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A Breath of Fresh Air: 52nd Conference of the International Plant Propagators' Society – Australia Region

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Summary

"A Breath of Fresh Air' was the theme for the 52nd Annual Conference of the International Plant Propagators' Society (IPPS) Australia Region held during 22 – 25 May 2024 at RSL conference Centre in Ballina, New South Wales. The conference was packed with different activities, including a pre-conference tour, traditional golf competition, trade displays, award session during the gala dinner, nursery tours, grafting demonstrations and of course many interesting presentations. The traditional six pack of young energetic people selected by the Executive Committee helped in running the conference. Some highlights from these activities are presented in this Editorial to the Proceedings of the IPPS Australia Region.

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INTRODUCTION

The theme of the 52nd Annual Conference of the Australian Region of IPPS “A breath of Fresh Air” was evident from the very beginning of the conference, during the pre-conference tour, and throughout the conference held at the spacious RSL conference facility at the edge of the scenic Richmond River. The Ballina Coast and Hinterland are the traditional Nyangbul Country of the Bundjalung nation.

The conference was organised by Ray Parker, supported by President Bruce Higgs, Clive Larkman and the dedicated Secretary Pam Berryman and was attended by 135 delegates. It was packed not only with interesting presentations from a variety of scientists, academics, hands-on nursery managers, practitioners, company representatives and students, but also with on-stage interviews, nursery tours, the traditional golf competition and a variety of trade displays. This editorial is meant to cover the activities associated with the conference as well as giving a brief run-down of the conference proceedings and to introduce IPPS Australia award winners in 2024.

PRE-CONFERENCE TOUR

For the preconference tour, the delegates were picked up from the Gold Coast Airport and then travelled to Mt. Tamborine for the evening. There was a total of 25 delegates on the tour.

Pre-conference Tour – Day 1

The tour began at Tamborine Mountain Wholesale Nursery. Despite having been affected by a tornado around Christmas of 2023, the retail and wholesale areas were both in full swing. Tour attendees were shown around by Alicia who took over the nursery within the last couple of years. Ebb and flow irrigation systems were used across the entire nursery.

Second stop was Mt Nathan Propagation. They had endured 3 major floods in recent years. The nursery is located on two cites close to the scenic Coomera River and easily accessible from Gold Coast. A wide range of exotic and native trees and shrubs are grown across the two sites (**Fig. 1**), with a focus on wholesale production. Operating for over 25 years, Mt. Nathan Nursery produces an extensive selection of both native and exotic plant stock, currently over 200 species (Mtnathan, 2025).

Next stop was Crystal Waters Nursery in Gold Coast. It stocks excellent quality indoor and outdoor landscaping ornamental stock ranging from 100 mm pots to 100 L bags (**Fig. 2)**.

The final stop was Boyd’s Bay Nursery who are well established and grow for the landscaping trade and their own gardening business projects (**Fig. 3**). They had begun treating some potting mix batches with bifenthrin as part of their fire ant requirements. This can add up to $20 per cubic metre and was a topic of discussion throughout the tour (as well as the topic of a presentation) as some nurseries visited were within the fire ant zone. The Boyd’s Group’s rehabilitation, restoration and ecological services are impressive as they have a range of restoration services.

The delegates spent the evening at Mantra on Salt Beach, Kingscliff.

Figure 1. Despite three major floods in recent years, Mt Nathan Propagation has recovered to continue the propagation of native and exotic species. Photo credit – Pam Berryman.

Figure 2. Crystal Waters Nursery in Gold Coast stocks excellent quality indoor and outdoor landscaping ornamental stock.
Photo credit – Pam Berryman.

Figure 3. Boyd's Bay Nursery was the last visited on day 1 of the pre-conference tour. Located in the Gold Coast, the nursery stocks landscaping plants. Photo credit – Pam Berryman.

Pre-conference Tour – Day 2

The inspiring Limpinwood Botanic Gardens and nursery was the first stop on day 2. Russell Costin had recently passed away, but his wife Sharon and Mary guided the delegates through extensive gardens with many interesting native plants such as the smooth Davidson's Plum, *Davidsonia johnsonii*. Established in 1977, the nursery stocks Australian bushfood, camellias and vireyas (tropical rhododendrons) (**Fig. 4**). They also specialise in *Grevillea* spp.

The final visit was to the Gondwana Nursery, where Joy and Gahan took us on a native plant frenzy. Gondwana leads the way with a well thought out nursery design and impressive range of plants including grafted natives and new selections (**Fig. 5**).

Figure 4. Limpinwood Botanic Gardens and Nursery stocks a variety of Australian natives.

Figure 5. The final visit in the pre-conference tour was to the Gondwana Nursery stocking an array of native plants for gardens and revegetation projects. Photo credit Pam Berryman.

AWARDS

IPPS Australia has a suite of awards for members and even non-members who excel in propagation-related activities or have contributed to the Society. They are selected by committees appointed by the Board and are honoured at the annual conference.

IPPS Conference Youth Initiative (Six Pack) and South African Exchange

Year 2024 was the 22nd year since the Six Pack award commenced in 2003 at Coffs harbour. There have been 20 conferences with 120 awardees. It is inspiring what this has meant for many of these young horticulturists in their careers. This year's Six Pack (**Fig. 6**) was sponsored by Garden City Plastics. The Six Pack has an honourable task of assisting the Organizing Committee in running the conference smoothly and they learn from the best while on the 'job'. In addition to the Six Pack Support Team, South African Exchange is another program that is designed to offer two exciting opportunities to new propagators. Joshua Taylor (Australia Awardee) and Nosipho Ndlovu (South Africa Awardee) shared their experiences visiting the two countries at the Conference and are published in these Proceedings.

Figure 6. The 'Six Pack' of young horticulturists selected for each IPPS Australia Region conference has been a tradition for the last 20 years. 2024 Ballina Conference was no exception. From left to right: Nicoletta Centofanti, Royal Botanic Gardens, VIC (RBGV); Emily Smith, RBGV Cranbourne Gardens, VIC; Willow Sawyer, Glasshouse TubeStock, QLD; Nosipho Ndlovu – South Africa Exchange, Gabriella Lee, Westlands Nurseries, TAS and Indie Keenan, Ellenby Tree Farm, WA.

Rod Tallis Memorial Youth Award and Anita Boucher Award for the Best Presentation

IPPS recognizes outstanding achievements by the younger members of the industry. One way the Australian Region of the Society achieves this is through the Rod Tallis Memorial Youth Award which is presented annually to the most commendable achievement by a person under 30 years who is working within the horticulture industry or studying horticulture in Australia. The award is named after one of the Society's most respected members, Rod Tallis. Rod was a committed nurseryman with a passion for plant propagation and had a keen interest in the youth of the industry.

The recipient of 2024 Rod Tallis Memorial Youth Award was Lisa Wightwick from Peninsula Growers, Victoria (**Fig. 7**) for her achievements in developing protocols for micropropagation of *Grevillea* spp. In her presentation, she demonstrated how a growth retardant paclobutrazol can help in attaining better acclimation and survival of Grevillea 'Bonnie Prince Charlie' microshoots in the rooting and acclimation stages of micropropagation. For her outstanding presentation, Lisa was also awarded the Anita Boucher Award for the Best Presentation at the 2024 Conference as selected by a panel of judges.

Figure 7. Lisa Wightwick from Peninsula Growers, Victoria receiving Rod Tallis Memorial Youth Award for her research in micropropagation of *Grevillea* spp.

Ed and Mary Bunker Award

The focus of the Edward and Mary Bunker Award is to recognize an outstanding contribution from someone who has demonstrated the IPPS motto 'To Seek and To Share' for the betterment of the industry at large. The Edward and Mary Bunker award is a relatively new award with the person not necessarily being a member of IPPS. The initial awardee was John MacDonald in 2019 at Twin Waters, QLD followed by Gabe Mostafa in 2022 at Leura, NSW and Jane Edmondson at Geelong, VIC in 2023.

The winner of the 2024 award Karen Smith (**Fig. 8**) is the epitome of the IPPS motto "To Seek and Share". Based in Sydney Karen has worked in the horticultural industry for over 30 years as an employee and business owner and is the editor of the national horticultural industry magazine Hort Journal. She is a recognised Horticultural Trainer, Presenter, Master of Ceremonies, Writer and Podcaster.

Figure 8. Karen Smith (centre) receiving Ed and Mary Bunker award, 2024.

Karen is active in the industry and has served on many committees including the Hort Media Association and the Interior Plantscape Association and is also a member of various horticultural organisations including IPPS. She currently is an Executive Board Member of the Interior Plantscape Association. In November 2017 she was awarded the Allan Seale Award by Nursery Garden Industry NSW & ACT. In 2020 Karen was awarded the Australian Institute of Horticulture's Golden Wattle Award for her work in the media, and for her raising the awareness of the importance of horticulture in today's world.

Steve Vallance - Pewter Tankard Award

In 1979 the Great Britain & Ireland Region of IPPS, presented this pewter tankard to our region, to be used as an annual award to recognise the contributions of one of our members to the society. It was regularly awarded until 1991. After that time, it was paused until 2010. In that year, at the Freemantle conference, it was awarded to Steve Vallance. Steve really embodied the ideals of the award, contributing without fanfare, but with commitment. In honour of Steve, and the way he went about his 'seeking & sharing', in 2017 the award was renamed the *Steve Vallance Tankard.*

The 2024 awardee Dermot Molloy (**Fig. 9**) has been involved in horticulture his whole working life. Prior to employment with the Royal Botanic Gardens Victoria (RBGV) he worked in a nursery, owned a garden design business and was head gardener at the historic Invergowrie property in Hawthorn. His membership of IPPS started in 2005 and he has been a board member since 2018. He has travelled widely promoting the values of IPPS and spoken at many IPPS conferences. With a Diploma of Horticulture obtained in 2006 from Oakleigh College of Horticulture in Victoria, his propagation and growing experience now especially includes Cycads, *Clivia*, *Agathis* and *Araucaria* as well as native and exotic species from around the world

Figure 9. Dermot Molloy receiving Steve Vallance - Pewter Tankard Award from Natalie Vallance (right) and speaking to the audience after receiving the award (left).

He enjoys mixing horticulture and travel to discover the world's plants and people. He is the Senior Curator of Horticulture at the RBGV, where he has worked for over 22 years.

The RBGV have awarded him the Guilfoyle Award for excellence in team achievement in July 2010 and for excellence of Individual achievement in August 2011.

Award of Honour

The Australian Region of the IPPS has been awarding individuals who have made a significant contribution to the society for many years. The trophy is designed using an individually selected free-form piece of rare Australian native timber such as red cedar, teak, blackwood etc. onto which the cast of the IPPS logo is fixed. The recipient's name is cast or engraved onto the award.

David Hancock from Natural Area Holdings, awardee for 2024 (**Fig. 10**) has made an exceptional contribution to the Society and horticulture in general. Additionally, David has accounting and economics qualifications and spent 22 years of his working life in finance and banking at general management level. His love for native plants and restoration of mine-sites and other disturbed areas fostered a change in career to horticulture, founding a business in 2001. He is currently a major shareholder and contributing consultant to the business with a nursery, contracting and environmental consulting divisions. His workforce varies from 115 to 150 based upon seasonal demand. His business services Government at all levels, property developers, mining companies and private landowners for their ecological requirements.

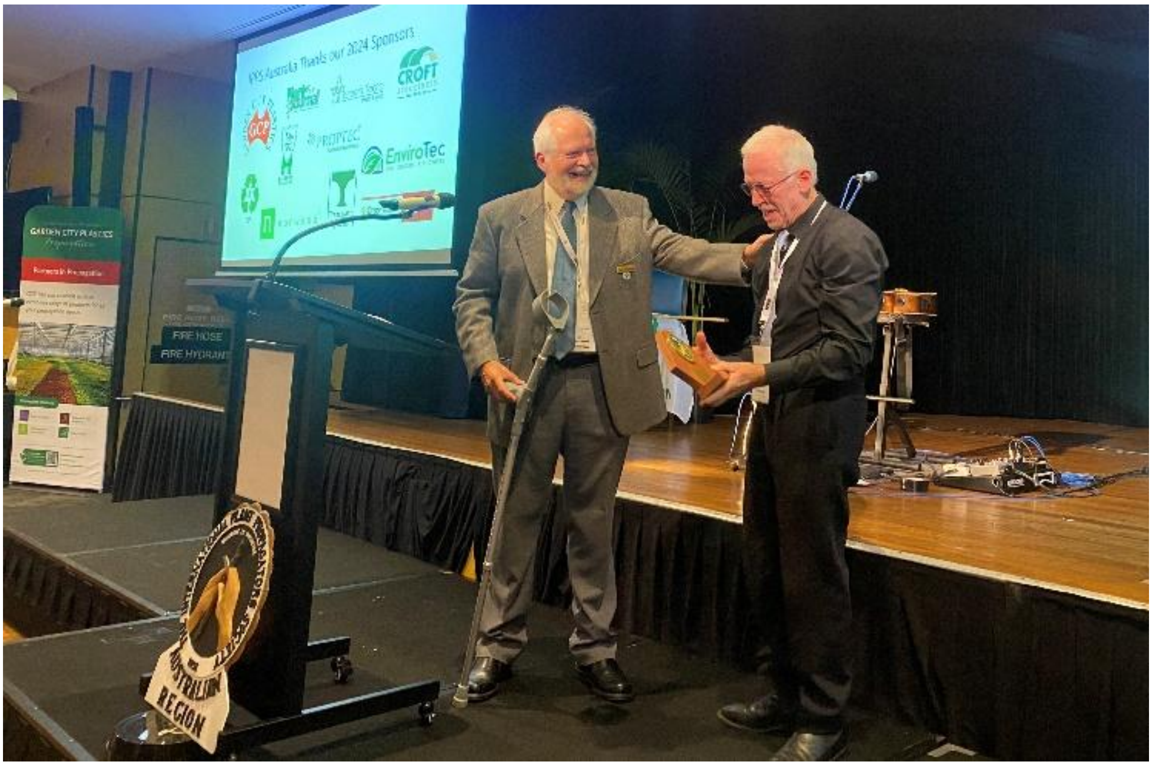

Figure 10. David Hancock from Natural Area Holdings (right) receiving the Award of Honour for 2024 from the President of IPPS Australia Region Bruce Higgs.

In his presentation at this conference (available in these Proceedings), David described how important provenance of seeds he collects for his nursery. He has been involved in the training and support for many new nursery industry people in both personal and business skills while encouraging a willingness to research and experiment in plant development. His restoration focus has been on recalcitrant species propagation and developing methods to overcome seed dormancy. According to David, “Working with researchers and practitioners in hot spot locations has been an abiding interest”.

He has been a long serving member of the IPPS Australian Region board, having convened a conference in Perth in 2017, as well as regional meetings in Western Australia and more recently at Boomeroo nursery in Queensland. He also serves on the management committees for the Revegetation Industry Association of WA (RIAWA), The Society for Ecological Restoration Australasia (SERA) and Australian Institute for Horticulture. As part of the additional community support provided by the business, he is active in the operations of the Dieback Working Group (DWG), the Association of Mining & Exploration Companies (AMEC) and the Australian Network for Plant Conservation (ANPC).

He is recognised for the Plant Breeders Rights filing in 2014 for *Hibbertia spicata* Ocean Reef. In 2002 the City of Joondalup recognised him as Citizen of the Year, and he received the Premiers Award for the state of Western Australia and Volunteer of the Year by the Department of Environment & Conservation in the same year.

Like IPPS motto of “seek and share” is the common saying of “you get out of life what you put into it”. David Hancock, the recipient of the most prestigious award of IPPS Australia Region truly lives up to both with his energetic approach to life.

Honorary Life Membership

IPPS Australia Region awards honorary memberships to its members who have immensely contributed to the horticulture industry in any field, including but not limited to, education, research, promotion, industry etc. Additionally, to earn the honorary membership one must have a demonstrated history of sharing their knowledge and belief in the principles of the Society and had been a member for a minimum period of 10 years.

Michael Gleeson was recognised as a person who has more than lived up to these and for many was the face of IPPS. In his absence, the President will be presenting the certificate to Michael at a separate meeting.

Peter Smith Perpetual Golf Trophy

It has been a tradition of the IPPS Australia to have a golf tournament among willing participants before the conference. The 2024 Trophy was won by James Gardner from Organic Crop Protectants.

THE SPONSORS AND TRADE DISPLAYS

The conference would not have been affordable to many without the support of the sponsors and the trade displays. The conference had many sponsors, namely Garden City Plastics, Growth Technology, Hort Journal, Norwood, KW Automation, Proptec Horticultural, Syngenta, Greenlife Gro, Croft Structures, Enviro Tec, Australian Plant Production and Transplant Systems.

In 2023, a new award for the best trade display was introduced and Garden City Plastics were voted by the participants as the best trade display in 2024.

PRESENTATIONS

There were seven sessions spread over two days with 23 presentations covering a wide range of areas related to the mandate of the Society – from personal experiences to nursery automation, plant propagation and healthy environments for both plants and humans.

Propagation and Breeding

In Vitro Technologies in the Nursery Industry

There were four presentations in the applications of tissue culture technologies for the nursery industry including the Rod Tallis Memorial Youth Award and Anita Boucher Award for the Best Presentation by Lisa Wightwick from Peninsula Growers in Victoria. Lisa lives in Melbourne and grew up on the Mornington Peninsula. She has worked in horticulture for 10 years, specialising in plant tissue culture and micropropagation. She feels lucky to have been selected for the Six-Pack initiative in 2017 and attended her first IPPS conference in Perth. Her award-winning presentation was on the improvement to the rooting and acclimation stages of popular Grevillea cultivar ‘Bonnie Prince Charlie’. As the plants were growing spindly and wilting during acclimation, she decided to test paclobutrazol, a gibberellic acid inhibitor that helps to shorten internodes and make plants stouter. Testing different concentrations, she optimised the concentration to 2 mg/L for this variety and she is now testing other varieties and species with similar problems to ascertain if there are similar improvements to be achieved.

The second presentation on micropropagation was by Dr. Puthiyaparambil Josekutty, (Jose), an agricultural biotechnologist with 37 years of experience in research and research management. In Australia, Jose managed commercial plant tissue culture laboratories at Yuruga Nursery and Fleming's Nursery before joining Skybury farms as Research Manager. He has micropropagated over 100 plant species and many crop varieties from Australia, USA, New Zealand, Micronesia, South Africa and India. Dr Josekutty’s presentation was on the development of a micropropagation protocol for three valuable table grape cultivars for rapid and reliable cloning of virus-free stock material for orchard establishment. The work was undertaken at the laboratories of Skybury Farm where he is the Research Manager. His presentation also touched upon various in vitro methods applied in grapevine improvement, virus eradication and conservation.

Another presentation on micropropagation protocol development was on a new fruit crop for Australia - Chinese bayberry or Yangmei (*Myrica rubra* – Myricaceae family). It was presented by one of our new IPPS members Dr. Jayeni Hiti-Bandaralagė, Co-founder and Director of J&S Plant Biotech and STC Link Pvt. Ltd, an expert in plant biotech tools for horticulture. With expertise in tissue culture, genetic improvement, and cryopreservation spanning academia and industry, Jayeni has lately focused on industry outcomes benefiting environment and community. Thus, this project is partly funded by Agrifutures Australia through an Emerging Industries Business Grant 2023 and was conducted in collaboration with several industry partners; Microplants Pty Ltd, Australian Nurserymen’s Fruit Improvement Company (ANFIC), Wide Bay Seedlings, and Australian Horticultural Traders ensuring that the outcomes benefit the horticultural industry in the spirit of IPPS. In her presentation, Jayeni explained how she optimized plant material selection, seasonal timing, and media composition for successful red bayberry micropropagation. The developed protocol will facilitate improved growth and mass propagation of red bayberry for commercial applications within and beyond Australia. It is expected that in the future this novel fruit with many nutritional and medicinal benefits will be available in the shelves of Australian fruit traders thanks to the untiring work of Dr Hiti-Bandaralagė.

The fourth presentation on in vitro applications was by Dr Ranjith Pathirana, Editor, IPPS Australia Region. His presentation covered multitude of applications of in vitro technologies, mostly with examples from his own research. In addition to micropropagation, the presentation covered an array of in vitro applications in crop improvement and conservation. These included eradicating viral and bacterial diseases infecting clonal plant material to produce high-health planting material by combining different methods such as meristem culture, thermotherapy, chemotherapy, electrotherapy and cryotherapy, development and deployment of new cultivars to the industry much faster and efficiently than traditional field-based plant breeding methods using in vitro mutagenesis, genetic transformation, gene editing, distant hybridization, polyploid and haploid induction, and increasing the proportion of hybrid seeds in apomictic species. The application of in vitro technologies in ex situ conservation through in vitro and cryo repositories was explained using his personal experience in setting up the cryo-genebank of horticultural species in New Zealand including the rescue of thousands of kiwifruit accessions and breeding lines through in vitro gene banking after the incursion of bacterial canker of kiwifruit in New Zealand.

A Breath of Fresh Air, Healthy Soils and Plants and Clean Irrigation Systems

Inspired by the theme of the conference, there were several presentations on keeping our nurseries, plants, irrigation systems and soils in good health in addition to ascertaining effect of plants on the air we breathe and on our own well-being.

Plants in the Classroom Improve Student Performance

Many studies in the past have shown that plants and growing media (as a biofilters) maintained indoors improve air quality, ambiance and mood of workers resulting in improved staff productivity, performance, job satisfaction and reduced sick leave absence, stress, depression and negative mood states (Sadick & Kamardeen, 2020; Hähn et al., 2021). However, only few studies on the effect of plants on classroom performance of school children have been conducted so far. To fill this gap, in collaboration with the Plants and Indoor Environmental Quality Group of the Centre for Environmental Sustainability, Faculty of Science at the University of Technology, Sydney, John Daly of Eco-Environment in Queensland conducted a study to understand the performance of students in classrooms with and without potted plants. It involved 360 students in grades six and seven in 16 classes in three schools in Queensland, Australia. Student performance was tested across three curriculum course streams: Numeracy, Literacy and Science. The results indicated that the presence of plants and long-term specialist growing media in the classroom consistently led to improved performance in spelling, mathematics and science – i.e., across the curriculum. The results were statistically significant with 10 to 14% improvement in all but one of the five sets of scores in two schools. In the third school where results were not significant between groups with and without plants' presence, the students were already involved in an active gardening program, involving both ornamental and vegetable species.

John Daly who initiated these trials has more than 48 years of experience as a specialist horticulturist, specialising in landscape design and developing soils and potting media for landscape, nursery broadacre and indoor, Plantscape and green building environments across Australia, Singapore, Qatar and Saudi Arabia. His research and treatment of problematic soils such as acid sulphate and calcic soils has led to manufacturing soil amelioration solutions, converting desert sands and marine mud into healthy fertile soils and potting mixes that act as biofilters of air and water to grow biophilic landscapes.

Significance of Vegetation Solutions for Sustainable and Productive Workspaces and Built Environment

Mark Thompson, a registered Queensland Architect who founded Eco Effective Solutions - a consulting organisation working in the design, education and research sectors was the next speaker on the theme of plants in built environment. He co-authored the book "The Environmental Brief: Pathways to Green Design" and co-developed the Queensland Government's Ecological Fitout Guidelines (QldGov, 2023). For 10 years Mark was a member of Greenstar Faculty, the Expert Teaching Panel of the Green Building Council of Australia and as an Adjunct Professor at QUT, assisted in the establishment of the Centre for Subtropical Design. He is an Honorary Member of NIPA (National Indoor Plant Association) and is a passionate advocate of vegetation integrated in the built environment.

Mark reviewed the research findings in multiple research projects he was involved in, demonstrating the significance of integrating vegetation within the indoor environment and the resulting improvement of air quality, reduction of pollutants, and enhancement of occupant well-being. The Revitaliser he designed, and other biophilic design strategies show quantifiable advantages from lowering volatile organic compound levels and stabilising CO2 which improves cognitive function and reduces stress in occupants. Using data from biochemical measurements he further demonstrated the significance of strategic implementation of biofiltration and sustainable construction practices and methods to creating healthy workplaces and urban areas. While indoor environments are vital to occupants, the results of research support incorporating green spaces into proposed urban development approval requirements of cities around the world. Fostering collaboration between architects, scientists, urban planners and legislators will be crucial in developing built environments into healthy and self-sustaining ecosystems. This collaboration will reinforce human and environmental health while paving the way for a sustainable urban future with proven good indoor air quality and increased indoor wellbeing for building occupants.

Plant Quality Control in the Nursery

Natural Area Nursery in Western Australia run by the recipient of the IPPS Australia Award of Honor, David Hancock, has stringent control on quality of their stock. A qualified veterinarian Dr Sabine Suess changed her profession to horticulture and plant nursery management due to her keen interest in plants. Thanks to her eye for detail, she has been selected for the role of Plant Yield Coordinator of Natural Area Consulting and Management in 2020. In her presentation, Dr Suess shared her experience and best practices she put in place for improving plant quality in the nursery. The key areas described ranged from monitoring and identifying areas of concern, water management, determining and implementing actions, teamwork, documentation, to research and development. The focus of the presentation was on the role's integration with the nursery team, and practical ways adopted in the overall management of key functions and areas. After describing the work in improving quality of plants in detail, Dr Suess reflected over the past operations and growth, emphasizing multiple benefits of targeted nursery quality control. The benefits are both of short and long-term nature and include:

- Reduced plant losses, improved stock quality, increased profitability, happier clients.
- Early recognition of problem areas for the production and sales perspective.
- Increased efficiency in dispatch grading, weeding and all maintenance tasks
- Optimised water efficiency and quality
- Improved record keeping and documentation.
- Motivation for procedure improvement and innovation.
- Pride in all staff for the combined efforts as a self-driven team to efficiently grow a quality product.

Green Technology for Sustainable Management of Irrigation Systems

Irrigation lines, drippers and sprinklers will operate inefficiently when fouling occurs due to scale, sediment and/or biofilms. Inefficient irrigation leads to lower production, higher operating costs and lower water use efficiency. Sediment removal is a function of flocculation/filtration while scale is caused when metallic ions are oxidised to inorganic salts and accumulate in-situ. Iron and calcium salts are the most prevalent in irrigation systems. Biofilms on the other hand are complex, can be formed by bacteria, algae, fungi, protozoans or combinations thereof. Common phyla in irrigation systems include *Proteobacteria, Actinobacteria, Chloroflexi, Mycobacterium* etc.

Gary Murdoch-Brown, a senior executive with 25 years of regenerative agriculture experience has provided a platform of knowledge and practical solutions to assist growers in achieving sustainable production systems. As part of this endeavour, Gary described the sustainable solutions developed to manage biofilms. Biofilms are problematic in all production regions. Biofilm fouling is traditionally carried out using oxidising agents, chlorine dioxide, hypochlorite, hydrogen peroxide etc. Most of these products have very high environmental impacts as well as toxicity to humans, water systems and soil and are inefficient in that the biofilms will recur. The modern environmentally friendly 'green' alternatives use either physical forces such as hydrodynamics (flushing through high water flows) or the use of substances that are capable of interfering with the matrix structure of biofilms. In the driest continent Australia, first option is not sustainable and therefore the latter group is being promoted. The latter group includes biocatalysts (enzymes, phages) and organocatalysts (organic non-enzymes). AquaMate® is a patented organocatalyst developed by Advanced Nutrients (Advanced Nutrients, 2025) that causes destruction of the biofilm matrix by breaking it into simple sugars and flushing out from the system whose repeated use prevents reoccurring of biofilm and is low-cost, non-toxic, and non-hazardous.

Managing Red Imported Fire Ant for Soil Health

The production nurseries in Southeast Queensland (SEQ) have been battling Red Imported Fire Ant (RIFA) since 2001 when the first incursion was detected in Richlands suburb of Brisbane. The costs associated with the pest are high due to market access, treatment, site management, lost markets, etc., costing the sector in SEQ more than $20 million annually. RIFA is a pest of the environment, more so than horticulture, where if established it dominates the invertebrate world, out competing or killing native insects and small animals. Greenlife Industry Australia National Biosecurity Manager/Director Research Development & Extension (RDE) John McDonald with 35 years' experience in production horticulture has been involved at state and national levels addressing industry development, plant protection, biosecurity, policy and RDE. In his presentation, he pointed out shortfalls in funding the RIFA control (and eradication) program and emphasized that it is critical that Australia eradicates RIFA to ensure our way of life for future generations is unaltered and that our environment is protected. RIFA is one of the most invasive species known and it has been known to 'farm' plant pests such as aphids within cropping systems which add to growers' pest pressures and further enhances worker exposure and subsequent health impacts from stings. It is estimated that 43,000 - 174,000 people in Australia get medical assistance due to allergic reactions to RIFA stings annually.

After describing the history of RIFA eradication/control programs and the current situation John concluded that RIFA is continuing to spread, and it is expected to move into other Australian jurisdictions in future. For production nurseries, his message is to keep RIFA off the site and trade with businesses that are RIFA aware and have their own risk mitigation programs in place. Incorporating bifenthrin granular into the growing media is one measure. Inspecting consignments, property surveillance, crop monitoring and dispatch inspections have been more effective than simple chemical treatment. He suggested using the pest management resources available to industry including RIFA specific technical information plus a plant protection program (BioSecure HACCP) that provide all the guidance on surveillance, inspections and crop monitoring.

Propagation, Breeding and Nursery Infrastructure

Apart from the four presentations on tissue culture-based propagation, *in situ* plant propagation in nurseries, plant development, adaptation, breeding and developing machinery and infrastructure were also addressed in several presentations.

As only 1% of the Subtropical rainforests (STRF) are left in eastern Australia after their decimation in the 1800s and early parts of 1900, planting is the only solution for restoration. Momentum that gathered in the 1970s saw annual plantings increasing from mere hundreds in the 1980's to over half a million by 2020's. Over the years it was realised that not only the quantity of plants but also its diversity is important. Hence seedlings have become the planting material for rainforest restoration. As a result, seed collection, storage, propagation and growing techniques of seeds of over 450 rainforest species became the cornerstone of research and a multimillion-dollar industry in recent years. Species composition and functional trait representation in these forests is of utmost importance. It is no exaggeration to state that Mark Dunphy is the most qualified person to discuss Australian rainforest seed propagation as he has worked on over 100 restoration projects as project manager or as a consultant in Australia and in the Pacific. His Firewheel Nursery has been operating since 1988 and produces over 250,000 trees annually from over 300 species. Mark is the lead author of the CSIRO published "Australian Rainforest Seeds. A Guide to Collecting, Processing and Propagation" (Dunphy et al. 2020), considered the handbook for any nursery dealing with rainforest seeds and has sold thousands of copies. Mark passionately described the reasons for increase in demand for seedlings, importance of diversity of species in restoration projects, skills, knowledge and experience needed for seed collection (species identification, masting issues, viability, handling etc.), reasons and techniques for processing STRF fruit and seeds, recalcitrance and viability issues, sowing and germinating rainforest seeds and techniques for storing seedlings (as seeds cannot be stored).

It is heartening to note that, thanks to the efforts of dedicated seed collectors and nurseries such as Mark's Firewheel Rainforest Nursery (FRN, 2025), the trend of reducing land and species diversity under rainforests found in many countries has reversed in the northern New South Wales. The species diversity, number of trees planted, and area of rainforest established is increasing annually in eastern Australia. Collecting rainforest seed, propagating it, growing it on, then planting it and maintaining the trees to form a young rainforest is a relatively new science. Since 1980's this science has taken momentum, and we have been moving ahead in leaps and bounds since then. However, there is much more to learn and discover ways to improve and speed germination, growing on and establishing rainforest. Funding this research is therefore critical for restoring our degraded rainforests.

Des Boorman has had a life-long interest in plants, especially flowering natives. After completing a degree in Production Horticulture in 1991, Des has worked in the horticultural industry in various roles. Plant breeding has always interested Des, and he gave an update on the *Brachychiton* hybridisation and selection program he has been undertaking since 1998. He described the methods of pollination and grouping of hybrid plants and the outcomes from different hybrid combinations. With time, the initial three groups had to be crossed with other genotypes and species producing interspecific and poly specific (four species in one of the groups) hybrids. The multiple crosses have yielded unusual genotypes of breeding interest and some already promising selections are being bulked up for commercialisation. Despite the time it takes to breed ornamental tree species, Des encouraged more people to take up breeding as the results are very satisfying.

Propagation and breeding of another two native Australian species, *Anigozanthos* and *Macropidia* popularly known as kangaroo paw (some species and hybrids also called cat's paw) were the theme of the presentation by Angus Stewart (GWA, 2025), who co-operates with a network of horticultural businesses and individuals to create a unique blend of information that includes tried and trusted topics as well as the new and experimental in Australian horticulture. Angus works with a range of specialist Australian native plant nurseries. He coauthored the book "Grow Your Own– How to be an Urban Farmer" with Simon Leake of Sydney Environmental and Soils Laboratory (Stewart and Leake, 2020). The book features excellent new growing systems for urban farmers and it won a Laurel for best gardening book at the Horticultural Media Association of Australia in 2020. Angus is organising the 2026 IPPS Australia Region conference in Hobart, Tasmania.

Angus' presentation on kangaroo paws covered the brief history of domestication of the two species as ornamental crops, methods of propagation including tissue culture, using seed and using parts of divided rhizomes. He emphasised the importance of breakthrough research by Kingsley Dixon and co-workers of Kings Park and Botanic Gardens in Perth, WA where they showed the role of smoke water in breaking seed dormancy (Dixon et al, 1995). In his presentation, he vividly illustrated the possibilities of developing cultivars by intra and interspecific hybridisation of the most adapted *Anigozanthos flavidus* with short stature and red and green coloured species for urban areas and as potted plants with spectacular colours. Tissue culture techniques such as embryo culture have played a distinct role in developing some spectacular interspecific hybrids.

Natural Area Nursery in Western Australia started from humble beginnings in 2005 and grew into an 800,000 annual turnover of tubestock from 80,000. Over the 15 years, the Government leased land of the nursery quadrupled in area as well. At the beginning of Covid pandemic, in January 2020, the Government of Western Australia asked for the return of the land for a new train station complex. The founder of the nursery and the recipient of Award of Honor David Hancock described the identification of land, logistics, designing, building and relocation of the massive operation within the two-year timeframe allocated by the Government. In addition to all other factors, the dedication and hard work of the staff of the Natural Area Nursery made this relocation possible.

Automation is key to successful plant nursery business in developed countries, as manual labour is costly. Moreover, automation helps achieve uniformity of the product and better efficiency. Equipment and machinery production for nurseries requires both engineering skills and knowledge of plant biology and physiology. KW automation is a leading provider of nursery automation solutions founded in 1979 by Kurt Weisenberger. KW Needle Seeder set a new standard for efficiency and productivity. Today, as a third-generation family-owned business, KW Automation continues Kurt's legacy of quality and innovation. Their range of machinery includes soil mixers, hoppers, conveyors, & elevators, pot & bag fillers, needle seeding equipment, tray fillers, potting machines, tray & pot washers, watering tunnels and customizable equipment etc. Thus, their expertise includes a broad range of automation technologies from seeding lines, soil mixing lines, pot and tray fillings solutions plus customised solutions.

Luke Weisenberger is a third-generation member of KW Automation, a dynamic sales technician emerging at KW Automation. He Joined the family business in 2016 and transitioned from Purchasing to Sales in 2024 and presented the profile of the company in his talk.

Plant Biology, Physiology and Evolutionary Biology

Biology of plants from cell to species levels were discussed at the conference.

In his presentation, Carl Barry, co-founder of Growth Technology Pty Ltd discussed the different types of meristematic cells in trees and how they contribute to the growth. He described the differences in apical meristems in shoot and root and how these in turn differ from lateral meristems that contribute to girth of massive trees. Then he went on to discuss the differences between the two lateral meristems – cork cambium and vascular cambium. He suggested that a thirty-meter-high tree trunk with a diameter of one meter would have a lateral meristem with an area of over 90 square meters and a thickness of tissue paper. Then he moved onto describe how the meristematic cells act, differences in apical, axillary and root meristem division. A mention was also made of the dedifferentiation of cells and redifferentiation, not only in tissue culture, but also when we use external auxins to induce roots in cuttings in nursery industry. Barry's knowledge in the fundamentals of plant physiology and development made Growth Technology a successful business with novel products for the hydroponic community and the development of plant hormone products for the plant propagation industry. Under his management Growth Technology went from a two-man operation in South Fremantle WA to a business with factories in Australia and the UK. Exports now account for nearly half of their production.

Clive Larkman elected the President of IPPS Australia at the Ballina Conference in 2024 is a qualified botanist and nursery person with over thirty years managing a major propagation nursery. He developed an interest in the lavender industry and is now recognised as a world expert in the growing and breeding of commercial lavender varieties. He is a passionate collector of new, different, old and rare plants from all parts of the globe and his presentation was about the importance of understanding the evolutionary biology of a species for a successful nursery industry using lavender as an example. He first described the mediterranean climate in southern France where *Lavandula* evolved and how his own experience and field trials in Australia helped grow and breed lavender successfully and transform it into a business with a large market share.

Personal Experiences

IPPS is all about personal experiences, research and sharing the knowledge so acquired. Hence, every IPPS Australia Conference has a renowned speaker or two talking about their experiences in the gardening/nursery industry. These speeches motivate young people attending the conference. In fact, the first two inaugural presentations of the Conference were about the journey of two contrasting but equally successful people in horticulture/nursery industry.

The inaugural speech was by Samantha Birkwood from Bamboo World – a 15-acre nursery specialising in clumping bamboo in the picturesque Northern Rivers region of New South Wales where the participants had the chance of visiting during the Conference. Samantha described how her character was moulded by the Army in her early days as an Officer in the Australian armed forces, then transitioning into a travel writer, while working in project management roles in leading international brands. She then went onto describe how she transformed into managing the Bamboo World, after acquiring it in 2019 combining her project management skills with her husband Matt's extensive landscaping experience in Macau, including the world's largest interior vertical garden. Their key strategies include innovation, sustainability, community engagement, and adaptability. They use e-commerce platforms, automated processes, and online ordering while prioritising sustainability by minimising their environmental footprint and promoting conservation efforts. They also stay prepared for unexpected challenges, having navigated droughts, fires, a global pandemic, floods, storms, and more in just 5 years!

Samantha's presentation was followed by Des Boorman's story, about his journey in horticulture. He had a life-long interest in plants, especially flowering natives that made him complete a degree in Production Horticulture in 1991 and has worked in the horticultural industry his whole career in various roles. Des has many skills including native plant pollination and breeding, grafting and nursery management. He says, "being able to weld, build and fix things may not seem like a horticultural skill but it certainly makes you think about a lot of different industries as you apply their tools of the trade". Des described his school and university days when his enthusiasm in exotic plants made him establish the first tea plantation in New South Wales and selecting 'Mineola Tangelo' by tasting and sugar analysis of a range of selections. He went on to describe the different native species he worked on and how he learned their biology while working with them to unlock their potential as ornamentals. He did not forget to mention people and teachers who inspired him throughout his horticultural journey.

The conference also had an interesting on-stage interview of a young and emerging horticulturist Zoe Williams, also IPPS Australia Social Media Editor, interviewed by a renowned radio/media personality and 2023 IPPS Australia Edward and Mary Bunker Award winner Jane Edmanson (Pathirana and Williams, 2023) (**Fig. 11**). The detailed papers on all the abovementioned presentations are published in these Proceedings including the experiences of the two South Africa Exchangees Nosipho Phiwokuhle Ndlovu (from South Africa to Australia) and Joshua Taylor, Australia Region awardee to visit South Africa.

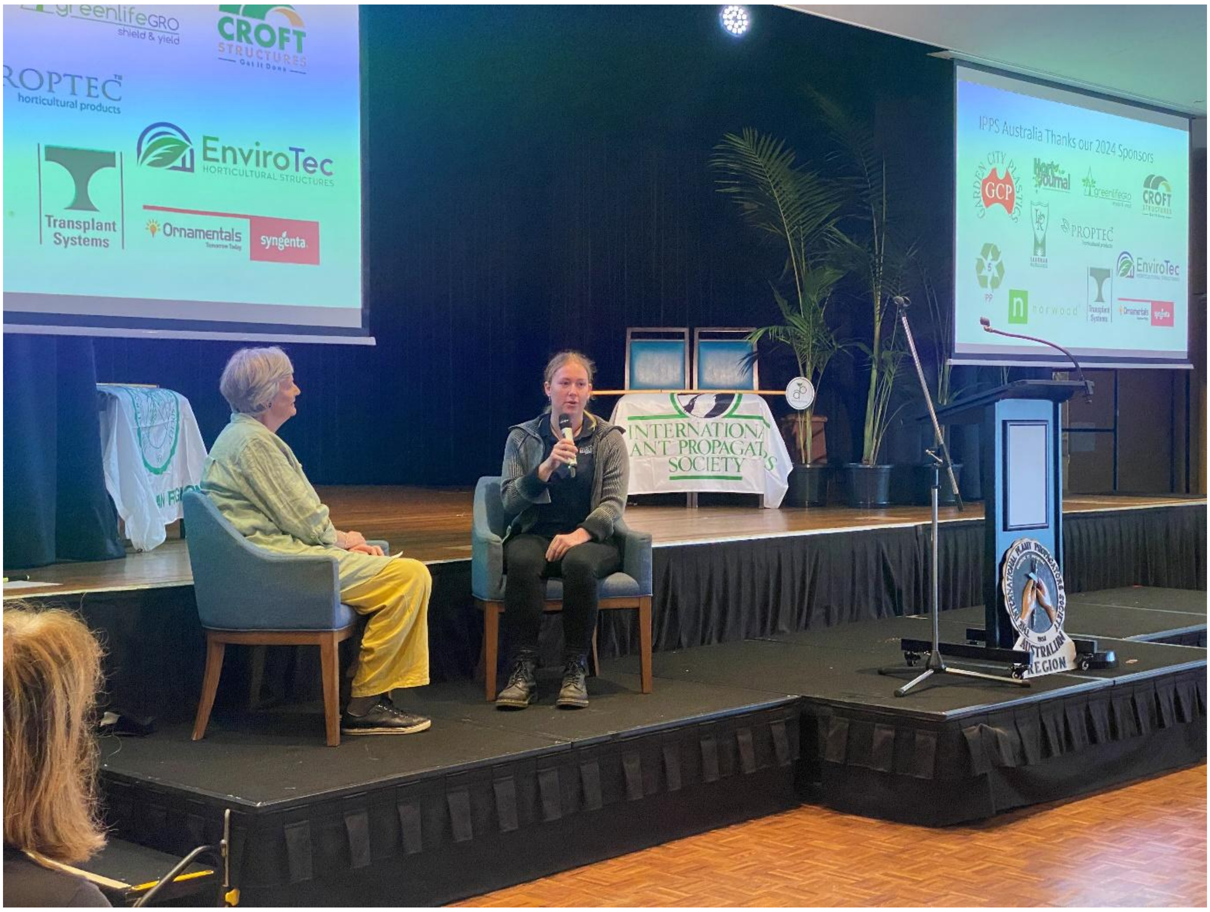

Figure 11. Zoe Williams, a successful young horticulturist was interviewed by award winning media personality Jane Edmanson on stage during the Conference.

Nursery Tours During the Conference

On 24 May, the second day of the conference, all the participants had the opportunity to visit four nurseries in the Northern Rivers region of New South Wales where conference venue was also located. Bamboo World (Bamboo World, 2025) was the first nursery to visit, and the participants already had an idea about its operation as Samantha Birkwood from the nursery had already given the inaugural presentation about her involvement. At the nursery the participants were taken through the plantation and the nursery (**Fig. 12**), and Matt described how to distinguish runner bamboos from clumping bamboos as it is important to select clumping bamboos for home gardens. In addition to being the largest bamboo collection supplying bamboos Australia-wide (except Western Australia and Tasmania), Bamboo World provides garden design and consultation, landscaping and maintenance, holds workshops and garden tours as well as hires plants.

Next, Ray Parker, Convenor and Organiser of the Conference and Diane hosted the participants at their Parkers Place Nursery (Parkers Place, 2025), operating as a wholesaler, for a stopover and lunch. During the lunch, Des Boorman who has two manuscripts in these Proceedings gave a demonstration of grafting techniques (**Fig. 13**).

Figure 12. Participants visited the Bamboo World, the leading bamboo nursery in New South Wales during the Conference.

Figure 13. Des Boorman demonstrating grafting techniques during the lunch at Parkers Place.

After lunch at Parkers Place, the participants visited Alstonville Plants, another wholesale nursery. Alstonville specialises in indoor plants, tropical foliage and landscaping plants including Aspidistras, Cordylines, Waterhousia, Heliconia, Hoyas, Magnolias, Dracaenas, Strelitzia, Sansevierias and Palms (Alstonville, 2025). Production Manager Josh Duncan and

Chief Plant Officer Lynne Sutherland showed the stunning collections of land-scaping and indoor plants they produce (**Fig. 14).**

The last nursery to visit was Pearce's Nurseries, a wholesale nursery supplying potted plants to garden centres, florists, landscapers, city councils etc. (Pearce's, 2025). Their collection of succulents was diverse and stunning (**Fig. 15).**

Figure 14. Alstonville Plants specialising in indoor and landscaping plants was the third nursery visited by the Conference participants.

Figure 15. Pearce's Nursery visited by the Conference participants had a stunning collection of succulents.

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