

Assessing suitability of landscape palm trees in the urban environments of southern Arizona



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Introduction

Palm trees have become icons of the deserts of the southwestern United States. Palms exist as a symbol of the climate and overall environment of these areas, and are closely linked to images of a desert oasis. In a contemporary context, urban environments like Tucson, Arizona act as these oases. Because of their ubiquitous use in landscape design, understanding how these plants impact and contribute to their surroundings can help facilitate and improve future landscape planning.

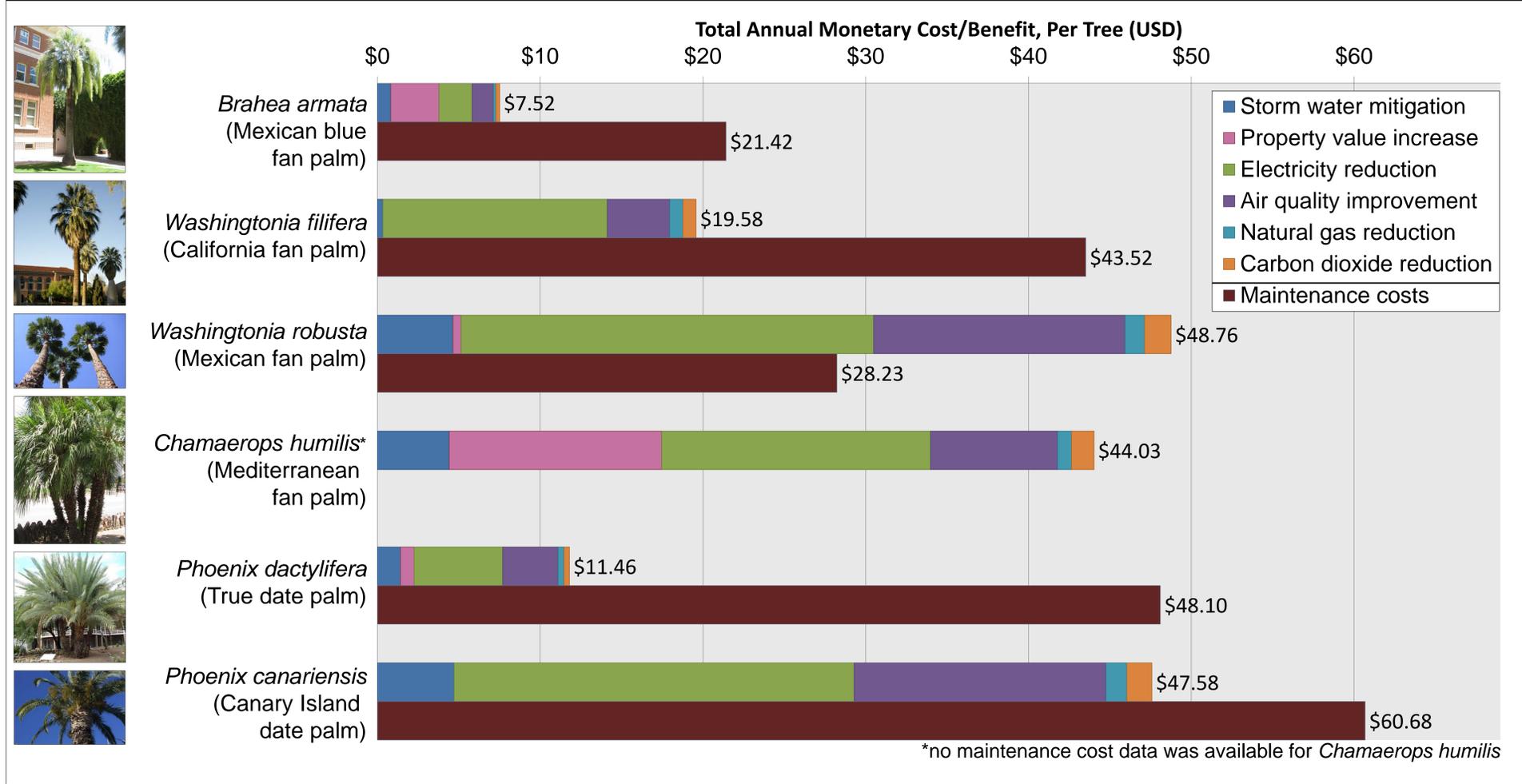
The intention of this thesis is to assess the suitability of palm species used as landscape ornamentals in southern Arizona. The study includes research on six palm species, three native and three non-native to the Sonoran Desert region.

Methods

The study used two approaches: a case study of the selected palm species as used at the University of Arizona Campus Arboretum, and a cost-benefit analysis based on the results of this case study.

Data for the case study was collected through field measurements and from UA Facilities Management, and processed using the National Tree Benefits Calculator software. A qualitative assessment of the relative aesthetic value of each species was also conducted as part of the case study, and was used in comparing the overall value of each species.

Costs & benefits



Results

The National Tree Benefits Calculator determines the economic benefit, or savings, provided by the presence of a tree within an urban setting, with benefits divided into six categories: storm water mitigation, property value increase, electricity reduction, air quality improvement, natural gas reduction, and carbon dioxide reduction. These benefits were compared to the average tree maintenance cost for each species to determine the net economic value contributed by a tree over the course of a year.

Of the five palm species for which complete data was available, only *Washingtonia robusta* had a positive net value, while the maintenance costs of the other species was greater than the benefits they provided annually. The three native species generally had a higher net value than the non-native species. However, it was concluded that, despite the relatively high cost of maintaining many of the selected palm species, there is value in their use in urban landscapes, through aesthetic and cultural contributions, and species selection should still be made on a case-by-case basis, accounting for the specific conditions of a site.