

Where Propagating Can Take You!



Presented by:
Dermot Molloy

Date 7th March
2018



The Royal Botanic Gardens Victoria



- 50,000 plants
- 8,000 taxa
- 30 Living Plant Collections
- Two sites Melbourne and Cranbourne



- 171 years old
- 38 Hectares
- 25,000 school students attend formal lessons each year

RBGV Nursery



- 3 staff
- Propagation and Production
- Research
- Collections
- Started in 1850's

Propagation at RBGV

Plants ordered by:

- Horticulturists
- Botanists
- Government Dept. of Environment
- Regional Botanic Gardens
- Local Government/Councils
- Growing Friends at RBGV



Propagation and Production at RBGV

- Approximately 50% Natives and 50% Exotics
- Growing plants for all internal and external clients
- Over 1000 accessions per year
- Cuttings
- Root cuttings
- Seed
- Divisions
- Grafting
- Aerial layering
- Tissue culture
- Spore
- Fungi



RBGV Nursery



- Contracts for Victorian Government
- City of Melbourne's Future Urban Forest 20/20/20 mission to create 20% more green space in our urban areas by 2020.



RBGV Research

- Growing natives for taxonomic assessments at National Herbarium of Victoria
- Seed collecting trips throughout Australia
- Area divided into families, Rhamnaceae, Asteraceae, etc.
- Growing plants for University students
- Growing plants for Herbarium voucher specimens



RBGV Contracts

- Seed is collected from the wild and grown at the nursery for seed harvesting and reintroduction



Swainsona recta seedlings



- Our preference is for wild collected provenance

RBGV Contracts



- *Sophora toromiro*
- Extinct on Easter Island
- We have 5 genetic lines

- *Nematolepis wilsonii*
- Threatened by bushfire and deer



RBGV COLLECTIONS

Native orchid collection

- Ex situ collection for seed collection
- Contracts with government for reintroduction
- Germinated seed grown on agar in the lab
- Curated by Chris Jenek



Tropical Collection

- Growing plants of economic importance
- Weird and wonderful e.g. *Amorphophalus titanum*
- Curated by David Robbins



Propagation Database

Burn
 Cold Water Treatment
 Cool Moist Stratification
 Cutting graft
 Dehusk
 Dusting Sulphur
 Ends Cut & Dried
 Fermented
 seed passed through a C
 Kendon
 None
 Purple Clonex 3g litre IBA
 Red Clonex 8g litre IBA
 Saddle graft
 Scarification
 seed nicked
 seed passed through a C
 Side veneer graft
 Side wedge graft
 Smoke Water
 Smoked Vermiculite
 Stratification
 Sulphur
 Vinegar
 Warm Moist Stratification
 Warm Water Treatment
 Washed
 Wedge graft
 Whip and tongue graft

Propagation Details

PROPAGATION DETAIL Record No. 1 Total: 1

Propagation ID: 10699
Plant Name: Agathis montana
Date: 02/12/2014
No. REQ'D: 6 **ALL:** ☐
Date REQ'D: 05/04/2029
Destination: Advanced Tree Area - East
Requested By: Dermot Molloy **Employee List**
Source:
Nursery Location: Large Shade House
Friends: ☐

Accession No. 140757
Notes:
Provenance History:
 grafted onto Agathis robusta 091141

Cutting: ☒
Date Cut: 02/12/2014
No. Cut: 6
Cut Type 1: Graft
Cut Type 2:
No. Struck: 6
Strike Rate: 100.0 %
Prop More: 0.0

Seed: ☐
All Sown: ☐
Date Collected:
Date Sown:
No. Sown:
Date Germinated:
No. Germinated:
Condition:

Divisions: ☐
Purchased: ☐
Treatment 1: Purple Clonex 3g litre IBA
Treatment 2:
Media: Bio Gro G2 Propagation I

Date Tuber: 02/12/2014
No. Tuber: 6
No. Tuber Out:
Remaining:

Date Potted: 15/10/2015
No. Potted: 6
No. Potted Out:
Remaining:

Label Info 1: C x 6 02/12/2014 DM

Add New Delete ← →

Search by Accession No. Search by Species ← → Add New Accession Propagation Report
 Delete Accession



Part of our accession database

RBGV Recent Projects

Working Wetlands Project

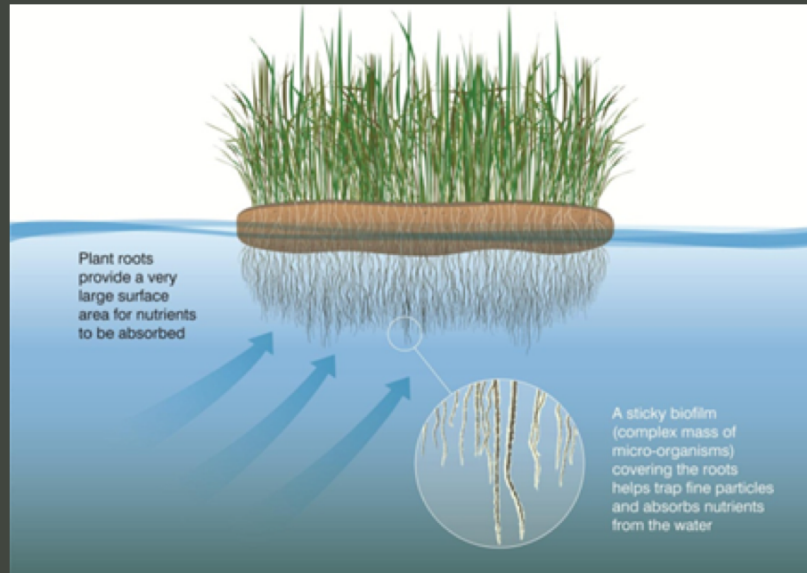
- Rainfall harvested from the surrounding streets
- Lake holds 30 Megalitres which saves 40% of potable water use
- Plan to be 100% self sufficient
- Water banked in the soil during Winter for use by trees later on
- 1.6 million visitors per annum and planned to double by 2070
- Cooling effect as well mental health benefits
- Propagation of wetland species



Working Wetlands

In 2012-13, the \$5.8 million dollar 'Working Wetlands' project was completed in response to water management challenges at RBGV to achieve the following outcomes:

- Restoration of Ornamental Lake levels for landscape amenity
- Increased security of water supply
- Reduction in reliance on potable-sourced water for landscape irrigation
- Improvement in the ecological condition of the Ornamental Lake.



Working Wetlands

The Working Wetlands project was comprised of three stages as follows:

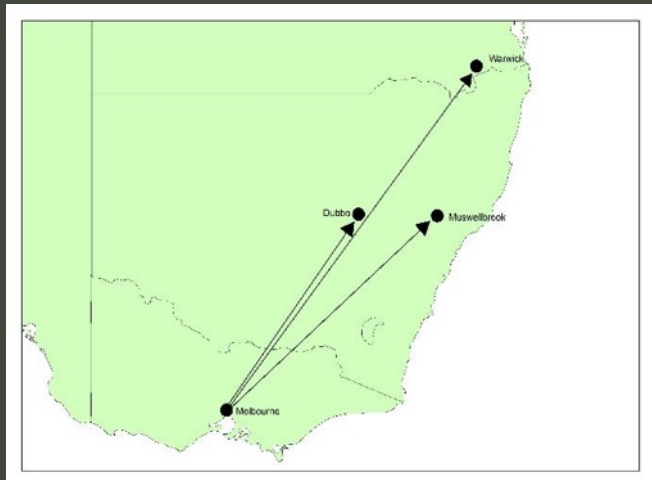
- Working Wetlands Part A Infrastructure for additional harvesting of stormwater, wetland water treatment and Ornamental Lake water recirculation through pumping stations
- Working Wetlands Part B Mechanisms to use stormwater stored in the Ornamental Lake for landscape irrigation within RBGV
- Working Wetlands Part C Alternative water source (in planning) project to meet the gap in provision from stormwater



RBGV Recent Projects

Landscape Succession Plan

- Landscape to remain the same just with different species able to adapt to a drier climate
- Tree and shrub species audits across RBGV
- Plant beds are placed into High, Medium and Low water use requirements



- Climate modelling will put Melbourne's future climate similar to Dubbo, NSW

Landscape Succession Plan

Adapt landscape to Melbourne's projected 2090 climate – hotter and drier

Maintain provision of educational, recreational and scientific values of these Gardens for future generations

Evaluation and selection of long-lived plant biodiversity (e.g. trees) requires predicative decision making and a need to act now



Landscape Succession Plan

Challenges for RBGV

Adapting to a projected climate of significantly higher temperatures and lower rainfall

Managing and securing sustainable water supplies

Maintaining the values of a mature, heritage landscape through this transition

Responding to biosecurity threats from increasing globalisation and changing environments

Managing aging built assets



Benefits

Provision of Melbourne Gardens for future generations: with population increase, by 2036 we could see 2.3 - 2.5 million visitors per annum

Enhance human well-being: considerable evidence to show that access to green space improves overall physical and mental health

Environmental cooling: about 2 - 8°C provided by urban vegetation through the process of evapotranspiration

More resilient, sustainable landscape with reduced maintenance, energy and water demands

More targeted *ex situ* plant conservation: focus on learning about plant tolerances, transferring susceptible plants to more suitable locations

Education and learning: LSS provides a planning framework for heritage/botanical landscapes and improving community understanding

Key Targets

By 2020:

100% of landscape irrigation needs are provided by sustainable water sources

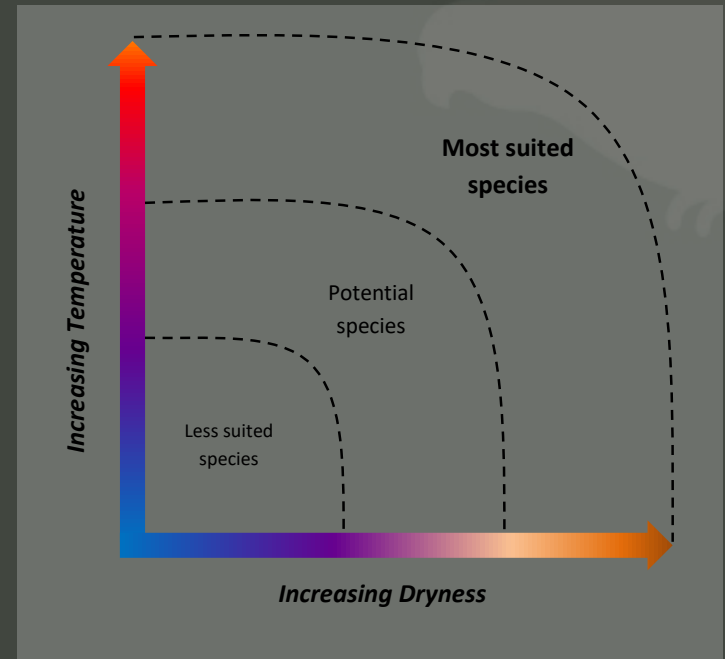
By 2036:

*From ~65% to **75%** of taxa in the Gardens are suited to the projected climate of 2090*

*Plant diversity is $\geq 8,400$ distinct taxa of mixed-age. Increased from 21% to **> 35%** wild provenance-sourced plants*

Improved green and built infrastructure

Delivery of community information on importance of plants in the face of climate change



RBGV Recent Projects

Fern Gully

- Fern spore collected from the wild
- Boardwalk completed
- Second stage is underway now
- Health and wellbeing spaces
- Great opportunity to learn about fern propagation





MOSS GARDEN
Reflective and wellbeing Garden



IPPS Membership

- Joined IPPS in 2006, Elected to the board in 2016
- Benefits include;
 - Attending Local and International IPPS Conferences and tours
 - Broadening my plant knowledge
 - Encouraging young propagators
 - Sharing plant production knowledge



International Projects and Tours

- Sharing of information and new idea's
- Traveling and networking with fellow international horticulturists
- Nursery visits to see the latest nursery technology in action





Abu Dhabi, United Arab Emirates

- Garden City of the Gulf
- Nursery and Herbarium workshops 2010
- RBGV, Kew BG, and Seoul National University



- UAE ministers visited RBGV nursery in March 2010
- Invited to Abu Dhabi September 2010
- Aim to seed orchard UAE natives
- 3 day workshop to plan a Seedbank, Herbarium and Nursery



ICBA visit Dubai



- International Centre for Biosaline Agriculture
- High-quality applied research increasing food and nutritional security
- Improving water security
- Helping build more resilient environments



- Irrigating various grass species with saline water to be used as fodder crops

Date Palm Project



- Effect of Mycorrhizae on date palm growth under various salinity and fertility conditions



- UAE has 1200 Native species



- Dibba Research Nursery growing UAE native species with saline water



Oman Botanic Gardens



Reason for visit to Oman Botanic Gardens



- Bhuthainia and Hunan attended IPPS conference in Melbourne 2013
- They visited David Hancock from Natural Area nursery in Perth
- Invitation sent to all Australian IPPS members to assist in OBG's difficult species propagation as well as give advice and training to staff
- David and I visited in November 2015

Dr Annette Patzelt
Scientific Director



Ian Oliver

Vision

- To inspire people, to conserve and cherish the biodiversity and botanical heritage of Oman for a sustainable future

Mission

- Discover, cultivate, showcase and protect Oman's unique plant diversity and ethnobotany through innovative research, exciting displays and engaging communication



- Oman is home to 1,200 species of plants about 80 species are found nowhere else in the world



- The OBG will be a world class facility to conserve, display and research the plants and ethnobotany of Oman.
The garden is 420Ha

Northern Biome



- Growing species from Oman's mountains

Northern Biome



SOUTHERN BIOME



Southern Biome replicating the Khareef
(monsoon)



- Seed and cuttings collection at Jebel al Akhdhar
- Collected *Daphne*, *Lonicera* and *Berberis*



- Lunch at the Pomegranate terraces in Autumn



- Propagation workshops to process cuttings and seed from the field
- Trial of new seed and cutting media



- OBG propagation team with Ian Oliver, the gardens have 80 staff with 4 expats

IPPS New Zealand 2014 South Island Tour

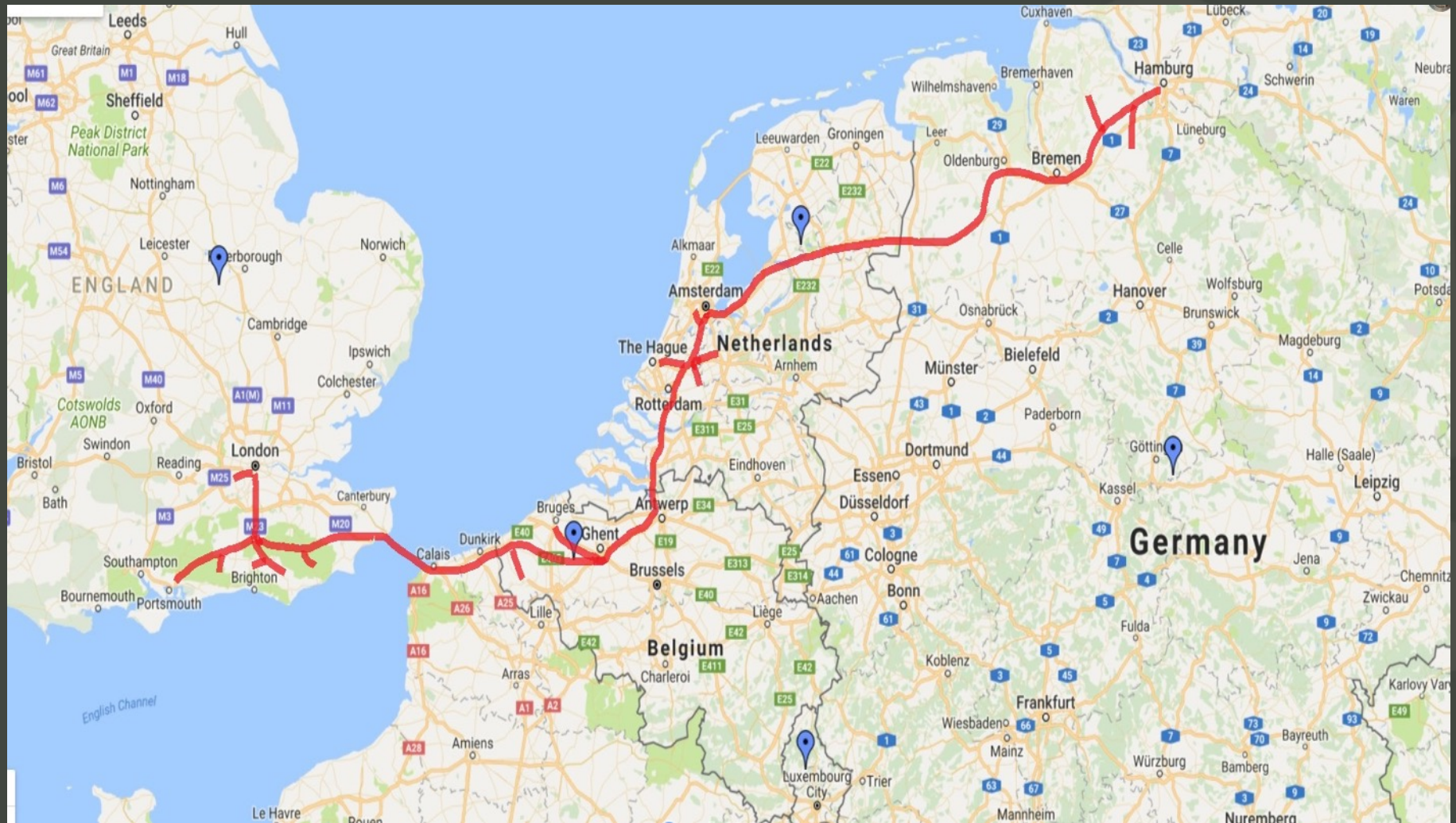


- Phil and Janine Smith put on great International tour of New Zealand's South Island with Conference in Christchurch

Arrowtown near Queenstown



IPPS Europe 2017 International Tour Map



Kew Botanic Gardens



Royal Botanic Gardens Kew

- Kew Garden tour
- 3 Nurseries on site



- Processing cuttings and potting trees for new Temperate Glasshouse



IPPS Europe 2017 Pre-Conference Tour

- 22 Nurseries
- 10 Gardens
- 4 countries
- 22 days



Roundstone Nursery

- Produces over 190 million young plants
- 82 million retail ready plants.

Cyclamen production



- Located in Lagness, Chichester



Hillier's Nursery



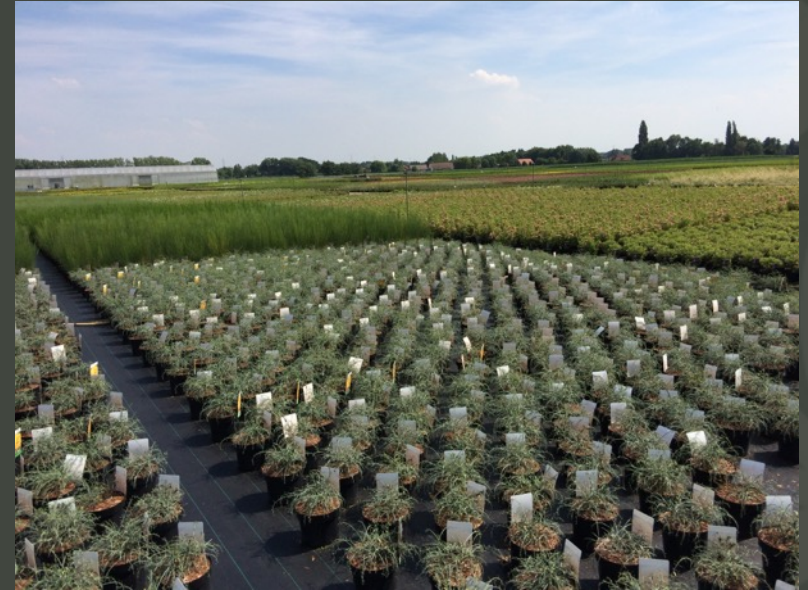
- Founded in 1864 by Edwin Hillier
- Grows trees and shrubs for retailers all over the U.K



- Record 71 RHS Chelsea Gold Medals
- Hillier's manual



Willy De Nolf Nursery Waregem, Belgium



- *Berberis, Frangula, and Physocarpus and many more*



Solitair Nursery Belgium



- Expert in producing standalone plants



- Founded in 1987
- 100 acres of trees
- Trees are grown in-ground and containerised

Tree spade





- Tour group heading into Bruges for lunch



- Enjoying a Belgian beer



- Visit to the Friet Museum



Post Conference Tour

Bruns Pflanzen-Export Germany



- Founded in 1876
- One of Europe's leading tree nurseries



- 500 Ha of production
- Tree's sold throughout Europe and Russia



Technology

- No Glyphosate allowed in Netherlands or Germany
- Use container mulch



- Boom irrigators used to deliver water efficiently



- Infrared weeders used on hard surfaces

Jeddeloh Pflanzen



Charlie Parkerson inspecting stock

- Nursery started in 1930's
- They grow conifers, Rhododendrons, roses and perennials
- New range of Brazelberry (Thornless Raspberries and Blackberries)



Ludemann Pflanzen



- 30 species of conifer for forestry
- 27 million plants
- 100 Ha
- 40 different hardwoods
- 7 euro cents
- Rows steam sterilised
- Seed is sown transplanted and grown on for 2 years



COMING UP!

IPPS Australia Conference in
Hobart, Tasmania May 2018



Pre Conference tour starts in
Launceston on Saturday 19th May and
travels along the East coast arriving in
Hobart on 23rd for beginning of
Conference which will conclude on 25th
May.

pam@ipps.org.au, ipps.marketing@ipps.org

COMING UP!

"Pacific Rim Conference", Hawaii, USA July 28th to 4th August 2018

The Western Region is delighted to invite our fellow IPPS members and friends from other IPPS regions to join us in Hawaii for our Annual Meeting. A three-night, two-day pre-conference tour will begin with a reception on Saturday, July 28 at Ala Moana Hotel in Honolulu. Enjoy all-day tours on Oahu Sunday and Monday, and a free day on Tuesday to relax on Waikiki and fly on to Kona on the Big Island.

"Let's meet in the middle"



We have been able to secure excellent room rates, interesting speakers and many wonderful tour locations

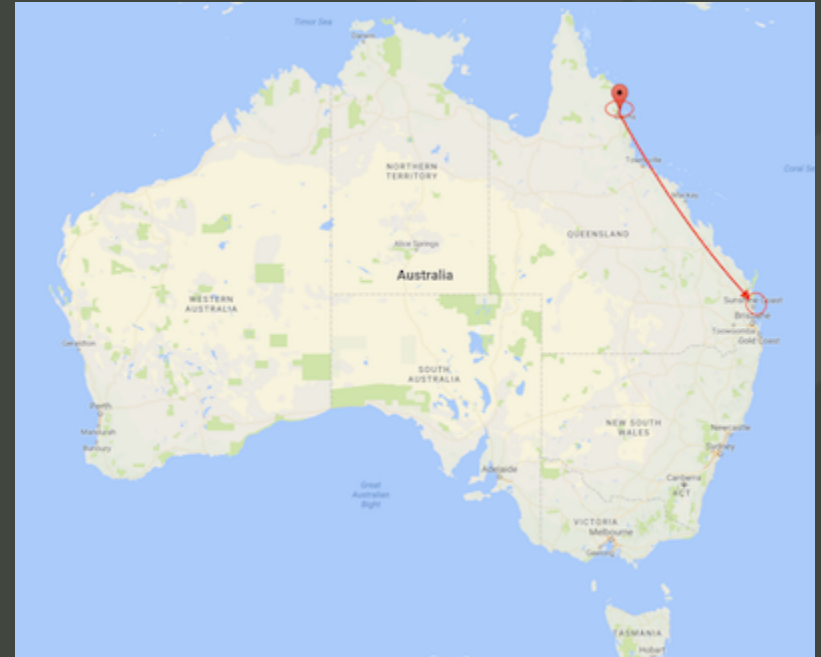
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COMING UP!

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IPPS Australia International Conference Queensland, Australia

- Experience Tropical Horticulture - It's all in the Latitude!
- Come and join the 2019 International Tour hosted by the Australian Region.
- 17 May 2019 - 2nd June 2019
- The pre conference tour will start in Port Douglas and end in Maroochydore where conference will be held.



Thank you



- IPPS South Africa



- David Hancock
Natural Area Nursery
Perth



Questions ?



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