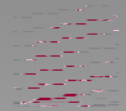# Does Plant Color Affect Emotional Responses To Landscapes?

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Objectives

The hypothesis that viewing trees of different colors will evoke different emotions was developed based on evolutionary survival theories. Colors could be cues associated with long and short term landscape sustainability. For instance, deep green foliage might indicate a nutritious plant with high sugar and carbohydrate content and evoke a positive emotion, whereas yellow foliage might indicate a nutrient deficiency and elicit a negative response. The objective of Phase 1 was to determine the range of tree colors that evoke human responses.
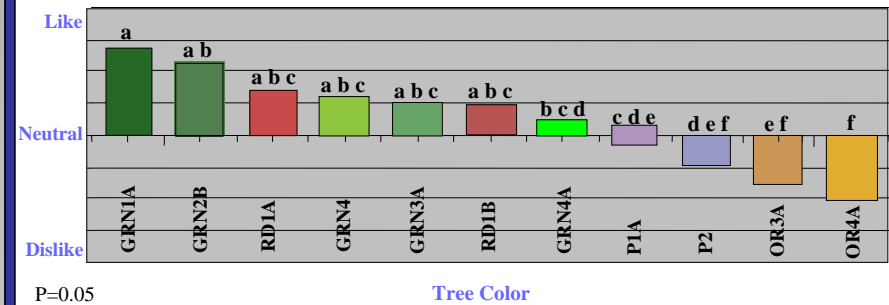
Introduction

Color has been studied since ancient times in many cultures. Surprisingly, few studies have addressed plant color and its influence on people. Extending research to investigate whether different plant colors contribute to exciting or calming landscapes could have tremendous economic and social impacts. This poster discusses Phase 1 of a two phase research study addressing what effect plant colors have on people's emotional and physiological states. Phase 1 focuses on general plant color preference ratings. Phase 2 will monitor emotional and physiological responses to tree colors.

Methods

Phase 1 used a simple methodology, preference ratings, to examine responses to a range of hues and intensities. Nine respondents (ages:27-77) were shown computer-generated images of one tree form in 52 different colors (illustrated on the top and bottom of this poster). They were asked which trees they liked and disliked. After this, a subset of images of the tree in 11 colors was selected. It included colors that consistently evoked very positive or very negative ratings. Yellow hues, for example, were not included in the subset, because they tended to receive neutral ratings. The subset of colors was then shown to 24 respondents (ages:20-61). Respondents were asked to rate each tree color by saying which they liked, disliked, or felt neutral about. Results from these 24 respondents are presented.

Results and Discussion

Tree Color Preference Rating

Like — Neutral — Dislike

a: GRN1A
a b: GRN2B
a b c: RD1A
a b c: GRN4
a b c: GRN3A
a b c: RD1B
b c d: GRN4A
c d e: P1A
d e f: P2
e f: OR3A
f: OR4A

P=0.05 — Tree Color

As expected, people expressed a range of preferences among the presented tree colors. All green and red trees, regardless of hue and intensity, evoked positive responses. Purple trees received both neutral and negative ratings, whereas orange-brown colored trees were rated negatively. GRN1A was rated significantly different from GRN4A, indicating that people can respond differently to trees within the same color hue. These responses to different hues appear to be related to the evolutionary survival theory. To understand these phenomena, Phase 2 will incorporate recording emotional and physiological responses, such as heart rate, electro-dermal activity, and muscle activity during smiling and frowning, while respondents view slides of trees of different foliage colors.

Conclusions

Phase 1 showed that people exhibit strong responses to a range of tree colors, varying in hue and intensity. Generally, greens and reds were preferred to purples, oranges, and browns. Phase 2 will determine whether these preferences are associated with physiological responses as well.