

THE NEED FOR COMMUNITY AWARENESS REGARDING THE IMPORTANCE OF NATIVE TREES: A SURVEY-BASED STUDY

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ABSTRACT

Public perception and awareness are crucial for the success of programs that impact the public domain, particularly those aimed at environmental conservation. In response to present challenges of climate change and the need to reduce carbon footprints, tree plantation initiatives have gained momentum. However, many such programs often focus on fast-growing exotic species, due to their rapid carbon sequestration potential. In the long run, these well-intentioned efforts can inadvertently disrupt local ecosystems by outcompeting native species. In the process they alter habitat dynamics and threaten biodiversity. This study aimed to assess the public awareness of native tree species, which are inherently more climate-resilient and better suited to local ecological conditions. A survey questionnaire was designed with 10 questions to assess participants' knowledge of native tree species. The survey encompassed 200 participants, including students and individuals from diverse educational and professional backgrounds. The findings highlighted the need for increased public awareness regarding the ecological and cultural significance of native trees. Many participants were unaware of the term 'native trees' while others had a basic idea about them but were unaware of such trees in their surroundings. More than half of the participants believed that they were mainly used for ornamental purpose. Given their role in enhancing biodiversity, mitigating climate change, and fostering sustainable ecosystems, targeted educational campaigns and community-driven initiatives may help promote the value of native trees.

KEYWORDS: Biodiversity, Carbon Footprint, Ecological Balance, Native Trees, Public Awareness.

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INTRODUCTION

Native trees represent the rich diversity of tree species that have thrived in specific regions for hundreds, if not thousands, of years. These trees have evolved to adapt to local ecosystems by enduring fluctuations in environmental conditions such as heat, light, and water stress [1]. Over time, they have developed resilience to climatic changes and associated stressors. As a result, they are key players in stabilizing local ecosystems. More importantly, native trees are fundamental to sustaining biodiversity. They provide critical support to native wildlife, including birds, mammals, insects, and microbial flora. In turn, this fosters interdependent relationships within ecosystems. Through these processes, native trees promote and sustain an ecological balance [1, 2]. Since native trees are inherently resilient to adverse conditions prevalent in a particular region, they offer the most compelling advantage of low-maintenance and minimal human interventions in terms of watering, fertilizing or pest control [1].

In contrast to native trees, several varieties of hardy or bushy plants either invade an ecosystem or are intentionally introduced by humans as part of afforestation programmes [3]. Presently, tree plantation drives have gained popularity as a response to global warming and climate change [4]. These non-native tree species present a different dynamic in ecosystems. They are selected based on their fast-growing, pollution controlling or aesthetically pleasing characteristics. While these species have contributed to carbon sequestration by increasing green cover and addressing immediate environmental concerns, they often fail to withstand long-term climatic variability. Another major disadvantage, particularly of invading species, is that they may out-compete the resilient native species for resources, disrupting local biodiversity and compromising the ecological balance [3]. This is because the non-native trees may fail to provide the same food, shelter, or other ecological benefits to different animals and birds equally. It is quite possible for one or few species of animals and birds to dominate, along with the non-native trees introduced intentionally or un-intentionally [5]. Overall, the well-intentioned afforestation efforts risk ecological imbalance and may pose unintended consequences [4, 5].

Public awareness regarding the importance of native trees is a small step that may reap significant benefits in terms of achieving the much needed sustainability goals defined by United Nations' Development Programme [6]. Besides, native trees serve as a link to a region's environmental and cultural heritage. Unfortunately and un-intentionally, the importance of native species is often overlooked in large-scale tree plantation drives and afforestation initiatives aimed at addressing climate change. Considering these facts, this survey-based study is a preliminary effort undertaken to understand public perception and awareness regarding native trees.

METHODS

The study employed a survey methodology using a structured questionnaire focused on native trees. The questionnaire is represented as Fig.1. A total of 200 participants were surveyed, comprising both students and adults from varied educational backgrounds. The questionnaire was designed to assess participants' basic knowledge of native tree species, rather than their ecological significance or role in biodiversity conservation. The survey was conducted in urban and semi-urban areas, in India to ensure a diverse demographic representation. The responses were analysed using statistical methods to identify patterns, trends, and gaps in public awareness. The survey also included an open-ended question for participants' suggestions to gather qualitative insights into their views on tree plantation drives and the use of native species.

A SURVEY OF PUBLIC AWARENESS ON NATIVE TREES

Name : _____ Age : _____

Gender : _____ Occupation : _____

1) What is a Native tree ?

(a) Tree that has not been introduced by man and occurs naturally. ☐

(b) Tree that has been introduced by man and does not occurs naturally. ☐

(c) Tree that has been introduced to an area from outside. ☐

2) How many Native trees do you know?

(a) 1-5 ☐ (b) 6-10 ☐ (c) > 10 ☐ (d) none ☐

3) Name the Native trees ?

4) From where did you get the knowledge of Native trees?

(a) Books /syllabus ☐ (b) Family ☐

(c) Internet ☐ (d) Interpersonal communication ☐

5) How many Native trees are present around your residence?

(a) < 10 ☐ (b) > 10 ☐ (c) None ☐ (d) Don't know ☐

6) On what basis do you select trees for plantation?

(a) Ornamental (based on beauty) ☐ (b) Indigenous /native ☐ (c) Cost effective ☐

7) Do you think awareness is needed on this subject?

(a) Yes ☐ (b) No ☐

8) Would you like to be part of awareness program on Native trees?

(a) Yes ☐ (b) No ☐

9) Suggest which medium can provide maximum awareness on this topic?

(a) Syllabus ☐ (b) Government ☐ (c) NGO's ☐

10) Any other suggestion:1)

2)

Sign : REDMI NOTE 8 PRO

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Figure 1: Structured Questionnaire on Native Tree Awareness

RESULTS

The observations of this study provided insights into the public's knowledge and perception of native trees. While 87% of participants selected correct definition of native trees from the given options (Q1 in Fig. 1), a significant gap in practical knowledge was evident. Fig. 2 represents the extent of knowledge of native trees among participants. Approximately, 56% of participants could identify between 1 to 5 trees and 17% demonstrated a higher familiarity by naming up to 10 native trees. Interestingly, 11.5% participants had above average level of knowledge and could name more than 10 native trees. Around 15% respondents admitted to having no knowledge of native trees. Although these responses led us to believe that there is some degree of public awareness regarding native trees, enquiries related to surrounding native trees revealed a concerning lack of awareness. Over 43% participants either had no idea (26%) or believed there were no native trees in their area (17%).

Besides actual knowledge, identifying the relevant sources for acquiring information is an important parameter for spreading awareness. When participants were asked regarding their knowledge source, interestingly, 43% of those aware of native trees credited family members as their primary source (Fig. 3). Despite this, misconceptions persist, as 64.5% of participants believed native trees are best used for ornamental purposes rather than their ecological benefits (Fig. 3). Overall, our findings demonstrate a significantly low level of awareness regarding native trees, and highlight a pressing need to enhance public engagement and education regarding native biodiversity.

Encouragingly, 93% of participants positively suggested the importance of creating awareness programs for native trees, and 91% of these participants expressed a willingness to participate in such initiatives. When asked about the best platform to spread awareness, 62% believed that integrating knowledge about native trees into school curriculum would be the most effective approach. In contrast, fewer participants believed NGOs (16%) or government bodies (22%) are more effective drivers of such efforts.

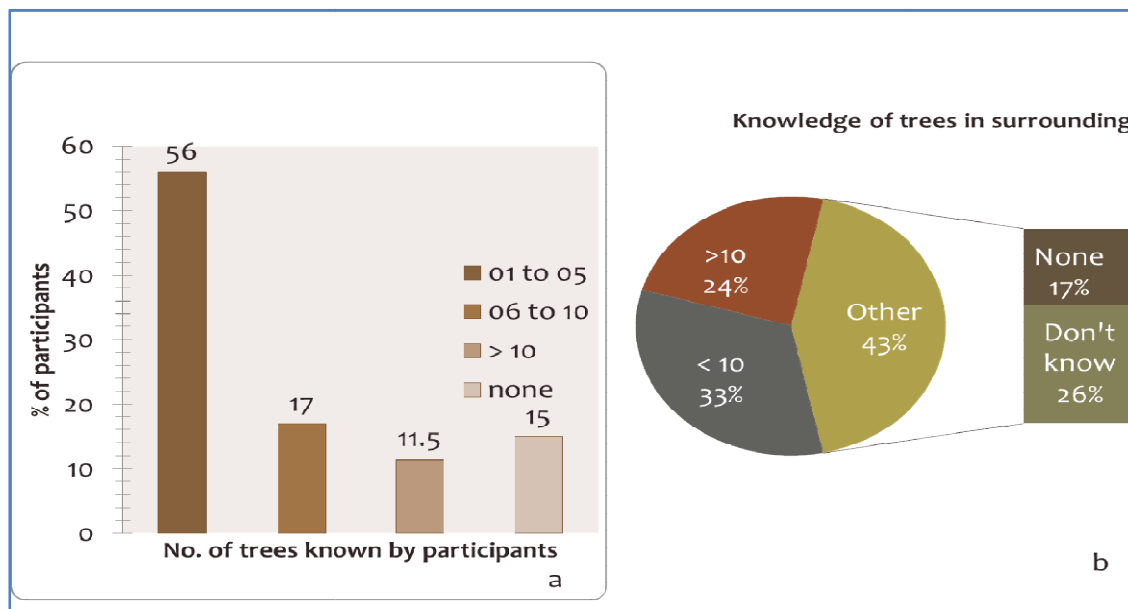


Figure 2: Knowledge of Native Trees Among Participants.

Figure represents the knowledge of diversity of native trees in general (a) and participants' surroundings (b)

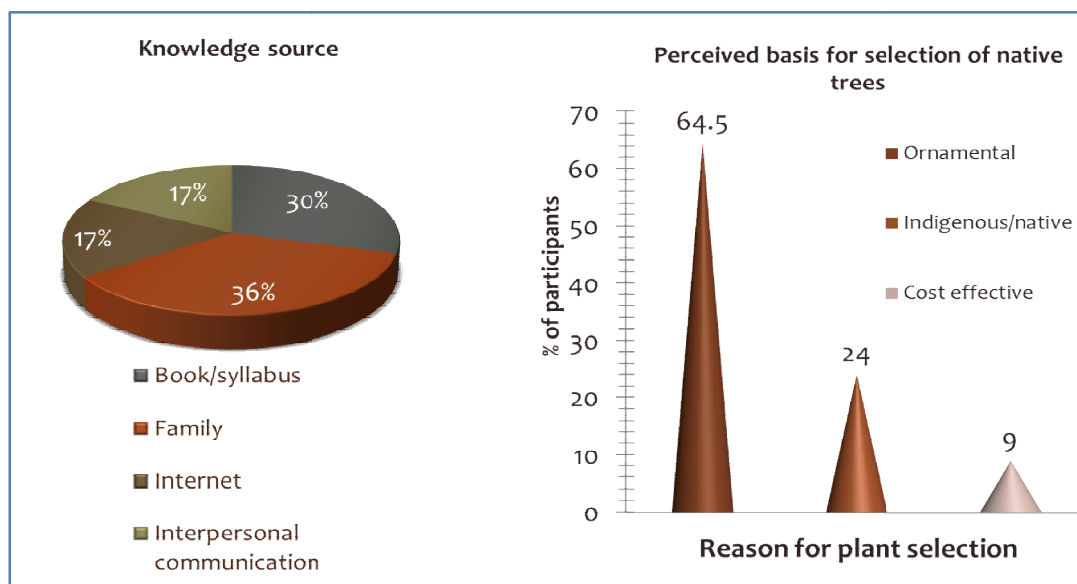


Figure 3: Knowledge Source and Understanding of Native Trees Among Participants.

DISCUSSION

Public perception and awareness play a central role in initiating and sustaining programs related to environmental conservation and the public domain. Hence, understanding the level of public awareness about native tree species is essential for developing effective conservation strategies. This study aimed to assess public knowledge and perception of native trees among 200 participants across India. The survey revealed significant gaps in awareness despite some degree of theoretical understanding.

The study revealed that 87% of participants correctly identified the definition of native trees, demonstrating a theoretical understanding. However, practical familiarity and engagement were considerably lower. A notable 43% of respondents either did not know about the presence of native trees in their surroundings or believed there were none. Overall, these observations suggest that a vast majority of participants lacked interest in local bio diversity. A similar study conducted in Ontario, Canada, examined residents' attitudes toward native trees and found generally positive perceptions. However, despite acknowledging the benefits of native species, many residents were reluctant to plant them for reasons such as minimal gains or high initial maintenance costs. Furthermore, these positive attitudes did not necessarily translate into the active selection of native species when choosing trees to plant [7]. Linking these reports to general human behaviour, we can suggest that awareness alone may not be the solution here; instead additional incentives or interventions may be required to encourage active participation in native tree conservation strategies.

Interestingly, the primary source of knowledge for those aware of native trees in this study was family members (36%). This emphasizes the role of informal education in shaping environmental awareness. At the same time it raises an important concern. While native residents may have a stronger connection to native trees, the urban population are often detached from their natural surroundings. In fact, in the rapidly urbanizing environments, people generally lack both time and interest to explore or engage with native biodiversity. Providing tangible benefits to urban population may be one of the possible ways to bridging this gap. A study by Kaplan et al. [8] highlights a key conflict between urban and rural populations regarding their perceptions of trees. The research states that there are diverse public preferences, where they seek social and personal (in terms of food, medicine or green landscape for aesthetic reasons) benefits from the trees. Hence, if we can integrate the cultural and functional values of native trees into public green spaces, tree selection can be guided by multiple objectives. This approach can ultimately balance environmental sustainability with human needs.

The ecological importance of native trees cannot be overstated. Recent studies have shown that native tree species positively influence soil chemical properties in agro forestry systems [9]. Additionally, research conducted in Hawaiian wet forests indicates that native trees exhibit more conservative water use compared to invasive species. This further reinforces the necessity of preserving native-dominated ecosystems [10]. Overall, these studies suggest that controlling invasive species and prioritizing native trees can contribute to sustainable water management and improve soil quality.

CONCLUSION

The perception that native trees are merely ornamental and hold little functional value may be an urban misconception. Without proactive awareness campaigns, such misconceptions will persist, hindering conservation initiatives. Climate change and biodiversity loss are pressing concerns that cannot be addressed solely by the efforts of scientists, botanists, or governmental bodies. To foster a deeper appreciation for native trees, targeted awareness campaigns, community-driven tree-planting initiatives, and educational programs should be implemented. By highlighting the ecological, economic, and cultural significance of native trees, individuals may be more inclined to actively engage in conservation efforts.

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