



AFRICAN FORUM
ON URBAN FORESTS

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IMPACT OF MONOCULTURE URBAN FOREST AND THE USE OF INDIGENOUS TREES TO MITIGATE CLIMATE CHANGE IN CITY OF JOHANNESBURG, SOUTH AFRICA

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INTRODUCTION

- VISION: A Joburg that is environmentally sustainable and liveable



1890



1950



2022



COJ TREE PLANTING HISTORY

- City of Johannesburg is savannah grassland
- Tree planting started to boom during gold rush in 1880's
- Settlers brought seeds and seedlings
- Some of the trees were used in mining e.g Eucalyptus spp
- Other tree species were used for homes, streets and parks.
- All the trees were exotic trees from various regions

WHAT IS URBAN FOREST



WHAT IS MONOCULTURE



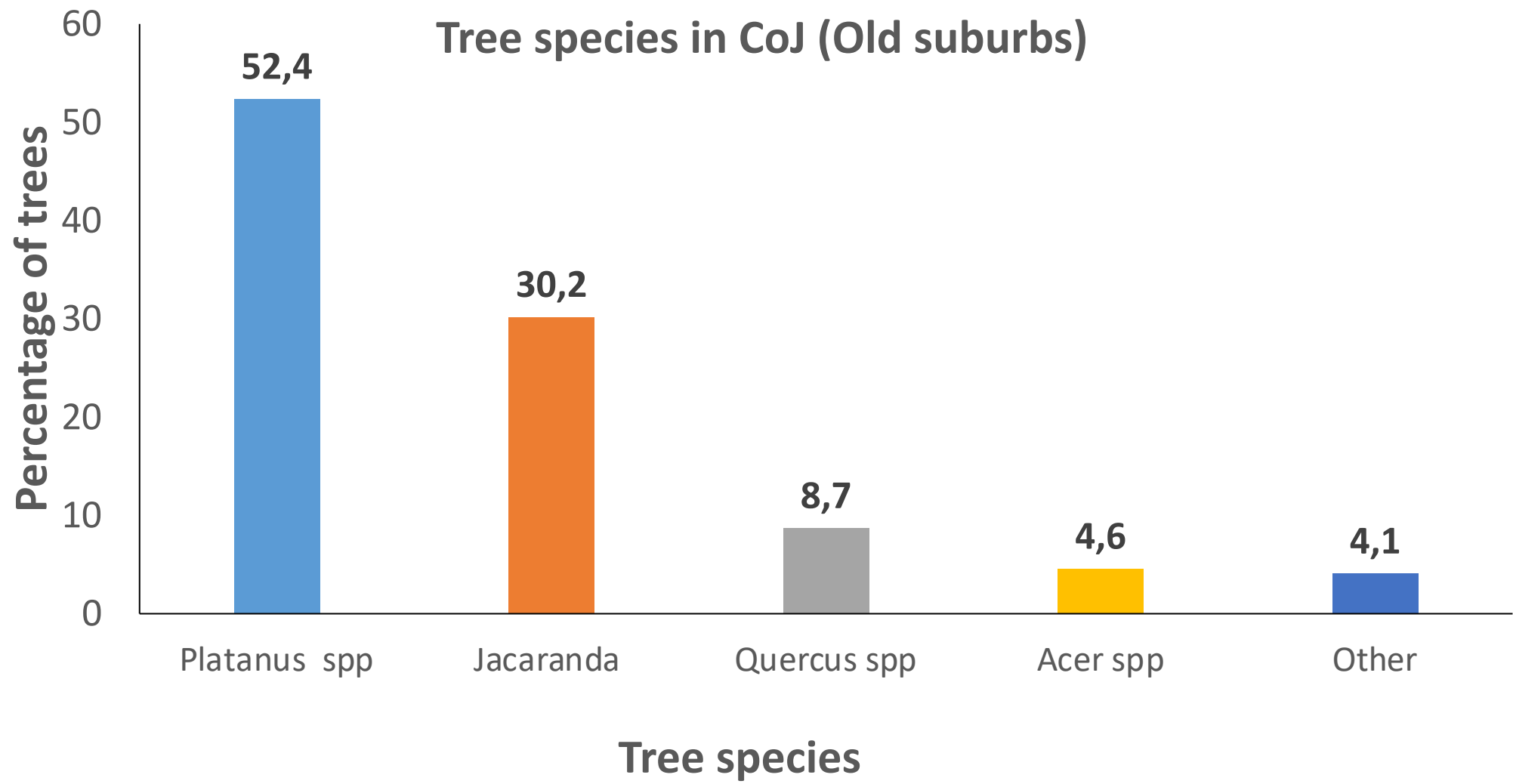
Picture: (Worldkings, 2019)

Materials and methods

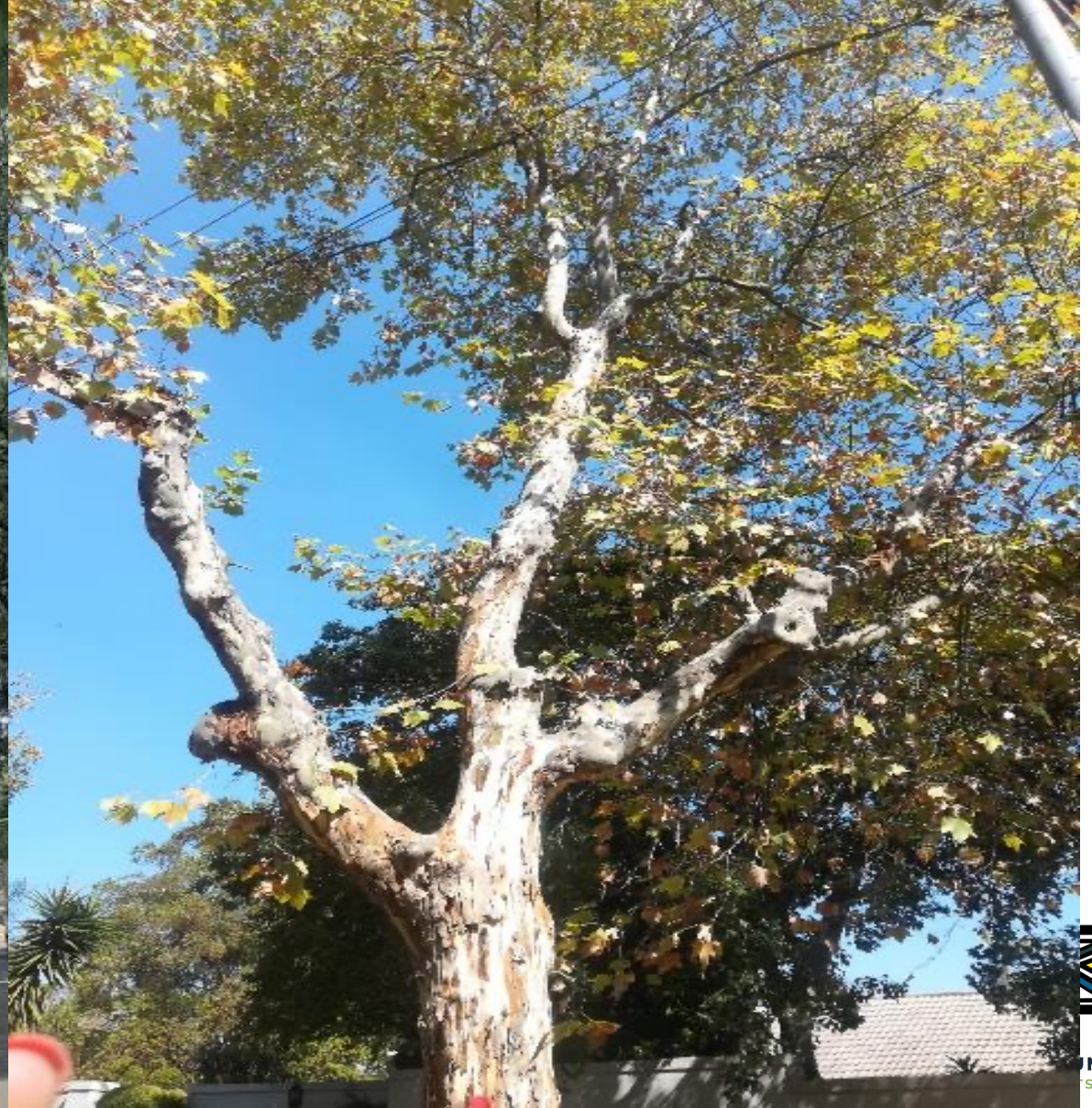
- Data collected on various streets and parks
- Data was collected and captured on GIS
- Data was analysed using excel



TREES SPECIES IN THE NORTH OF JOBURG



MAJOR TREE SPECIES IN OLD JOHANNESBURG SUBURBS

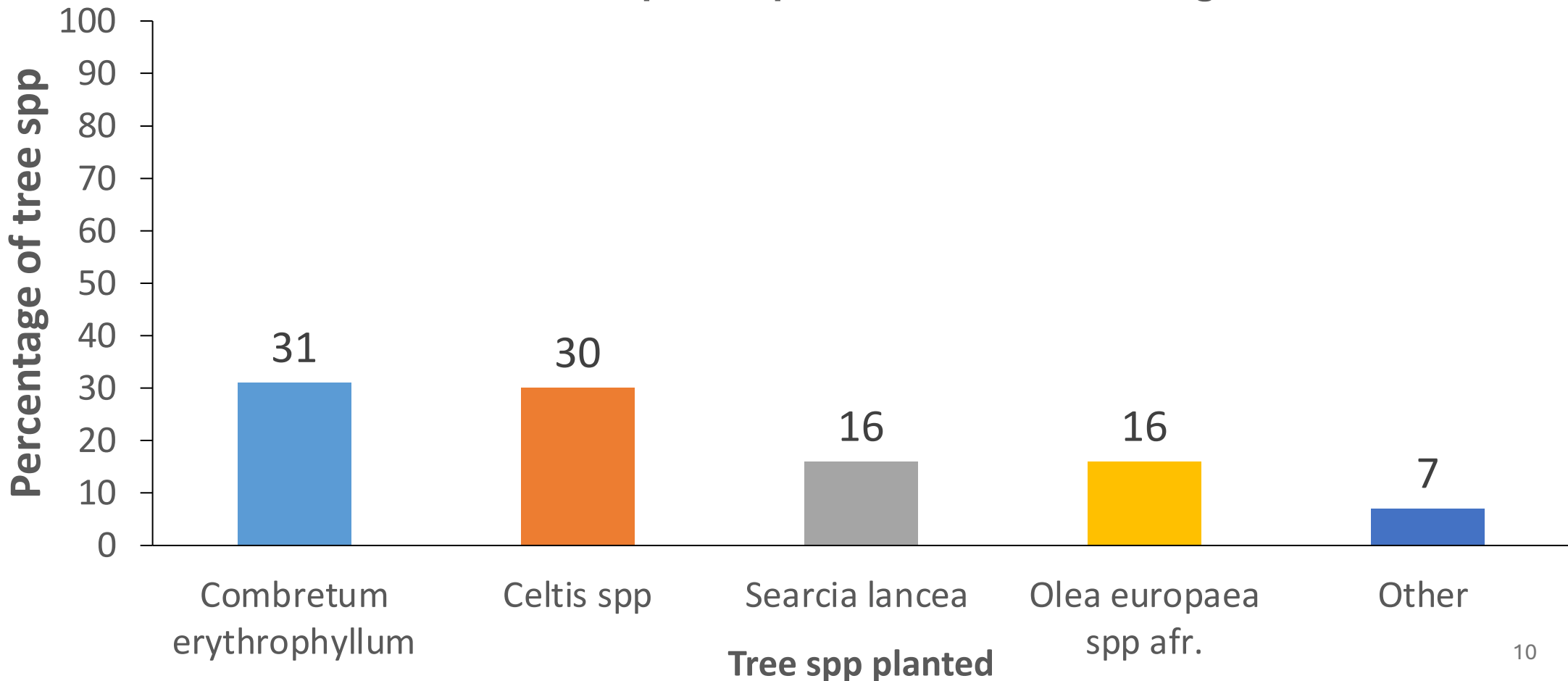


CURRENT MONOCULTURE PLANTING TREND

Greening of Soweto, Estimated 200 000 trees planted

11 different species planted and 93% are four main species

Four main tree species planted in South Joburg



MOST COMMON SPECIES



*Combretum
erythrophyllum*



Celtis africana



*Searsia
lancea*



*Olea europaea subsp.
africana*

CURRENT IMPACT OF MONOCULTURE IN COJ

PSHB – Majority of trees are reproductive host

Oak wilt disease and drought

Cost associated with removal of dead trees

Cost associated with tree planting

Cost associated with tree maintenance

Deforestation is eminent



Over indulgence?

Too much of good things can be dangerous

Monoculture can create environmental dessert

Trees may be wiped out by outbreak of pest attack (e.g. PSHB, Emerald ash borer)

Trees may be wiped out by diseases (e.g. Oak wilt diseases, Dutch Elm disease).

Climatic conditions such as drought



Pin oaks decline



English oak decline

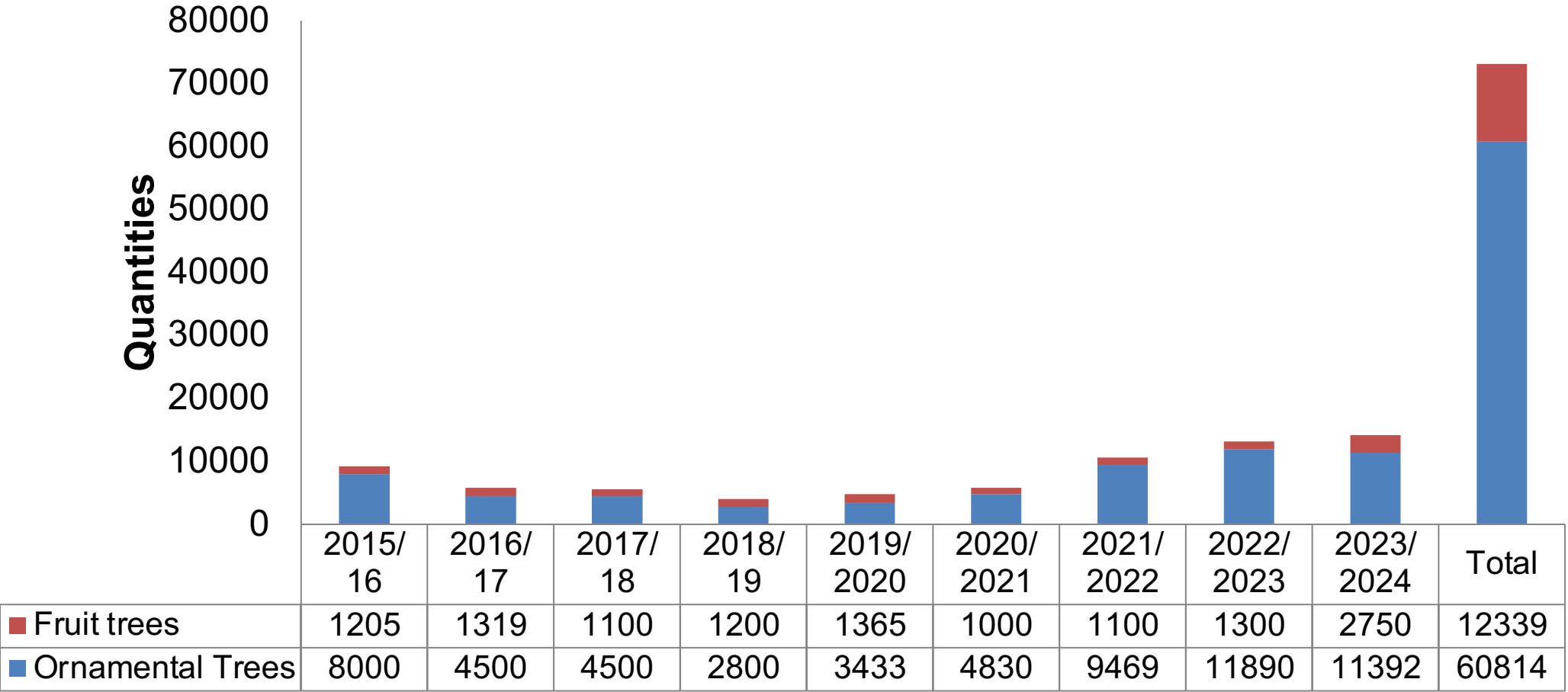


Platanus spp (PSHB)



Tree planting in CoJ to mitigate climate change

Tree Planting Pattern



Overall No. of Trees: 73153

TREE PLANTING TO MITIGATE CLIMATE CHANGE

Revised tree planting strategy and species list

Various tree planting projects

CoJ annual tree planting targets (vulnerable areas)

Urban heat island and flooding

Planting of 16 000 trees in greater Alexandra as part of

NbS







Nursery p



Fruit tree



CONCLUSION

- Monoculture has an adverse impact on the future of urban forest
- Creates possible deforestation
- Creates vulnerability for attack by pest and diseases
- Put pressure on limited resources
- JCPZ taking step to the right direction,
- Managing urban forest by planting diverse tree



Recommendations

- South Africa rich in diverse flora
- Refrain from planting more than 10% of the same species in the same suburb
- Planting various “suitable” species
- Nursery diversifying tree stock
- Use of trees as part of Nbs
- How horticulturists and urban forest managers respond to monoculture?



REFERENCE

Van Staden, EM and Stoffberg, GH. 2021. The Greening Soweto tree-planting project in South Africa – Eliminating the “green divide” legacy of apartheid, South Africa, Urban Forestry & Urban Greening 65.

Jactel, H., Bauhus, J., Boberg, J. et al. 2017. Tree Diversity Drives Forest Stand Resistance to Natural Disturbances. Curr Forestry Rep 3, 223–243.



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THANK YOU

