



XIII 2025

ORCHARD SYSTEMS

Preliminary Programme

Sunday 19th January

Pre – symposium workshop – Breakout Room 2

11:00–12:30	Technical session	Introduction to the fundamentals of programming in base R	Mr. Sean Husheer
12:30-13:30	lunch		
13:30-15:00	Technical session	Developing interactive computer applications for agricultural science.	Dr. Francisco Rojo
15:15-15:35	Career development session	An unconventional career pathway starting at the bottom: What have I learned?	Dr. Jill Stanley
15:35-15:55	Career development session	How did I end up here? A short story about a long career	Dr. Brent Clothier
15:55-16:15	Career development session	Taking advantage of opportunities during the 'gold age of pomological research'	Dr. Theodore Dejong
16:30-17:00	Networking session	Meet your peers and mentors	
13:30	Registration desk opens		
15:00	Poster set up		
17:30-19:00	Welcome function		

Monday 20th January – Natusch Ballroom

8:00-8:30	Registration		
8:30-8:40	Mihi Whakatau	Morehu Te Tomo (Director of Māori Partnerships at Napier City Council)	
8:40-8:50	ISHS welcome to delegates	Ted DeJong	
8:50-8:55	Convenors	Adam Friend and Ben van Hooijdonk	
8:55-9:05	Opening	Mark Piper, CEO, Plant & Food Research	
Breeding			Chair: Dr. Adam Friend
9:05-9:30	Opening address	Making a new kiwifruit – productivity challenges from breeding to commercialisation of ‘Zes008’	Dr. Mike Currie
Environmental Physiology 1			Chair: Dr. Jill Stanley
9:30-10:00	Keynote	How changes in the orchard microenvironment can affect fruit growth physiology: a case study on the use of multifunctional covers for sweet cherry	Dr. Brunella Morandi Sponsored by Summerfruit NZ
10:00-10:30	Break/posters:	Environmental physiology & Digital horticulture posters	
10:30-10:45		Exploring dormancy dynamics in 411 apple accessions in anticipation of changing climatic conditions	Ms. Xiaoying Chen
10:45-11:00		Phenotyping sunburn susceptibility in apples	Assoc. Prof. Lee Kalcsits
11:00-11:15		Light distribution and fruit quality in a multidirectional apple orchard	Ms. Madeleine Peavey
11:15-11:30		Using the photosynthetic active radiation intercepted and crop load to compare fruit tree yield performance	Prof. Gabino Reginato
11:30-11:45		Responses of kiwifruit leaves to different light levels	Mr. Andrea Giovannini
11:45-12:00		Maximising cherry quality and yield: the effect of light transmission in narrow-row planar cordon canopies	Ms. Claire Scofield
12:00-12:15		Drought emergency plan: apple tree behaviour to a single megadrought season	Dr. Joan Girona
12:15-12:30		Drought emergency plan: managing apple tree orchards during extreme droughts	Dr. Victor Blanco
12:30-13:30	Lunch		
Orchard management 1			Chair: Dr. Sara Serra
13:30-14:00	Keynote	Physiology of apple fruit set and abscission: effect of flower position and growth on fruitlet carbohydrate status and predicted fruit set	Laura Hillmann

14:00-14:15	Crop load responses of young 'PremA96'/Rockit™ planar cordon apple trees in New Zealand	Dharini Marinkovich Pre-recorded
14:15-14:30	Regulating crop load of 'Celina'/QTee® pear	Mr. Jef Vercammen
14:30-14:45	Evaluation of alternative chemical rest-breaking agents in 'Rosy Glow' and 'Fuji' apple trees in South Africa	Mr. Dian Craven
14:45-15:00	Improving floral canopy architecture in kiwifruit species	Will Barrett
15:00-15:30	Break	
Digital horticulture 1		Chair: Dr. Francisco Rojo
15:30-15:45	Digital phenotyping: which traits of interest for investigating fruit tree genetics and physiology?	Dr. Evelyne Costes
15:45-16:00	Using the Green Atlas Cartographer to investigate varietal and orchard-specific relationships between apple tree geometry, fruit number and fruit size to help growers optimise crop load	Jack Hughes
16:00-16:15	Towards precision orchard management for summerfruit orchards	Dr. Mark O'Connell
16:15-16:30	Novel ion-selective transistor technology for precision agriculture: advancing real-time monitoring of plant physiology	Dr. Dalila Pasquini
16:30-16:45	Tracking fall flush phenology for flowering fate determination in litchi using PhenoCam RGB imagery	JenYu Chang
16:45-17:00	Kc and the sunshine (band) – permanently installed cameras to measure almond canopy size and better estimate irrigation requirements	Mr. Mark Skewes
17:00-17:15	Using artificial intelligence to develop smart environmental control systems for greenhouses	Dr. Ming-Hwi Yao
17:30-19:00	ISHS Working Groups business meeting	

Tuesday 21 January – Natusch Ballroom

Modelling			Chairs: Prof. Dr. Ted DeJong (8:45-10:00 am) Dr. Evelyn Costes (10:30-12:15 pm)
8:45-9:15	Keynote	Narrow mango canopies have more even light distribution and more efficient light use	Dr. Ryan Orr
9:15-9:30		DeepRootGen, a generative deep learning model for the phenotyping and parameter estimation of apple root systems	Mr. James Bristow
9:30-9:45		Using digital twins to investigate light quality for innovation of narrow-row orchard systems	Dr. Liqi Han (Pre-recorded. Dr. Ian Goodwin to answer questions)
9:45-10:00		Orchard modelling to investigate trade-offs between planting density and lifetime yield	Dr. Inigo Auzmendi
10:00-10:30	Break/posters:	Orchard management & Fruit quality posters	
10:30-10:45		FruitCropXL, a generic functional-structural fruit crop model to study tree architecture and fruit quality	Dr. Junqi Zhu
10:45-11:00		Modelling light interception of planar cordon apple tree canopy using GroIMP	Dr. Xiumei Yang (Presented by Dr. Francisco Rojo)
11:00-11:15		An interactive computer application to simulate apple tree architectures and annual shoot growth under optimal conditions	Dr. Francisco Rojo
11:15-11:30		Modelling 'Royal Gala' apple fruitlet development, growth, and maturation in planar cordon orchard trees	Dr. Nicolette Niemann
11:30-11:45		Relationship between branch composition and reproduction during development of young macadamia trees	Dr. Emma Carrié
11:45-12:00		New statistical model of natural fruit set for apple under European weather conditions	Dr. Luis Gonzalez Nieto
Other			Chair: Dr. Evelyn Costes
12:00-12:15		Assessing industry impact from an orchard systems research program in Australia	Dr. Geoff Dickinson
12:15-13:15	Lunch		
Rootstocks 1			Chair: Dr. Konni Biegert
13:15-13:45	Keynote	Digging deeper: Why 3D matters in root system architecture analysis for predicting spatial water accessibility in cropping systems	Mr. Lukas Fichtl

13:45-14:00	New metrics for productivity evaluations of new apple rootstocks	Dr. Vincent Bus
14:00-14:15	Transcriptome analysis reveals the molecular response by grafting a scion onto different rootstocks	Dr. Xinwang Wang Pre-recorded
14:15-14:30	Using aeroponic systems to study apple rootstocks: from genomics to metabolomics without shovelomics	Prof. Gennaro Fazio (Pre-recorded)
14:30-14:45	Is kiwifruit rootstock-induced scion vigour correlated with trunk sap pressure?	Dr. Alicia Hellens
14:45-15:00	Productivity of 'Hass' avocado in central leader high-density planting systems on 'Ashdot' and 'Velvick' rootstocks in subtropical Australia	Helen Hofman (Presented by Dr. Geoff Dickinson)
15:00-15:30	Break	
Orchard management 2		Chair: Laura Hillmann
15:30-15:45	Influence of early-season deployment of reflective material on 'WA 38' fruit retention and crop performance	Dr. Sara Serra
15:45-16:00	Substrate production systems improve yield and fruit quality of 'Summerred' apple trees	Prof. Dr. Mekjell Meland Pre-recorded
16:00-16:15	Towards resilient apple production: redesigning the agroecosystem in response to climate change	Dr. Melissa Venturi
16:15-16:30	Effects of leaf pneumatic defoliation and reflective mulch on canopy features and fruit quality of 'Rosy Glow' apple	Dr. Alessio Scalisi
16:30-16:45	Closing the gap between fruit growers and precision horticulture	Ms. Yasmin Vanbrabant (Presented by Dr. Bart Vanhoutte)
16:45-17:00	Revisiting aminoethoxyvinylglycine as an apple branching agent	Assist. Prof. Thomas Kon
17:00-17:15	'Hass' avocado fruit thinning induces more consistent year to year cropping	Mr. Declan McCauley
17:15-17:30	Development of a citrus water stress estimation model using soil moisture and meteorological data for practical application	Haruto Kikuchi

Wednesday 22 January – Natusch Ballroom

Training systems 1			Chairs: Dr. Stuart Tustin (8:45-10:00 am) Dr. Dugald Close (10:30-12:30 pm)
8:45-9:15	Keynote	New apple training systems, more density with fewer trees	Dr. Jaume Lordan Sanahuja
9:15-9:30		Comparison of different planting material, rootstocks, and tree training systems for 'Gala' apple	Christian Andergassen
9:30-9:45		Testing 2D-multileader narrow orchard systems in Western Australian environment for apple industry	Dr. Shuangxi Zhou (Presented by Dr. Dario Stefanelli)
9:45-10:00		Development of the narrow-row planar cordon sweet cherry growing system: from concept to commercial success	Dr. Jill Stanley
10:00-10:30	Break/posters:	Rootstocks & Training systems posters	
10:30-10:45		Two-dimensional systems for 'Maxi Gala' apple trees in the subtropical climatic conditions of Southern Brazil	Prof. Dr. Daiana Petry Rufato
10:45-11:00		Performance of planar cordon 'PremP009' trees grown on Quince-C and BA29 rootstocks in Hawke's Bay and Tasman, New Zealand	Robert Diack
11:00-11:15		Row spacings modify floral bud traits, leaf area development and fruit set patterns within vertical branches of planar cordon 'Cherry Gala' apple trees	Mr. Yi-Chun Lai (Presented by Dr. Ben van Hooijdonk)
11:15-11:30		Productive and vegetative relationships between a single leader and whole tree in an apple multileader training system	Dr. Gianmarco Bortolotti
11:30-11:45		Performance of five high-density apple orchard systems in relation to light interception, light conversion efficiency, partitioning index and crop load based on light interception	Dr. Brian Lawrence
11:45-12:00		Effects of training systems on canopy light interception efficiency based on 3D virtual plants in grapevine	Dr. Weiwei Yang
12:00-12:15		Ten years of research on intensive growing systems to improve the productivity and profitability of the Australian almond industry	Dr. Roberta De Bei
12:15-12:30		Macadamia planting density has a strong effect on orchard productivity in a decade-long trial	Ms. Hanna Toegel
12:30-13:30	Lunch		
Fruit quality			Chair: Dr. Nicolette Niemann

13:30-14:00	Keynote	Rapid growth of apple fruit leads to xylem dysfunction and bitter pit in 'Honeycrisp'	Chayce Griffith Sponsored by FruitGrowers Charitable Trust
14:00-14:15		Self-ventilating rain cover effects on orchard microclimate and sweet cherry fruit quality	Dr. Dugald Close
14:15-14:30		Can avocado fruit quality be improved by precise measurements of avocado orchard growth parameters?	Mr. Declan McCauley
14:30-14:45		Effects of crop load on yield and fruit quality in three apple cultivars	Dr. Maria Dolores Raffo Benegas
14:45-15:00		The effect of preharvest pruning on the physiology and quality of 'Topaz' apple	Prof. Dr. Robert Veberic
15:00-15:30	Break		
Rootstocks 2			Chair: Dr. Alicia Hellens
15:30-15:45		EUFRIN apple rootstock trials: Evaluation of new semi-dwarfing rootstocks	Dr. Darius Kviklys
15:45-16:00		Rootstock affects horticultural performance of 'WA 38' apple trees grafted in Washington State	Assoc. Prof. Lee Kalcsits
16:00-16:15		Multi-Leader: a new training system for 'Maxi Gala' apple trees grown on different Geneva® series rootstocks in Southern Brazil	Prof. Leo Rufato
16:15-16:30		Alternative rootstocks to Malling 9 for planar apple orchard systems in Germany	Dr. Konni Biegert
16:30-16:45		Assessment of novel apple rootstocks representing three vigour classes for South Africa's apple industry	Mr. Tristan Dorfling
16:45-17:00		Preliminary results in the Iberian Peninsula of Pilowred®: a new low-vigour-conferring rootstock resistant to nematodes for almond	Maria Jose Rubio Cabetas
18:30 - late		Conference dinner – Optional extra pre-paid	

Thursday 23 January – Natusch Ballroom

Environmental physiology 2			Chair: Assoc. Prof. Lee Kalcsits
8:45-9:15	Keynote	Unlocking the potential of extreme stomatal traits for climate adaptation of apple trees	Francesca Zuffa
9:15-9:30		Physiological responses of apple trees on three rootstocks to decreasing water supply	Anna-Lena Haug
9:30-9:45		Olive cultivar responses to drought stress under climate change scenarios	Ms. Valeria Imperiale
9:45-10:00		Diurnal water uptake patterns in planar cordon 'Fuji' apple trees illustrate changing physiological demands	Dr. Teruko Kaneko
10:00-10:15		Effects of varied irrigation levels on <i>Actinidia chinensis</i> 'Jinyan' vine physiology and fruit production	Ms. Antonella Simini (Presented by Assoc. Prof. Luigi Manfrini)
10:15-10:45	Break		
Training systems 2			Chair: Dr. Brian Lawrence
10:45-11:00		Are intensive orchard systems sustainable in today's socio-economic climate?	Prof. Dr. Ted M. DeJong
11:00-11:15		Columnar apple trees – potential for a new planting system or just fantasy?	Prof. Dr. Peter Braun
11:15-11:30		Early performance of multi-leader apple training systems in Korea	Dr. In Hee Park
11:30-11:45		Advancing quality in deciduous nursery trees: management and propagation innovations	Mr. Frederik Voigt
11:45-12:00		Carbohydrate reserve regulation and fruit productivity in two mango cultivars at high or low planting densities	Dr. Gerhard Rossouw
12:00-12:15		Effects of rootstocks, tree density and training systems on fruit production of 'Abate Fetel' pears in the Upper Valley of Río Negro and Neuquén in Argentina	Dr. Maria Dolores Raffo Benegas
12:15-12:30		Apple research establishment in Ireland: preliminary information on varietal, rootstock, and training system performance	Dr. Alberto Ramos Luz
12:30-13:00		Go to bus – packed lunch	
13:00-17:30		Field tour	

Friday 24 January – Natusch Ballroom

Orchard management 3		Chair: Dr. Roberta De Bei
8:45-9:00	Potential use of triazole growth retardants as a tool for canopy management in macadamia	Ms. Siegrid Carola Parfitt (presented by Dr. Amnon Haberman)
9:00-9:15	Modernisation of vigour control protocols for 'Gala' and 'Fuji' apple trees in Southern Brazil	Renaldo Borges de Andrade Júnior
9:15-9:30	Application of 1-methylcyclopropene and aviglycine hydrochloride to increase fruit set in 'Maxi Gala' apple trees	Mr. Arthur Zanrosso
9:30-9:45	Pre-harvest chitosan application to improve fruit quality characteristics of pomegranate grown in Iran	Abdolghafour Bashghareh (presented by Feryal Varasteh Akbarpour)
9:45-10:00	Optimising crop load for the new apple cultivar 'HOT84A1'/Tutti™	Dr. Jaume Lordan Sanahuja
10:00-10:30	Break	
10:30-10:45	Impact of different localized irrigation systems on physiological responses and quality features of 'Cascade' hops	Assoc. Prof. Alessandra Carrubba (presented by Mr. Roberto Marceddu)
10:45-11:00	Opti-Shield™ increases photosynthesis, vegetative growth, and alters plant-water relations in young avocado trees	Dr. Narayan Bhusal
11:00-11:15	The influence of rootstock, scion type, and northern or southern side of the canopy on the rate and proportion of individual citrus tree regrowth following mechanical hedging in a large arboretum collection	Dr. Dave Monks
Digital horticulture 2		Chair: Dr. Junqi Zhu
11:15-11:30	Development of a reflectance spectroscopy model to predict chemical thinner efficacy in the eastern United States	Dr. James Larson
11:30-11:45	Development of a novel non-invasive sap flow sensor for orchard tree vigour assessment	Prof. Kazuhiro Nishioka
11:45-12:00	Using LiDAR to map and monitor vegetative growth in newly established narrow orchard systems	Mr. Mirko Piani
12:00-13:00	Awards & closing	

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