wildlife species, including birds (Hillock *et al.*, 2018; Idilfitri and Mohamad, 2018). The integration of ornamental plants into university campuses is particularly important, as these institutions provide an opportunity to study urban green spaces and their impact on community well-being. However, there is limited understanding of how ornamental plants are perceived and utilized within campus communities, especially in developing countries.

This study therefore investigated the perception, knowledge, and impact of ornamental plants on the Igbariam Campus of Chukwuemeka Odumegwu Ojukwu University, Nigeria; with the view of informing better management and educational practices that can enhance the sustainability and educational value of campus green spaces.

Materials and Methods

The study was conducted at the Igbariam Campus of Chukwuemeka Odumegwu Ojukwu University (COOU), located between latitudes 6.27321° to 6.31003° N and longitudes 6.94869° to 6.98174° E in Southeastern Nigeria (Ibeh and Nworji, 2022).

A structured questionnaire was designed to collect data from a representative sample of the University community, including students, faculty, and staff. The survey was administered to diverse demographics of the campus population and 152 copies of the questionnaires were retrieved. The survey instrument was divided into sections to address specific research questions. The data collected were analyzed using descriptive statistics, aimed to identify key trends in the perception and knowledge of

ornamental plants, as well as to highlight areas where educational and management interventions might be needed.

Results and Discussions

Our research provided insight into the educational potential, ecological benefits, and visibility of ornamental plants on Igbariam campus of the University.

Awareness and perception of ornamental plants:

The greater proportion of the respondents (39.5%) occasionally noticed ornamental plants on campus, while 22.4% rarely noticed them (Figure 2). The low visibility of these plants can be attributed to their scattered distribution, which limits their impact on campus aesthetics (Kendal *et al.*, 2012). This finding aligns with Lin *et al.* (2014) who reported the importance of strategic plant placement in urban green spaces to enhance visibility and community engagement.

Ecological and social impact

The environmental benefits of ornamental plants were overwhelmingly recognized, with 95.4% of the respondents affirming their positive impact on the environment and only 4.6% disproving it (Figure 3a&b). Furthermore, 86.8% of the respondents reported that these plants positively affected their mood and overall campus experience (Figure 4). This is consistent with study highlighting the psychological benefits of exposure to nature and green spaces (Jabbar *et al.*, 2022).

Knowledge and educational engagement

Despite the recognized benefits, there is a notable gap in knowledge about these plants. Most of the respondents (71.1%) reported having limited knowledge of ornamental plants (Figure 4), and 76.3% had not participated in any workshops or

classes related to ornamental horticulture (Figure 5). This aligns with research indicating that educational engagement with green spaces can significantly enhance environmental awareness and sustainability practices (Roger, 2018). The lack of educational initiatives represents a missed opportunity for integrating ornamental plants into the educational framework of the university, which could foster a more engaged and environmentally conscious community.

Maintenance and management

Maintenance emerged as a critical issue, with 40.8% of respondents perceiving the plants as not well-maintained (Figure 6). Effective maintenance practices, such as regular pruning and strategic planting, are essential to sustain both the visual appeal and ecological benefits of ornamental plants. This finding is supported by previous studies that emphasize the role of consistent maintenance in the success of urban green spaces (Jim, 2013). Improved management strategies are necessary to maximize the impact of these plants on campus sustainability and student engagement.

Conclusion

The study underscores the importance of strategic placement, maintenance, and educational initiatives to fully leverage the ecological and social benefits of ornamental plants on university campuses. The findings reveal that while the environmental benefits of these plants are widely acknowledged, their potential is not fully realized due to issues related to visibility, maintenance, and a lack of educational engagement. Strategic placement and improved maintenance practices are essential to maximize the impact of ornamental plants. Furthermore, integrating these plants into the educational framework of the university can foster a more

environmentally conscious and engaged community. By addressing these areas, the university can enhance the role of ornamental plants in contributing to a sustainable and aesthetically pleasing campus environment.

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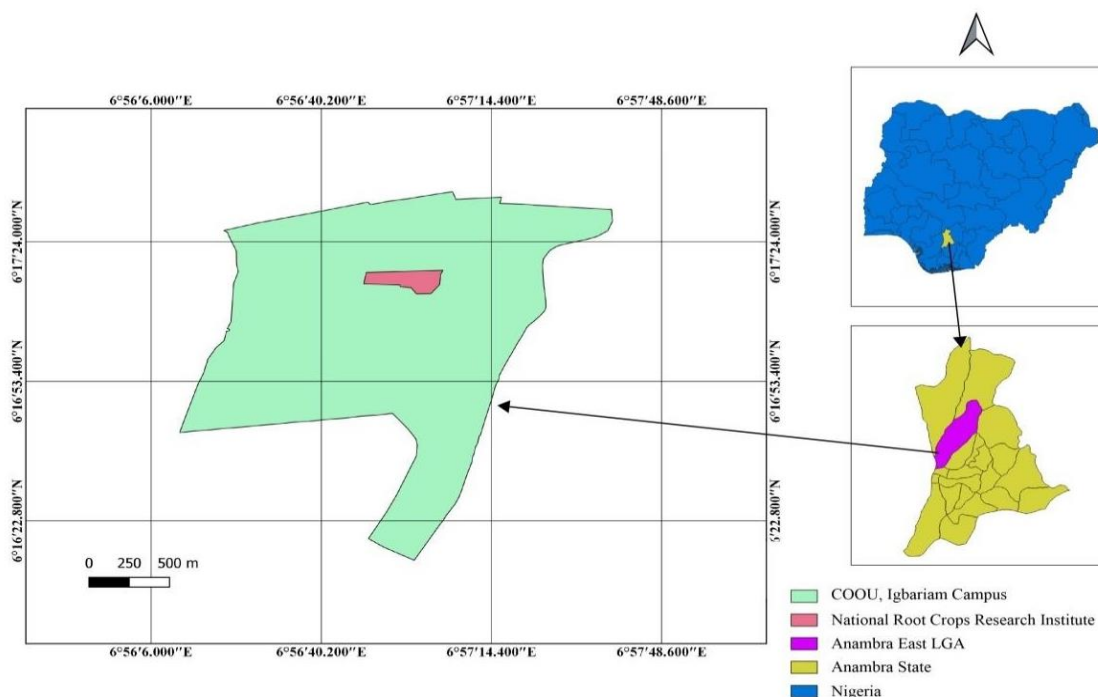


Figure 1. Map of the COOU Igbariam campus (Ibeh & Nworji, 2022).

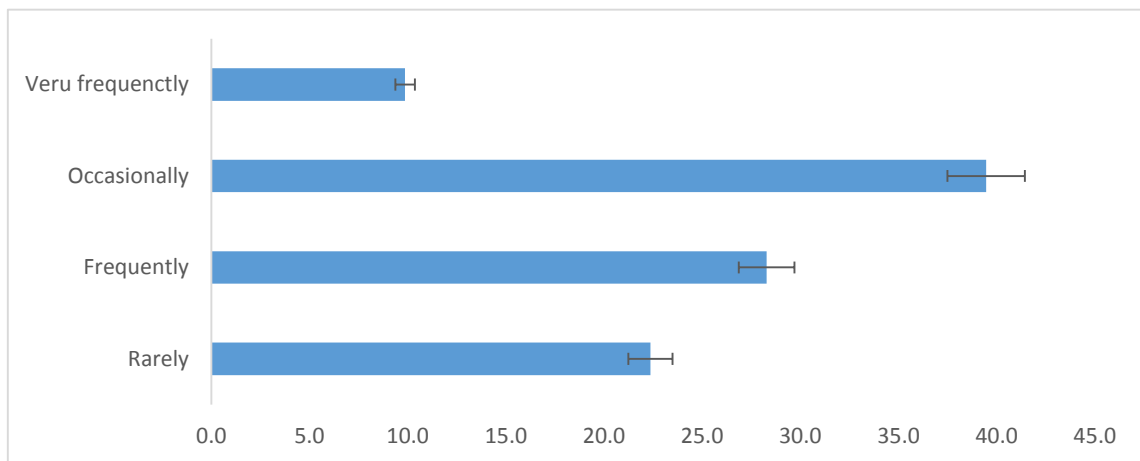


Figure 2. Response on how often the ornamental trees are being noticed by the respondents.

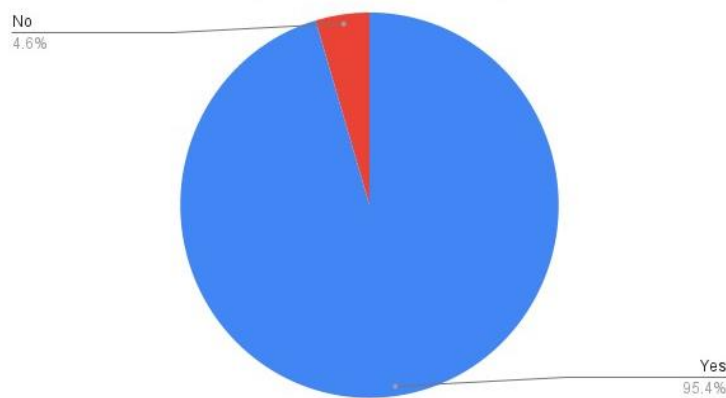


Figure 3a. Impact of ornamental plants and trees on the environment.

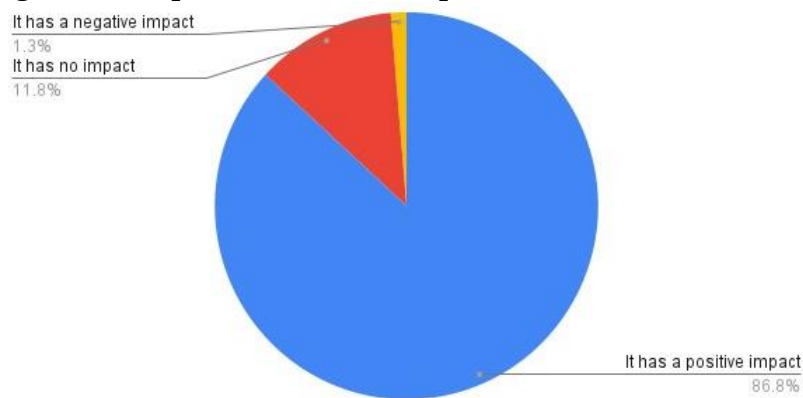


Figure 3b. Perception of the effect on the mood and overall experience of ornamental plants and trees.

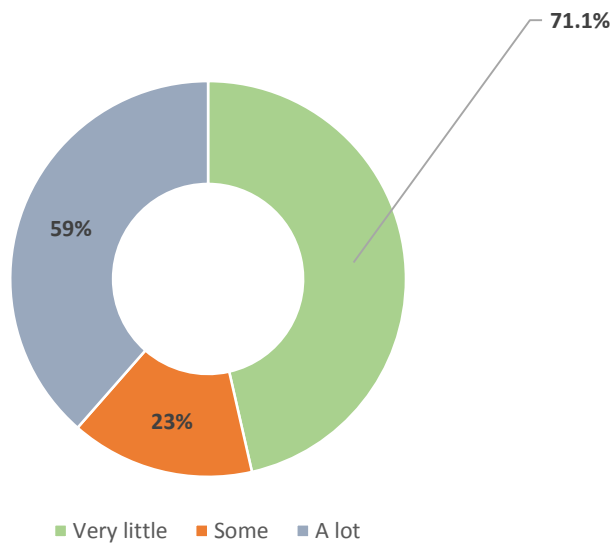


Figure 4. Knowledge about the types of ornamental plants and trees on campus.

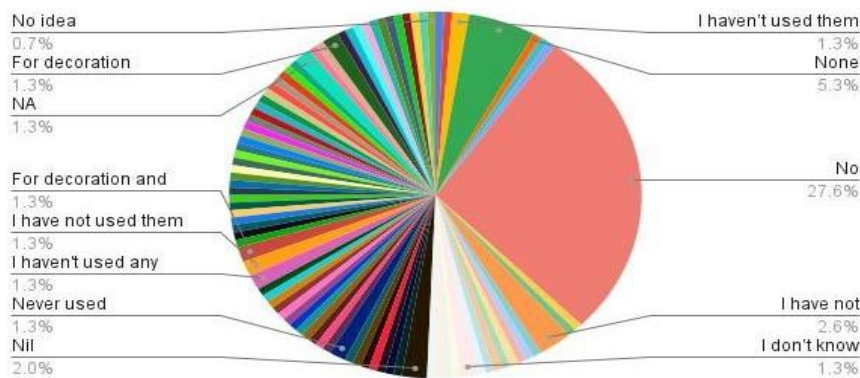


Figure 5. Perception impact on the use of ornamental plants and trees.

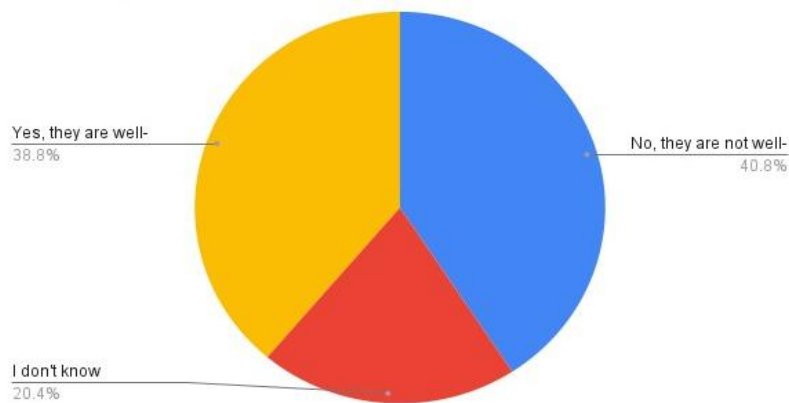


Figure 6. Perception of well-maintained ornamental plants and trees in the study area.