

A publication of the International Society for Horticultural Science

Chronica Horticulturae



News & views from the Board

The new Board of the ISHS • Introduction to the Chairs of Divisions for the term 2018-2022 • ISHS awards bestowed

Horticultural highlights

What use is a PhD in horticulture?

Symposia and workshops

Orchid • Plant Cryopreservation • Citrus Biotechnology • Plastics in Agriculture • Hazelnut • Mango • Grapevine Breeding and Genetics

Volume 58

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Number 3
2018

Chronica Horticulturae



Chronica Horticulturae® Volume 58 – Number 3; September 2018;
ISSN: 0578-039X (print), 2506-9772 (electronic).

Published quarterly by the International Society for Horticultural Science, Leuven, Belgium. Lay-out and printing by Drukkerij Graphius, Gent, Belgium. ISHS© 2018. All rights reserved. No part of this magazine may be reproduced and/or published in any form, photocopy, microfilm or any other means without written permission from the publisher. All previous issues are also available online at www.ishs.org. Contact the ISHS Secretariat for details on full colour advertisements (1/1, 1/2, 1/4 page) and/or mailing list options.

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Payments

All major Credit Cards accepted. Always quote your name and invoice or membership number. Make checks payable to ISHS Secretariat. Money transfers: ISHS main bank account number is 230-0019444-64. Bank details: BNP Paribas Fortis Bank, Branch "Heverlee Arenberg", Naamssesteenweg 173/175, B-3001 Leuven 1, Belgium. BIC (SWIFT code): GEBABEBB08A, IBAN: BE29230001944464. Please arrange for all bank costs to be taken from your account assuring that ISHS receives the net amount. Prices listed are in euro (EUR) but ISHS accepts payments in USD as well.

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Acta Horticulturae is the series of proceedings of ISHS Scientific Meetings, Symposia or Congresses (ISSN: 0567-7572). ISHS Members are entitled to a substantial discount on the price of *Acta Horticulturae*. A complete and accurate record of the entire *Acta Horticulturae* collection, including all abstracts and full text articles is available online at www.actahort.org. ISHS Individual Membership includes credits to download 15 full text *Acta Horticulturae* articles. All *Acta Horticulturae* titles - including those no longer available in print format - are available in the **ActaHort CD-ROM** format.

eJHS

The *European Journal of Horticultural Science* (eJHS) accepts original research articles and reviews on significant plant science discoveries and new or modified methodologies and technologies with a broad international and cross-disciplinary interest in the scope of global horticulture. The Journal focuses on applied and fundamental aspects of the entire food value chain, ranging from breeding, production, processing, trading to retailing of horticultural crops and commodities. ISHS members benefit from a discounted publishing charge. eJHS is available in print + online Open Access. Additional information can be viewed on www.ishs.org/ejhs.

Fruits – International Journal of Tropical and Subtropical Horticulture

Fruits – International Journal of Tropical and Subtropical Horticulture accepts original research articles and reviews on tropical and subtropical horticultural crops. The Journal is available in print + online. Additional information can be viewed on www.ishs.org/fruits.

Scripta Horticulturae

Scripta Horticulturae is a series from ISHS devoted to specific horticultural issues such as position papers, crop or technology monographs and special workshops or conferences.

PubHort – crossroads of horticultural publications

PubHort is a service of ISHS as part of its mission to promote and to encourage research in all branches of horticulture, and to efficiently transfer knowledge on a global scale. The PubHort platform aims to provide opportunities not only to ISHS publications but also to other important series of related societies and organizations. The ISHS and its partners welcome their members to use this valuable tool and invite others to share their commitment to our profession. The PubHort eLibrary portal contains over 78,000 downloadable full text scientific articles in pdf format, and includes The Horticulture Journal, Journal of the American Pomological Society, Journal of the International Society for Mushroom Science, Proceedings of the International Plant Propagators' Society, Journal of the Interamerican Society for Tropical Horticulture, etc.

Additional information can be viewed on the PubHort website www.pubhort.org.



A publication of the International Society for Horticultural Science, a society of individuals, organizations, and government agencies devoted to horticultural research, education, industry, and human well-being.

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Cover photograph: Assessing ethylene production of new apricot cultivars to understand their storage potential. © Robert Lamberts, Plant & Food Research. See p.20 to read about how a PhD can allow you to develop practical skills and insight, to prepare you for employment in the private sector as well as in research institutes or universities.



> Future vision of the new ISHS President

Yüksel Tüzel, President of ISHS



> Yüksel Tüzel

IHC2018

The XXX International Horticultural Congress (IHC2018) was held in Istanbul, Turkey, from 12-17 August 2018. It attracted almost 1800 delegates from more than 90 countries. The program featured nine plenary lectures, 67 keynote speakers, more than 950 oral and 750 poster presentations, 2 colloquia, 39 (24 within the ISHS series) symposia and 11 workshops. The program included a pre-congress tour to Cappadocia, two training sessions on Good Horticultural Practices and Organic Horticulture, an East Europe and Central Asia Summit, and business meetings during the congress, followed by one-day technical tours on 17 August 2018. IHC2018 also hosted the 54th photography exhibition of “Gardens and Flowers of Istanbul”, tailor-made meetings bringing together scientists from all over the world, as well as a youth workshop aimed at creating a network among young horticulturists. It gave the young horticulturists an opportunity to discuss their expectations for the future. Bayer CropScience Limited was the platinum commercial sponsor of the congress, and continues to make major contributions to future ISHS congresses. The Turkish Exporters Assembly (TIM)/Aegean Exporters Association, and Anadolu Etap were gold and silver sponsors, respectively. The number of participants was comparatively lower than the last two congresses. However, new participants from developing countries and young research groups participated in high numbers, and all enjoyed being part of IHC2018 and ISHS. The next International Horticultural Congress will be held in Angers, France, from 14-20 August 2022, and I invite you to join us there. A detailed report of the congress with photos will be included in the December issue of *Chronica Horticulturae*.

It was a great pleasure and honor for me to be elected as President of the International Society for Horticultural Science (ISHS) at the last Council meeting held in Istanbul, Turkey. I am proud to be part of the worldwide horticultural family.

Horticulture is the art and science of the culture of plants for food, beauty, utility, comfort and therapy. Horticulture contributes to our health and quality of our life. Horticulture has gained more importance in recent years due to the effects of cultivated crops on the nutrition of human beings. Horticultural production can also be an efficient tool to combat the hidden hunger in developing countries. Therefore, ISHS provides a unique platform to facilitate cooperation, to gather and disseminate available expertise and knowledge transfer on a global scale, and to promote and encourage research and education in all branches of horticultural science. ISHS is a huge global network nourished by horticultural scientists from

different regions and countries, who are all making valuable contributions.

The world is changing rapidly. While we communicated by fax and posted mail just two to three decades ago, today communication is instantaneous. It is easy to reach global information via the internet or engage electronically. Therefore, networking by meeting each other face-to-face is losing its importance. Thus, attendance at such structured meetings is declining. We believe that meeting in person continues to hold real value, but we need to provide additional benefits for members to encourage them to want to meet face-to-face. Future congresses could benefit from discussion workshops and training sessions. However, we should closely monitor the demands of our stakeholders, research and corporate communities, and address their demands rapidly within an ethical consideration to increase interest in participation.

During the next four years, I would like to focus on increasing outreach and improving

sustainability of symposia, by encouraging an increase in participants. We need to continue to improve the scientific quality of *Acta Horticulturae* and our peer reviewed journals, *eJHS* and *Fruits*. We need to build ISHS in regions where we are currently not very active; continue to provide benefits for the younger generation by building on the accomplishments of the last Board; and establish structures (e.g. expert pools) to improve relations with the industry. We also need to work together on corporate social responsibility projects, strengthen the regional congresses, and enhance relationships with international organizations, national societies and societies in horticulture related fields.

To be able to sustain a dynamic Society and address these issues, we need to plan strategically. The new ISHS Board members and I will review the Strategic Plan, which serves as a tool to help ISHS to overview and prioritize its functions and activities.

Working for the IHC2018 over the last eight years as the Congress President, and receiving reflections from registered participants from nearly 90 countries, has been a great journey. My recently elected colleagues on the Board and I are ready to serve you in the coming four years.

It is my privilege to introduce you to the new Board members. Our new Vice-President is Dr. Jill Stanley from New Zealand. Dr. Stanley will be the Chair of the Executive Committee and will oversee the scientific structure and program of the Society. Professor Dr. Silvana Nicola from Italy will take the role of Secretary, with the responsibility for communications, including relationships with other horticultural societies. Professor Dr. Sisir Kumar Mitra from India will take responsibility for publications while he continues his strategic role as editor-in-chief for our peer reviewed journal, *Fruits*. Dr. Kim Hummer from the USA will take the role of Treasurer, and she will provide support to Dr. Mitra on publications. For the first time, we have two new Board members representing Africa and South America. Professor Dr. Isaac Aiyelaagbe from Nigeria will be

responsible for outreach and innovation. Dr. Patricia Duarte de Oliveira Paiva from Brazil will assume the responsibility to reach out to young minds. In addition, the Board will be joined by Dr. François Laurens, President of the upcoming International Horticultural Congress in Angers, France, IHC2022. And last but not least, the ISHS Executive Director is also a member of the Board. As you know, Ir. Jozef Van Assche, Executive Director, leads the team at the ISHS secretariat, who carry out the administrative functions of the Society. He has made an enormous contribution over more than 25 years, to build and increase the capacity, reputation and value of ISHS. We are all thankful to him. On 31 December 2018, he will step

down from this full-time position. He will reduce his hours, and will focus on present and potential corporate members as Chief Corporate Development. I am delighted to inform you that Mr. Peter Vanderborght, who has significant experience working within the secretariat of ISHS, was proposed by the ISHS Board and appointed by the ISHS Council to take on the role of Executive Director beginning 1 January 2019. We welcome Mr. Vanderborght in this new role and look forward to working with him. My journey with ISHS started at the end of the 1980s. It was a great chance to be introduced to the international scientific and horticultural community. I worked at different levels of the ISHS scientific and admin-

istrative structure: as an individual member, Convener of various symposia, Chair of a Working Group, Vice-Chair of a Commission, Council member representing Turkey, and finally President of the XXX International Horticultural Congress and *ex officio* Board member. Now I feel the weight of my responsibility, and plan to dedicate myself to serve ISHS as best I can. I am open to your suggestions, contributions and questions. Please feel free to contact me. I will do my best for ISHS and to contribute to ensuring it makes a difference to you and your science. I look forward to working with you in the next four years and greatly appreciate your support. ●





eJHS

European Journal of Horticultural Science

FRUITSS

International Journal of Tropical and Subtropical Horticulture

eJHS and Fruits provide a new and fresh alternative to ISHS members and all others wishing to publish their research in a high profile international horticultural journal with rising impact. We warmly invite your article submissions.

Check out www.ishs.org/ejhs and www.ishs.org/fruits for more details.





www.facebook.com/ishs.org

> The new Board of the ISHS

On August 15, 2018, at the meeting of the General Assembly, the ISHS members present confirmed and inaugurated the new Board of the ISHS. As laid down in the Statutes and in the Rules of Procedure of the Society, the Board is composed of seven elected members and two *ex officio* members.



> The new Board members at the ISHS General Assembly at IHC2018.

Prof. Dr. Yüksel Tüzel, President of ISHS and Chairperson of the Board



> Yüksel Tüzel

Prof. Yüksel Tüzel was born in 1959 in Izmir, Turkey. She graduated from Ege University in 1981 with an MSc degree and received her PhD in Protected Cultivation in 1989. Between 1983 and 1984 she was employed by the Ministry of Agriculture & Forestry and thereafter became Research Assistant

at the Faculty of Agriculture of Ege University. She became Associate Professor in 1992. Since 1998 she has been working at the Horticulture Department of the Agricultural Faculty of Ege University as a Full Professor. Prof. Tüzel was a Visiting Scientist at Horticultural Research International in Littlehampton, United Kingdom, April-September 1988, and at Wageningen University and Research Centre, The Netherlands, January-June 2012.

Her expertise is in development of vegetable production technologies in greenhouses. She has worked on soilless culture systems, irrigation and fertilization management, abiotic stress response and grafting. In 2000 she started to work on organic greenhouse vegetable production. Recently, she completed a project to increase local input use of organic agriculture, and she was responsible for seedling production, which included experiments on substrates, nutrition programs, the use of beneficial organisms and grafting. Prof. Tüzel has lectured on protected cultivation to undergraduate and postgraduate students. She has supervised 21 Masters and four PhD students and conducted international and national projects. She has authored more than 195 scientific articles in SCI journals,

national refereed journals, international and national symposia, books and chapters. Prof. Tüzel joined ISHS in 1990. She acted as the symposium secretariat of the II ISHS Symposium on Protected Cultivation of *Solanacea* in Mild Winter Climates (13-16 April, 1993, Adana, Turkey) and has convened six more ISHS symposia. She was the co-editor of five volumes of *Acta Horticulturae*. She was the Chairperson of the ISHS Working Group Protected Cultivation in Mild Winter Climates (2000-2004) and Vice-Chair of ISHS Commission Protected Cultivation (2006-2010). She has been one of the ISHS Council members for Turkey since 2000. Prof. Tüzel was Chair of the Turkish Society for Horticultural Science (TSHS) between 2000 and 2003 and acted as Vice-Chair between 2009 and 2012. Turkey began its bid for the International Horticultural Congress in 2002 and she was involved in the bidding as the Chair of TSHS. She was the President of the XXX International Horticultural Congress (IHC2018).

Prof. Tüzel has been well supported in her career by her husband Hakkı and daughter Elcin. She is ready to devote the next four years to her role as President of ISHS.

She believes that ISHS is a dynamic society embracing thousands of members and it

should continue to lead and embrace the World of Horticulture. In order to be able to sustain a dynamic Society, she believes that the strategic plan of ISHS needs to be constantly reviewed and updated. A strategic plan can serve as a tool that helps ISHS to overview and prioritize its functions and activities. Short and medium-term plans will contribute to reaching the goals of the Society and increase efficiency at each level, enable key performance indicators to be monitored and provide flexibility to update our plans to take changing trends and interests into account.

Dr. Jill Stanley, Vice-President of ISHS and Vice-Chairperson of the Board, Responsible for the Scientific Activities of the Society



> Jill Stanley

Dr. Jill Stanley was born in Matamata, New Zealand, in 1958 and has been an active horticultural researcher for almost 38 years. She completed her B. Hort. Sci. from Massey University in 1980 and began active research after this, rather than continue study. So she did not complete her PhD from Griffith University (part time) until 2015. She is currently based at the Clyde Research Centre, which is part of the New Zealand Institute for Plant & Food Research. She is Science Group Leader Fruit Crops Physiology & Pollination, a group of 58 staff located in 11 sites across New Zealand and Australia. She also continues to carry out research in horticultural physiology, mainly focusing on understanding the physiological processes of tree and fruit development in summerfruit, to improve productivity and fruit quality. Jill is passionate about using physiological understanding to provide practical solutions for growers and to mentor younger staff members. Jill has been based in several locations within New Zealand and has spent two periods

overseas. She spent six months researching flower initiation in chrysanthemum at the Glasshouse Crops Research Institute at Littlehampton in the United Kingdom in 1985 and four years developing collaborations in Europe for HortResearch, based at IRTA (Institut de Recerca i Tecnologia Agroalimentàries) in Barcelona, Spain from 2004 to 2008.

Jill has been an active member of the New Zealand Institute of Agricultural and Horticultural Science (NZIAHS) and its predecessor, the New Zealand Society for Horticultural Science (NZSHS). She has served as a Council member for a total of nine years, was President of NZSHS for a two-year term and is currently President of NZIAHS. Jill served as an ISHS Council member for 16 years and has been on several organising committees and scientific committees for ISHS symposia. She was the Vice-President (Scientific Programme) of the organising committee for the XXIX International Horticultural Congress for eight years and was responsible for overseeing the 43 symposia, 23 workshops and 4 plenary sessions held at the Congress in Brisbane, Australia in 2014. Jill has just finished a four-year term as secretary on the ISHS Board, in which she focused on developing ISHS's social media and edited *Chronica Horticulturae*.

Jill looks forward to her new position as Vice-President and chair of the scientific committee. She is keen to continue to add value to symposia and promote them to a wider audience through social media. She is also keen to support her colleagues in reaching out to young minds and horticultural scientists around the world who could benefit from ISHS services. She is grateful for the strong support given by her husband, John, and that of her two adult sons, Michael and Paul.

Prof. Dr. Isaac OreOluwa Aiyelaagbe, Responsible for Outreach and Innovation

Prof. Dr. I.O.O. Aiyelaagbe was born on 16th September 1957 in London, UK. He studied horticulture at the University of Ibadan, Nigeria, and obtained a PhD (Agronomy) in 1988. He is Professor of Horticulture (Fruit science and Cropping systems) at the Federal University of Agriculture, Abeokuta, Nigeria (FUNAAB). He coordinates the Work, Earn and Learn Project (WELP) of the Organic Agriculture Project in Tertiary Institutions in Nigeria, established for building entrepreneurship in organic agriculture among graduates, in addition to his teaching and research commitments. He is a Fellow of the Alexander von Humboldt Foundation, Germany, and Fellow of the Horticultural Society of Nigeria (HORTSON).



> Isaac OreOluwa Aiyelaagbe

Previously, Prof. Aiyelaagbe was Senior Visiting Scientist (Fruit Crops in Agroforestry) at the World Agroforestry Centre/ICRAF in Nairobi, Kenya, Visiting Professor at Coventry University, UK, and the University of Ibadan, Nigeria, Humboldt Fellow at the Institute for Crop Science and Resource Conservation-Horticultural Science, Bonn University, Germany, Chief Research Officer (Farming Systems) at the National Horticultural Research Institute, Ibadan, Nigeria (NIHORT), and Head of Department of Horticulture at FUNAAB. He served as President-in-Council of HORTSON (1999-2000).

Prof. Aiyelaagbe has been an active member of ISHS for almost two decades. He was a member of ISHS Council representing Nigeria (2005-2010). He is a member of the Publications Committee and of several ISHS Divisions and Working Groups. He is also an Associate Editor of the ISHS journal *Fruits – The International Journal of Tropical and Subtropical Horticulture*. He convened the III All Africa Horticultural Congress of the ISHS on 7-12 August 2016 in Ibadan, Nigeria. Prof. Aiyelaagbe's research interests span drought stress, plant nutrition and component interactions in fruit tree-based poly-cultures. In over three decades of his career, he has made modest contributions to the development of horticulture and agroecology in Nigeria and the West African sub-region through the West African Network for Organic Agriculture Research and Training (WANOART)/Reseau Ouest Africain pour la Recherche et la Formation en Agriculture Biologique (ROARFAB). He is passionate about equipping horticulture graduates and future farmers with knowledge and skills that enable them to excel in the marketplace.

He looks forward to putting his expertise to use in the wider domain as he serves on the ISHS Board.

Dr. Kim E. Hummer, Treasurer, Responsible for the Financial Affairs of the Society



› Kim E. Hummer

Dr. Kim E. Hummer was born in Washington, D.C., in 1952, received her B.S. in Biology from St. Lawrence University in 1974, her M.S. from the University of Vermont in 1978, and her doctorate in Horticulture from Oregon State University in 1981. In 2009, she received an honorary doctorate in Agronomy from the Sveriges Lantbruksuniversitet in Sweden. She was recognized as an honorary member of the Società di Ortoflorofruitticoltura Italiana (SOI) in Matera, Italy in 2013.

Her scientific research includes the conservation of fruit, nut, and specialty crop genetic resources. Her present research involves the study of cytology and genetics. She is actively studying the taxonomy, horticultural identity, and diversity of berry crops.

During her career she has participated in more than 18 international plant collecting and exchange expeditions. She was selected as Specialty Crop Curator for the US Department of Agriculture, National Clonal Germplasm Repository in Corvallis, Oregon, in 1987, and became Research Leader in 1989. She manages a genebank containing more than 12,000 plant and seed accessions. She collaborates with the Global Crop Diversity Trust on the development of a Global Conservation Strategy for horticultural crops, including strawberries.

Dr. Hummer has named a new strawberry species, released four plant cultivars and an advanced germplasm selection. Dr. Hummer is an active member of the American Society of Horticultural Science, and was selected as an ASHS Fellow in 2006. She was the first woman president of the American Pomological Society (2004-2006). She served on the ISHS Board as Vice-President from 2010 to 2014 and has been ISHS Science Editor since 2015.

In August 2018, Dr. Hummer was bestowed with the ISHS Honorary Membership Award at the XXX International Horticultural Congress in Istanbul. At that congress she was elected to the ISHS Board. Her assignment will be to oversee the financial affairs of the Society. In addition, Dr. Hummer will assist in matters related to publication. Her goals for the next term include maintaining the Society's good financial standing while improving the diversity and quality of the submissions to the Society journals.

Prof. Dr. Sisir Kumar Mitra, Responsible for Publications



› Sisir Kumar Mitra

Prof. Dr. Sisir Kumar Mitra is a tropical and subtropical fruits production and postharvest technology scientist with a Doctorate in Pomology. He worked at East Malling Research Station, UK as a post-doctoral Commonwealth fellow. Prof. Mitra started his career as Assistant Professor at Bidhan Chandra Krishi Viswavidyalaya (State Agricultural University), West Bengal, India in 1980 and became Professor in 1997. He served the university as Head of the Department, Dean, Faculty of Horticulture, and Dean, Post-Graduate Studies. He has also served Università degli Studi delle Tuscia, Italy, as Visiting Professor. Dr. Mitra is a well-established and highly respected scientist with an international reputation. He has published widely, with more than 200 papers in peer reviewed and local journals. He has written or edited 14 books and published many technical bulletins of local value.

Prof. Mitra was intimately involved in postgraduate training, having successfully supervised 56 Doctoral and Masterate students. He is in demand as an invited Visiting Professor, and recently spent extended time in Japan and Brazil mentoring postgraduate students and colleagues using his expertise on tropical and subtropical fruit production

and postharvest quality. He has also been the Technical Advisor for nine years of the International Tropical Fruits Network, Malaysia, and Board of Directors, Department of Food Processing Industries, Government of West Bengal, India. Prof. Mitra is a Fellow of the Horticulture Society of India and has served as an expert member of Quinquennial Review Team and different Research advisory committees of the National Research Institutes of the Indian Council of Agricultural Research. He was the Editor-in-Chief for 22 years of the *Horticultural Journal* published by the Society for Advancement of Horticulture, India, and is presently Associate Editor of the *European Journal of Horticultural Science* (eJHS) and *Fruits – The International Journal of Tropical and Subtropical Horticulture*.

He has been Chair of ISHS Working Group Guava and other *Myrtaceae*, Jackfruit and other *Moraceae*, Papaya and Avocado, and Vice-Chair (2006-2010) and Chair of ISHS Section Tropical and Subtropical Fruits for two 4-year terms, the latest of which was completed at the IHC2018, Turkey. He has demonstrated remarkable scientific and management commitment to ISHS in having made 27 keynote/lead lecture presentations at ISHS symposia, chaired or been a member of 23 symposia committees, edited seven *Acta Horticulturae* publications, convened nine ISHS symposia and having compiled, edited and distributed 17 Section newsletters to his members, and has had 62 papers published in *Acta Horticulturae*. He has represented the ISHS at many symposia during his term of office. Additionally, he has been a regular attendee and participant at eight IHC congresses. In recognition of his outstanding service to the Society, he was awarded Honorary Membership of ISHS in 2018.

As Board member responsible for Publications, Prof. Mitra is definitely committed to promoting the ISHS journals *Fruits* and eJHS, and further expanding and advancing the other publications of the Society. In addition to his responsibilities for ISHS publications, Dr. Mitra is keen to work on developing collaborations with national societies in different countries, reaching young minds, and training and capacity building.

Prof. Dr. Silvana Nicola, Secretary, Responsible for Communications of ISHS

Prof. Dr. Silvana Nicola was born in Italy in 1961. She graduated in Agricultural Sciences from the University of Turin in 1988, and obtained a PhD in Horticultural Sciences from the University of Florida in 1997.

Prof. Nicola has been Professor at the University of Turin, Italy, in Vegetable Crops & Medicinal and Aromatic Plants since 1996.



› [Silvana Nicola](#)

Her present professional activities include teaching on vegetable, medicinal and aromatic plant crops and production chains, and research on the effect of pre-harvest environmental factors on quality and safety of fresh and fresh-cut produce, especially leafy vegetables and culinary herbs, on the fresh-cut produce chain and aromatic plant production and postharvest processes. Prof. Nicola has worked since 1988 in Horticultural Sciences and Development on seedling and transplant biology and physiology, soil and soilless culture, protected cultivation, pre- and postharvest handling and processing, postharvest physiology and technology, quality and safety, and supply chain management.

Prof. Nicola has been a Fulbright Scholar in the USA (1992-1993), a Research Assistant at the University of Florida, USA (1993-1996), a Visiting Scientist and Professor in Spain at the Universidad Politécnica de Cartagena (2003, 2014), in Japan at Hokkaido University (2015) and at Kyoto University (2016). Prof. Nicola has been a member of the Board of the Italian Society for Horticultural Science (2004-2010) and since 2013 has been a member of the Italian Technical Board of Medicinal and Aromatic Plants, Ministry of Agricultural, Forest and Food Policies. She is currently the President of EUVRIN, the European Vegetables Research Institutes Network (since 2017). In 2014, Prof. Nicola was inducted into the Italian Academy of Agriculture in Turin for her scientific achievements, and in 2018 awarded the title of Honorary Member of the ISHS for her outstanding contribution to the Society.

Prof. Nicola is author or co-author of ca. 300 publications (170+ international). She is Chief Editor of a new series of Springer, *Advances in Olericulture*, and member of several Advisory and Editorial Boards. She has been

invited speaker at some 20 international scientific symposia, meetings and conferences. Prof. Nicola participated, in 1990, in her first IHC meeting in Florence, Italy. Since then, she has actively attended numerous ISHS meetings and been involved in numerous ISHS activities. She has thus far organized and convened or co-convened seven ISHS events (five symposia, one workshop, one summit), been member of 33 symposia Scientific Committees, and Session Chairperson at 12 symposia. She has been editor of three volumes of *Acta Horticulturae*, member of the editorial committee of 13 *Acta Horticulturae* volumes, and author of 44 papers published in *Acta Horticulturae*. She has been Chairperson of the Working Group Fresh Cut Produce (2007-2011). She was elected Chair of Section Vegetables in 2006 and in 2010. Prof. Nicola was elected Board Member in 2014 for the period 2014-2018, during which she was Vice-President of the Society, coordinator of the scientific activities. Throughout the years, Prof. Nicola has been the initiator or a contributor to several initiatives: initiating several symposia series, the first East Europe – Central Asia Summit (held at IHC2018), and contributor to negotiations for collaborations on specific strategic networks and alliances.

Prof. Dr. Patricia Duarte de Oliveira Paiva, Responsible for Young Minds



› [Patricia Duarte de Oliveira Paiva](#)

Prof. Dr. Patricia Duarte de Oliveira Paiva was born in Itanhandu, Minas Gerais, Brazil, in 1969. She graduated from Escola Superior de Agricultura de Lavras (currently UFLA – Federal University of Lavras), Brazil, with B.S. in Agronomy in 1992 and M.S. in Plant Science in 1994. She received a Doctorate in Plant Science from the Federal University of Lavras in 1998. Both her Master's and Doctoral theses focused on aspects

of ornamental plant propagation. She has been Professor at the Federal University of Lavras in the Plant Science Department since 1997 and Full Professor since 2014. Her present professional activity includes teaching courses and research in floriculture and landscaping. She has already supervised 35 Master and 18 PhD students and four Post-Docs, as well as undergraduate students. She held the position of Vice-Head of the Plant Science Department from 2014 to 2015 and Head from 2015 to 2016. Since 2016, she has been Coordinator of the Graduate Program in Plant Science.

She became a member of the Brazilian Society of Floriculture and Ornamental Plants (SBFPO) in 1995. From 2013-2017 she was President of SBFPO and she remains a Board Member of this Society (2017 to 2021). Prof. Paiva is active in research with an interest in ornamental plant propagation (including in vitro propagation and conservation), production and postharvest conservation of cut flowers and foliage of tropical plants, and bulbous species. She has also been involved in landscaping studies, researching the origin and history of Brazilian gardens, and the uses and qualification of urban green areas. The results of these studies have been published in more than 150 research papers in refereed scientific journals. She is author of two books in floriculture, one in landscaping and 16 brochures on historical Brazilian gardens. Since 2013, she has been Associate Editor of the journal *Ornamental Horticulture*.

Prof. Paiva has been member of the ISHS since 2008 and has served as country representative for Brazil on the Council of ISHS since 2013. She has served as Convener and invited speaker of one ISHS international symposium and several non-ISHS congresses and symposia.

She is very proud to contribute to the future of ISHS, representing South America. She will share her experience in order to promote more opportunities for both ISHS and South America, encouraging researchers and students to attend ISHS symposia, as well as to organize meetings and expand membership.

Also, she is proud of the opportunity to lead the initiative to reach out to young minds, working with them to show how Horticulture can be important in helping in their future and their careers. For that, she advocates the promotion of international educational programs that may give students and young scientists the opportunity to learn and practice Horticulture.

Prof. Paiva is passionate about flowers and gardens. She spends her time cultivating them at home and visiting different places. She shares this passion with her husband

Renato and their three children, Alice, Elisa and Gabriel.

Dr. François Laurens, President of IHC2022



> François Laurens

Dr. François Laurens was born in France in 1961, graduated in Agronomy, breeding and genetics at the Universities of Tours and Angers and then at the former Ecole Nationale Supérieure d'Agronomie in Rennes, now AgroCampus Ouest, to obtain his "Ingénieur Agronome" diploma. He received his PhD at the University of Rennes in 1992, working on "the genetic determinism of resistance to clubroot in *Brassicae*". For the last 25 years, he has been working at INRA Angers (France) as a geneticist and a breeder in charge of many and diverse missions: French fruit varietal testing network, apple and pear breeding programs, apple germplasm management, and fruit quality genetics studies. He is the Deputy Director of the Institute of Research on Horticulture and Seeds (IRHS), a large laboratory of 230 members developing research projects on quality and health of horticultural crops in Angers. He is the coordinator of the activities developed on fruit quality (genetics, genomics, ecophysiology). He is the leader of the apple and pear breeding programs: in the last 15 years, his team has released more than 20 apple and pear cultivars. At national level, he is the co-leader of the INRA Fruit genetics and breeding group, including pome and stone fruits. He is also the co-leader of GIS Fruit, a scientific interest group that draws together 22 French partners involved in research, training and professional organizations in the fruit sector. Dr. Laurens has been active in scientific committees of various institutes at national and international level. He is currently the President of the scientific committee of CTIFL (French Technical Center for Fruit and Vegetables). He is the author and co-author of ca.

200 publications including scientific journals (H index 17), book chapters, and conference papers. He has been an invited speaker at more than 10 international symposia. He is associate editor of the Horticulture Research journal from the Nature publishing group. François Laurens has held leading positions and managed a lot of regional, national and European projects. Recently, he coordinated the large collaborative European project FruitBreedomics, regrouping 28 partners, which aimed to improve the efficiency of apple and peach breeding programs by filling in the gap between basic research studies and applied breeding. He is currently in charge of the EU-Climate Kic project, Friendly Fruit (2018-2020), which aims to develop and test new agricultural environment-friendly practices for apple and strawberry. He is an active member of the Eufrin (European Fruit Research Institutes Network) board.

François Laurens has attended many ISHS symposia since 2000. He is co-editor of two volumes of *Acta Horticulturae*, he has hosted two international symposia and he will be the President of the XXXI International Horticultural Congress (IHC2022), which will be held at Angers (France). He will be an active member of the ISHS Board; he is very keen to share his experience on scientific publications and to help ISHS improve and define its links with the industry.

François and his wife Catherine have three children, Marion, Quentin and Paul.

Ir. Jozef Van Assche, Executive Director of the ISHS (until 31 December 2018)



> Jozef Van Assche

Jozef Van Assche was born in Leuven, Belgium, in 1960 and obtained his master's degree in Horticulture in 1983 at the Faculty of Agriculture of the University of Leuven (Belgium). He continued his studies as a research student at the University of Tokyo

(Japan). After working several years in various managerial positions for commercial companies, he returned to the world of science in 1993 and joined the team of the ISHS. He was appointed Executive Director in 1995. From the start, Jozef was determined to make horticultural science benefit all, including researchers in the developing world, and, together with the ISHS team, to serve the horticultural profession as a whole.

After 25 wonderful years of service at the ISHS, the ISHS Board agreed with Jozef's request to reduce his workload. Jozef will therefore retire as Executive Director as of 1 January 2019. He will continue to serve ISHS as Chief Corporate Development.

Jozef is a keen gardener and enjoys coming home to his wife Mieke and his family.

Mr. Peter Vanderborght, Executive Director of the ISHS (from 1 January 2019)



> Peter Vanderborght

Mr. Peter Vanderborght was born in Belgium in 1967, graduated as a certified accountant and tax consultant and began his early career as auditor with Ernst & Young in Brussels, responsible for a wide range of international accounts. In 1993 he joined the ISHS and took on the challenge of restructuring and streamlining the ISHS office management, improving the accounting and financial administration processes and setting up an adequate IT environment to efficiently support the membership and publishing-related activities at the Society headquarters. Peter Vanderborght was soon to identify the extreme importance of the rapid changes and developments that took place in the field of information technology and 'World Wide Web' during the early 1990s. His vision materialized in the implementation of the

ISHS publications scanning and digitizing project, converting the entire back catalogue of *Acta Horticulturae* from print to digital in a full-text searchable electronic format; in times where most publishers were still mainly focusing on print-only. This new digital *Acta Horticulturae* catalogue he had created, allowed *Acta Horticulturae* papers to become accessible to researchers all over the globe who now had instant access to a wealth of previously hidden or otherwise inaccessible papers right from their desktops!

Together with Prof. Yves Desjardins, who assumed the role of Board member, responsible for publications over the last eight years, Peter Vanderborcht later introduced a series of measures and procedures in the ISHS publications workflow to increase the overall quality, visibility and accessibility of all ISHS publications.

During his career of over 25 years with the ISHS, Peter Vanderborcht served in various roles within the core-management of the Society and most recently has been serving as a key advisor to the ISHS Board and assistant to the Executive Director. In view of the decision of Jozef Van Assche, to step down as Executive Director on 31 December 2018, and to take up a part-time position focusing on Corporate Membership instead, Peter Vanderborcht was proposed by the ISHS Board and appointed by the ISHS Council to become Executive Director from 1 January 2019.

In his position as Executive Director, Peter Vanderborcht is even more determined to continue serving the Society and its stakeholders, keeping a focus on the ISHS core-business. He also wants to further consolidate the strong position of the ISHS in fulfilling its increasingly critical role, which is expressed in the Society's mission statement: 'to nurture and deploy scientific growing knowledge for creating a better world'.

Changing needs of (new generations of) researchers and scientists within the global context of the ISHS with different economic situations and various cultural backgrounds require adequate responses. The Society should therefore be inclusive, keep a close eye on the 'marketplace', follow the development of new technologies, identify and embrace emerging opportunities, keep feeling with its 'audience' and be versatile and lean in adapting to a fast changing environment.

Peter loves cooking and running, and he appreciates the pleasure of enjoying good food in company with friends and family. Peter and his wife Véronique are the proud parents of Sofie. ●

➤ Introduction to the Chairs of Divisions for the term 2018-2022

Division Horticulture for Development	Chair Prof. Dr. Peter J. Batt (Australia)
	Vice-Chair Dr. Pritam Kalia (India)
Division Horticulture for Human Health	Chair Prof. Dr. Bhimanagouda Patil (USA)
	Vice-Chair Dr. Tim O'Hare (Australia)
Division Landscape and Urban Horticulture	Chair Dr. Francesco Orsini (Italy)
	Vice-Chair Dr. Vivian Loges (Brazil)
Division Ornamental Plants	Chair Prof. Dr. Margherita Beruto (Italy)
	Vice-Chair Prof. Dr. Kexuan Tang (China)
Division Physiology and Plant-Environment Interactions of Horticultural Crops in Field Systems	Chair Dr. Evelyne Costes (France)
	Vice-Chair Prof. Dr. Esmaeil 'Essie' Fallahi (USA)
Division Plant Genetic Resources and Biotechnology	Chair Prof. Dr. Jorge Canhoto (Portugal)
	Vice-Chair Dr. Maurizio Lambardi (Italy)
Division Postharvest and Quality Assurance	Chair Prof. Dr. Christopher B. Watkins (USA)
	Vice-Chair Dr. Peter M.A. Toivonen (Canada)
Division Precision Horticulture and Engineering	Chair Prof. Dr. Murat Kacira (USA)
	Vice-Chair Prof. Dr. Pierre-Emmanuel Bournet (France)
Division Protected Cultivation and Soilless Culture	Chair Prof. Dr. Stefania De Pascale (Italy)
	Vice-Chair Mr. Graeme Smith (Australia)
Division Temperate Tree Fruits	Chair Prof. Dr. Ted M. DeJong (USA)
	Vice-Chair Prof. Luca Corelli-Grappadelli (Italy)
Division Temperate Tree Nuts	Chair Prof. Dr. Tiziano Caruso (Italy)
	Vice-Chair Dr. Michelle Wirthensohn (Australia)
Division Tropical and Subtropical Fruit and Nuts	Chair Dr. Karin Hannweg (South Africa)
	Vice-Chair Prof. Dr. Zora Singh (Australia)
Division Vegetables, Roots and Tubers	Chair Prof. Dr. Daniel I. Leskovar (USA)
	Vice-Chair Dr. Francisco Pérez-Alfocea (Spain)
Division Vine and Berry Fruits	Chair Prof. Dr. Jorge Benjamin Retamales (Chile)
	Vice-Chair Prof. Dr. Guglielmo Costa (Italy)

Division Horticulture for Development

At the recent ISHS Council meeting in Istanbul, Prof. Dr. Peter J. Batt, former Chair of ISHS Commission Economics and Management, was confirmed Chair of ISHS Division Horticulture for Development. He will be supported by Vice-Chair, Dr. Pritam Kalia (India). For almost 30 years, Peter J. Batt was Professor of Food and Agribusiness Marketing at Curtin University in Perth, Western Australia.

A graduate of Lincoln College, New Zealand, Peter was first employed as a Horticultural Advisory Officer in cut flower and ornamental crops in Christchurch, New Zealand, before emigrating to Perth as foundation lecturer in Australia's first Bachelor of Agribusiness Horticulture. He obtained his PhD in agribusiness in 2003 from Curtin University, and has established a global reputation for his research in industrial purchasing behavior and relationship marketing in agri-food supply chains. For over two decades,



> Peter J. Batt

Peter worked with various industry groups in Australia to develop export markets for cut flowers, fresh fruit and vegetables and seed potatoes. However, he is best known for his rural development work in linking smallholder farmers to institutional markets in Indonesia, the Philippines and Viet Nam. In recognizing a need to provide a forum for other value chain researchers working in the emerging economies, Peter convened the first international symposium on enhancing the performance of supply chains in the transitional economies in Chiang Mai, Thailand, in 2005. He has subsequently organised six other symposia in Viet Nam, Malaysia, The Philippines, Australia (2) and most recently, Istanbul, as an integral part of the IHC. Peter regularly consults to the Food and Agriculture Organisation of the United Nations for whom he currently leads the development of the Rapid Urban Food System Appraisal Tool (RUFSA). He is a past state and national President of the Australian Institute of Horticulture and is currently WA State representative for the Australian Society of Horticulture Science. Peter is now principal of Peter J. Batt and Associates, an international agribusiness marketing and rural development consulting company.

Division Horticulture for Human Health

Prof. Dr. Bhimanagouda (Bhimu) Patil was elected Chair of ISHS Division Horticulture for Human Health. He has previously served as Chair of ISHS Section Medicinal and Aromatic Plants and Vice-Chair of ISHS Commission Fruits and Vegetables and Health. He will be assisted by Vice-Chair Dr. Tim O'Hare (Australia).

Dr. Patil is a Professor and the Director of the Vegetable and Fruit Improvement Center (<http://vfic.tamu.edu>) at Texas A&M University AgriLife. He has devoted his career to understanding the role of health-promoting factors by promoting the consumption of

fresh, healthful, and delicious varieties of fruits and vegetables. His broad, multi-disciplinary research spans all aspects of fruit and vegetable production, from isolation and characterization of the health-promoting compounds to plant breeding aimed to develop improved cultivars, and postharvest handling practices that will prevent soil-borne contamination of vegetables.

Dr. Patil's research has been recognized with many honors and has produced a remarkable publication and funding record. He has published 190 peer-reviewed journal articles and has given more than 120 invited presentations at land grant institutions, professional societies, commodity groups and other organizations. Dr. Patil has received 18 awards, including Healthy Living Lifetime Achievement Award from the Texas International Producers Association, Distinguished Service Award from the American Chemical Society - Division of Agricultural and Food Chemistry, Outstanding Graduate Educator Award from the American Society for Horticultural Science. Four professional societies (American Chemical Society, American Society for Horticultural Science, Brazilian Horticulture Society, TAMU AgriLife) recognized Dr. Patil as a Fellow.

He co-founded an International Symposium on Human Health Effects of Fruits and Vegetables (FAVHEALTH) with Dr. Yves Desjardins. He also served as chair of the Division of Agriculture and Food Chemistry of the American Chemical Society. Moreover, with USDA support, he developed three multi-disciplinary and multi-state first-of-their-kind courses.

The research and educational outreach programs led by Dr. Patil at the Vegetable and Fruit Improvement Center have received substantial attention and Dr. Patil has been interviewed and/or his work has been published in 135 articles from various news media including the Associated Press, Reuters, the Wall Street Journal, and Fox Health Channel.



> Bhimanagouda Patil

Division Landscape and Urban Horticulture



> Francesco Orsini

Dr. Francesco Orsini was appointed Chair of ISHS Division Landscape and Urban Horticulture. He succeeds Prof. Giorgio Prosdocimi Gianquinto in this position. Dr. Orsini will serve in the office in close collaboration with Vice-Chair Dr. Vivian Loges (Brazil).

Dr. Orsini has worked as a vegetable crop physiologist in the Department of Agricultural Sciences and Technologies at the University of Bologna (Italy) since 2008, and is currently a guest scientist at Wageningen University (The Netherlands). He has served as chair of ISHS Working Group Urban Horticulture since 2016, and is currently member of the Management Council of the Italian Society for Horticultural Sciences (SOI). His research program has mainly focused on abiotic stress physiology, growing systems for urban horticulture (including simplified soilless systems, rooftop farms and plant factories with artificial lighting), safety of urban food products and environmental assessment of urban agriculture systems. He recently edited the book "Rooftop Urban Agriculture" (Springer), and authored more than 80 scientific papers in international journals or books. He teaches "Vegetable crops" and "Greenhouse crop management", and contributed to the creation of the intensive course on "Entrepreneurial urban horticulture" at the University of Bologna. He was convener of the International Symposium on Greener Cities for More Efficient Ecosystem Services in a Climate Changing World (Bologna, Italy, 2017), and edited two volumes of *Acta Horticulturae* associated with the Division. He contributed to six European projects on "urban horticulture" and he served as consultant of international bodies (e.g. FAO-UN, NGOs) in international cooperation projects on urban horticulture in Brazil, Peru, Ivory Coast, Cape Verde, Kenya, Mauritania, Myanmar.

Division Ornamental Plants



› Margherita Beruto

Prof. Dr. Margherita Beruto was appointed as Chair of ISHS Division Ornamental Plants. She succeeds Prof. Dr. Margrethe Serek in this position and will be assisted by Vice-Chair Prof. Dr. Kexuan Tang (China).

Dr. Beruto has been actively involved in ISHS as Chair of ISHS Working Group Quality Management in Plant Propagation (2011-2017) and as Vice-Chair of ISHS Section Ornamental Plants (2014-2018). Dr. Beruto received a PhD in agricultural sciences and applied biology: biotechnology cellular and genetics at the University of Gent (Belgium). During the early part of her career she carried out research and senior research positions at the Regional Institute for Floriculture (IRF) in Sanremo (Italy), where she was involved in plant tissue culture. Her research focused on classical and advanced micropropagation systems. Studies were undertaken in order to outline nutritional models for in vitro plant tissues through a multidisciplinary approach that considered physical, chemical and biological aspects. The research was developed in close cooperation with the production world and the gained expertise enabled her to develop specialized services supporting breeders and nurseries in the floriculture sector. From 2009 onwards, Dr. Beruto has served as Director of IRF, a public research institute whose mission is to support growers and nurserymen involved in the floriculture sector, with particular attention on the achievement of novelties and with an eye towards sustainable management. In 2013, Dr. Beruto was appointed part-time Professor at Henan University of Science and Technology, China. She is on the editorial board of international scientific journals and she has been appointed to national panels of experts in floriculture. Dr. Beruto coordinates different international projects with public-private partnerships addressed to build innovation platforms in floriculture.

Division Physiology and Plant-Environment Interactions of Horticultural Crops in Field Systems



› Evelyne Costes

Dr. Evelyne Costes was elected Chair of ISHS Division Physiology and Plant-Environment Interactions of Horticultural Crops in Field Systems. She will serve in close collaboration with Vice-Chair Prof. Dr. Esmail 'Essie' Fallahi (USA). Evelyne Costes is Director of Research at the National Research Institute for Agriculture (INRA) in the AGAP unit, Montpellier, France. Since studying botany in her undergraduate degree, she has studied fruit tree development on a number of species from tropical (litchi, coffee) to temperate (apple, apricot, peach, almond) at CIRAD and INRA (France). Her research aims at understanding fruit tree architecture and flowering, considering their genetic and environmental control. She has longstanding skills in tree physiology, quantitative genetics, statistics and modelling. Her current research combines architectural descriptions, eco-physiology and structural-functional modeling to address fundamental questions with applied practices.

Evelyne Costes has co-authored about 100 scientific papers in international peer-reviewed journals and a large number of publications in *Acta Horticulturae*. She actively hosts, trains and collaborates with graduate and PhD students, post-docs and scientists from around the world. She has been member of the ISHS since 1992, and has mainly been involved in the former ISHS Section Pome and Stone Fruits. She has been Chair of ISHS Working Group Modelling in Fruit Research and Orchard Management since 2015, and has actively contributed as a member of scientific committees at several ISHS symposia.

Division Plant Genetic Resources and Biotechnology

Prof. Dr. Jorge M. Canhoto was appointed Chair of ISHS Division Plant Genetic Resources

and Biotechnology. He will work closely with Vice-Chair, Dr. Maurizio Lambardi, former Chair of ISHS Commission Molecular Biology and In Vitro Culture.

Prof. Canhoto completed his PhD in biology (plant physiology) in 1995 at the University of Coimbra, Portugal. In 2004 he obtained a position as full professor at the Department of Botany, University of Coimbra. He is currently director of the Department of Life Sciences, University of Coimbra, and leads the Plant Biotechnology Group of the Centre for Functional Ecology. At the University of Coimbra, he is responsible for the courses on plant biotechnology, plant development, forest biodiversity and biotechnology and experimental biology.

Prof. Canhoto was Convener of the VIII International Symposium on In Vitro Culture and Horticultural Breeding, held in Coimbra in 2013. Together with Sandra Correia, he edited the symposium proceedings, which were published as *Acta Horticulturae* 1083. He was member of the Scientific Committee as well as invited speaker at the VII International Symposium on Production and Establishment of Micropropagated Plants (PEMP2017), held in Lavras, Brazil. During the symposium, he was appointed Convener of the VIII PEMP symposium to be held in Coimbra, Portugal, in June 2020. Prof. Canhoto has given oral and poster presentations at several ISHS symposia, has published several articles in *Acta Horticulturae* and has been referee of articles for this publication. Prof. Canhoto was the Portuguese representative at the Joint ISHS Executive Committee and Council Meeting in 2014, held in Brisbane, Australia. From 2014 to 2017, he was member of the board of the APH (Portuguese Association for Horticultural Science). He was former director of the Master in Plant Biotechnology and Biodiversity (University of Coimbra, 2008-2015). Nowadays, he is Editor of the Springer journals *In Vitro Cellular & Developmental Biology* and *Forestry Research*.



› Jorge Canhoto

Division Postharvest and Quality Assurance



› Christopher B. Watkins

The ISHS Council meeting in Istanbul confirmed the election of Prof. Dr. Chris Watkins as Chair of ISHS Division Postharvest and Quality Assurance, previously Chair of ISHS Commission Quality and Postharvest Horticulture. Dr. Peter M.A. Toivonen (Canada) is the Vice-Chair of the Division.

Chris has been a member of ISHS since 1988, and is also active in the American Society for Horticultural Science (ASHS), which he joined in 1981. He is currently Vice President of the Extension working group in the ASHS.

Chris Watkins is the Herman M. Cohn Professor in the Horticulture Section of the School of Integrative Plant Sciences, College of Agriculture and Life Sciences (CAL S) at Cornell University, Ithaca, New York in the USA. He is also the Director of Cornell Cooperative Extension, an extension system that extends throughout New York State. He is Associate Dean at the College of Agriculture and Life Sciences, and the College of Human Ecology. Prior to taking an appointment at Cornell University in 1994, Chris worked in New Zealand in the Department of Scientific and Industrial Research (DSIR) and then HortResearch, now known as the Plant and Food Research Institute of New Zealand. He completed his BSc and MSc (1st class Hons) at the University of Auckland, New Zealand, and his PhD at Rutgers – The State University of New Jersey, USA.

Chris Watkins' research program is focused on maturity, storage and ripening of horticultural products from both applied and fundamental aspects. A primary area has been the underlying mechanisms in fruit responses to storage conditions such as temperature, atmosphere, and 1-methylcyclopropene (1-MCP), and the interaction of these factors on quality and product losses. Although most of his research is apple-oriented, he has worked on a variety of fruits and vegetables.

Chris Watkins has also been involved in international projects in Serbia, China, Benin and Malawi.

He has been an invited speaker at over a hundred national and international meetings. Chris Watkins and his colleagues have published 145 refereed papers, 44 conference proceeding papers, 14 book chapters and 113 grower, newsletter and technical bulletin articles. He has mentored 18 MSc and PhD students. Editorial responsibilities have included terms as Associate Editor of HortScience, and Horticulture Research, and currently of Postharvest Biology and Technology. Honors and awards given to Chris Watkins include a Winston Churchill Memorial Trust Fellowship; recipient of Trimble Agricultural Research Travel Fund; ASHS Outstanding Extension Educator Award; the Crystal Apple - Award of the Director of the Szczepan Pieniazek Research Institute of Pomology and Floriculture, Skierniewice, Poland; Fellow in the ASHS; and the CALS Alumni Association Outstanding Faculty award.

Division Precision Horticulture and Engineering



› Murat Kacira

Prof. Dr. Murat Kacira was appointed Chair of ISHS Division Precision Horticulture and Engineering. He has previously been Vice-Chair (2010-2014) and Chair (2014-2018) of ISHS Commission Horticultural Engineering. He will be assisted by Vice-Chair Prof. Pierre-Emmanuel Bournet (France).

Dr. Kacira is a professor in the Department of Agricultural and Biosystems Engineering and director of the Controlled Environment Agriculture Center at the University of Arizona, USA. He received his BSc degree in agricultural engineering at Cukurova University in Turkey and MSc and PhD degrees in food, agricultural and biological engineering from The Ohio State University in USA. Dr. Kacira worked as post-doctoral researcher at The Ohio State University and as a visiting scholar in the Lab of Controlled Environment

Agriculture at the National Institute for Rural Engineering in Tsukuba, Japan. He has been active in teaching and research related to controlled environment agriculture for the past 24 years, with work experience in academia and research institutions in the US, Turkey, and Japan. He has been with University of Arizona since 2007, and his research involves precision agriculture in controlled environment agricultural systems. He has a specific focus on greenhouse and plant energy balance studies, computer vision guided autonomous plant health and growth monitoring systems, modeling and simulation for analysis of greenhouse aerodynamics, and agrivoltaics in controlled environment agriculture. He also teaches both undergraduate and graduate level engineering courses at the University of Arizona.

Dr. Kacira has been the author and co-author of many scientific and technical papers dealing with greenhouse climate control, aerodynamics analysis of greenhouse systems, and automated crop diagnostics via computer vision guided systems in controlled environments. He is actively involved with ISHS where, in addition to his previous roles for ISHS Commission Horticultural Engineering, he was Co-founder, Secretary and Chair of Working Group Computational Fluid Dynamics in Horticulture. He co-convened an ISHS symposium and workshop, served as scientific committee member for a number of ISHS symposia, and had papers published in a number of ISHS publications in addition to those published in peer-reviewed journals. Dr. Kacira has given lectures regularly at greenhouse crop production and engineering short courses, and has given invited and keynote lectures both at national and international scientific meetings and conferences. He is a member of the International Society for Horticultural Science (ISHS) and American Society of Agricultural and Biological Engineers (ASABE).

Division Protected Cultivation and Soilless Culture

Prof. Dr. Stefania De Pascale, former Chair of ISHS Commission Protected Cultivation, was elected Chair of ISHS Division Protected Cultivation and Soilless Culture. She will serve in the office in close collaboration with Vice-Chair Mr. Graeme Smith (Australia).

Stefania is full Professor at the Department of Agricultural Sciences, University of Naples Federico II, Italy. She obtained a BSc and an MSc in agricultural sciences from the University of Naples Federico II and an MSc in green areas and landscape design from the Polytechnic University of Turin with the highest score 110/110 cum laude. She also obtained a "Perfezionamento diploma" and post-MA in Ornamental horticulture from the Uni-

versity of Turin. Since she joined the Department of Agricultural Sciences in 1993, Stefania and her team have carried out research in both fields and greenhouses to determine the effects of environmental and cultural factors on plant growth and development and on produce quality on a wide range of vegetable and ornamental crops. She teaches in courses on crop physiology, vegetable crop production, greenhouse horticulture and landscaping and supervises BSc, MSc and PhD students. She taught in international intensive courses on greenhouse horticulture and crop physiology. Stefania has received research funds through competitive grant programs awarded by the Italian Ministry of University and Research, the Italian Ministry of Agriculture and Forestry, the Italian Space Agency, the European Space Agency and the EU. She has co-authored >200 papers including peer review publications in international scientific journals, reviews and book chapters and >200 conference papers in peer-reviewed books of proceedings, technical communications and articles in national and international magazines. She has taken part in many international and national congresses as invited speaker. Stefania is also co-editor of international scientific journals and reviewer for many scientific journals. She is a member of several scientific affiliations and serves as an advisor and a rapporteur in national and international boards, committees and working groups.

Stefania's research interests are focused on abiotic stress adaptation in vegetable crops, water and nutrient management of horticultural crops in field and greenhouse production, organic horticulture and postharvest physiology. Recent research activities include the functional biology of water and salt stress adaptation in plants, the influence of pre- and postharvest conditions on nutritional composition of vegetables and the effects of "space environment" on plants.



› Stefania De Pascale

Division Temperate Tree Fruits



› Ted M. DeJong

Prof. Dr. Theodore DeJong, former Chair of ISHS Section Pome and Stone Fruits, was appointed Chair of ISHS Division Temperate Tree Fruits. He will be assisted by Vice-Chair Prof. Luca Corelli-Grappadelli (Italy).

Prof. DeJong is an emeritus professor who worked as a fruit tree crop physiologist in the Department of Plant Sciences at the University of California, Davis, from 1981 to 2016. He had a split appointment in teaching, fundamental and application-oriented research and extension. He served as chair of the UC Davis Department of Pomology for eight years (1994-2002) and as vice-chair in the reorganized/consolidated Department of Plant Sciences for three years (2006-2009). His research program mainly focused on understanding tree physiology and orchard management factors that control the carbon balance/budgets and productivity of fruit and nut trees. He has co-authored more than 250 scientific papers, taught fundamental pomology courses and mentored numerous graduate students, postdocs and visiting international scientists. He received the title of Distinguished Professor at UC Davis in recognition of his academic achievements and service. Dr. DeJong is a Fellow of the International Society for Horticultural Science and of the American Society of Horticultural Science and is a member of several ISHS Working Groups. He has chaired or co-chaired three ISHS symposia and also served as Vice-Chair of ISHS Section Pome and Stone Fruits from 2004 to 2010.

Division Temperate Tree Nuts

Prof. Dr. Tiziano Caruso, former Chair of ISHS Section Nuts and Mediterranean Climate Fruits, was confirmed Chair of ISHS Division Temperate Tree Nuts. He will be assisted by Vice-Chair, Dr. Michelle Wirthensohn (Australia).

Prof. Caruso graduated at the Faculty of Agricultural Science, University of Palermo, Italy. In the past decades, his research activity has mainly focused on the morphological and

molecular characterization of Mediterranean fruit tree genetic resources and on the horticultural and eco-physiological evaluation of cultivars and rootstocks of temperate zone tree fruit in intensive and super intensive planting systems. More recently his research efforts have focused on the development of models of precision fruit culture techniques to improve the sustainability and resilience of new orchard designs, in cooperation with physicians and engineers. Moreover, in ongoing projects, in cooperation with geneticists and bio-informaticians, he is focusing on the meta-analysis of transcriptomic responses of fruit trees to abiotic and biotic stresses and on functional genomics to identify gene networks involved in alternate bearing. Prof. Caruso has supervised 15 PhD, more than 50 MSc and 100 BSc students. Currently, he teaches courses to both BSc and MSc students and gives seminars to PhD students. For six years he has been head of the Department of Tree Fruit Crops, University of Palermo, Italy.

Prof. Caruso delivered many invited presentations at national and international symposia and congresses and seminars organized by professional societies. He hosted visiting scientists and PhD students for scientific internships at the University of Palermo. He is author/co-author of more than 70 scientific papers published in peer-reviewed journals and more than 150 scientific and technology transfer papers published in national and international journals. He served as reviewer for many papers for international scientific journals. He has been Associate Editor for more than 15 years for the Journal of Horticultural Science and Biotechnology.

Prof. Caruso is a fellow of the Italian Society of Horticultural Science, the Italian Academy of Olive and Oil and the Accademia dei Geogofili (Italy) and is a member of various ISHS Working Groups. He has been on the scientific committee of several ISHS symposia, chair of scientific sessions and served as Editor/Co-editor of three *Acta Horticulturae*.



› Tiziano Caruso

Division Tropical and Subtropical Fruit and Nuts



› Karin Hannweg

Dr. Karin Hannweg was elected Chair of ISHS Division Tropical and Subtropical Fruit and Nuts. She will be assisted by Vice-Chair Prof. Dr. Zora Singh (Australia).

Dr. Karin Hannweg, a Senior Researcher, has over 20 years' experience in tropical and subtropical crops research in the Plant Breeding Division of the Agricultural Research Council-Tropical and Subtropical Crops (ARC-TSC), having started as a Junior Researcher in 1996. Dr. Karin Hannweg holds a BSc degree in chemistry and cell biology, a BSc (Hons) degree in cell biology, and an MSc degree in cell biology (specialising in plant tissue culture), all obtained from the University of Kwa-Zulu-Natal (Howard College campus). Her PhD (horticulture) was obtained from the same University (Pietermaritzburg campus).

She has been involved in a range of research projects, including the use of *in vitro* tools in plant improvement, propagation research and broad horticultural trait evaluation across a wide range of crops and disciplines for which she also has an extremely broad insight and understanding. She is linked to more than 12 societies and/or committees and has presented nearly 100 oral and poster papers at various scientific symposia/conferences. She has also published a number of scientific manuscripts and has several popular articles to her name. She serves as an editor for a number of journals as well as an external examiner. Dr. Hannweg has organised more than 10 events including the II All Africa Horticulture Congress in South Africa in 2012, during which time she was President of the Southern African Society for Horticultural Sciences (SASHS). She continues to serve on the SASHS Council and maintains strong ties with the International Society for Horticultural Science. Dr. Hannweg has hosted undergraduate student groups at the ARC-TSC, with the aim of inspiring young scientists to enter the field of horticulture. Several students who participated in the Education Outreach Programmes organised by Dr. Hannweg, are now active scientists and leaders in their own right.

Division Vegetables, Roots and Tubers

Prof. Dr. Daniel I. Leskovar of the USA was elected Chair of ISHS Division Vegetables, Roots and Tubers. He will serve in the office in close collaboration with Vice-Chair, Dr. Francisco Pérez-Alfocea from Spain.

Dr. Daniel Leskovar is a Professor in Vegetable Stress Physiology and Center Director of the Texas A&M AgriLife Research Center at Uvalde, Texas A&M University. He received his BSc in horticulture from the Universidad del Comahue, Argentina; graduate training in vegetable crops at the University of Wageningen, The Netherlands; Master of Science degree in vegetable crops from the University of California, Davis; and PhD in vegetable crop physiology from the University of Florida.

Dr. Leskovar's background and research interest is in plant morphological and physiological adaptation mechanisms to environmental stresses and in the development of sustainable vegetable cropping systems that include cucurbits, tomato, pepper, onion, artichoke and leafy greens. More than 140 scientific papers were published by him and his team in the fields of seed-transplant production to enhance stand establishment; plant hormones to modulate seedling and plant growth; soil, tillage, and deficit irrigation strategies; water productivity, yield, antioxidants, and sensory attributes of vegetable crops.

His current research focus is on vegetable transplant quality; signaling compounds and bio-stimulants; soil amendments; root/shoot traits for heat and drought tolerance; grafted tomato responses in high tunnel and open field (conventional and organic); and genotype selection for abiotic stress tolerance, water use efficiency, yield and quality.

Dr. Leskovar has been actively involved in ISHS leading roles, including Vice-Chair of ISHS Section Vegetables (2010-2014), Chair of ISHS Section Vegetables, Quality Production Systems, Leafy Green and Non-Root Vegetables (2014-2018); and Chair of ISHS Working



› Daniel Leskovar

Group Crop Establishment, Seed and Transplant Technology (2007-2018). The strong combined experience and enthusiasm of Drs. Leskovar and Pérez-Alfocea will support their Division members, Working Group Chairs, and symposium conveners to lead new scientific exchanges, innovations, and paradigms shifts in horticulture.

Division Vine and Berry Fruits



› Jorge Benjamin Retamales

Prof. Jorge B. Retamales was appointed Chair of ISHS Division Vine and Berry Fruits, following Prof. Bernadine Strik in this position. Dr. Retamales will serve in the office in close collaboration with Vice-Chair Prof. Guglielmo Costa (Italy).

Since 1988, Prof. Retamales has worked as a small fruit tree physiologist in the Department of Horticulture at the Universidad de Talca, Chile with a split appointment in teaching and applied research. He served as Director of Graduate studies of the Universidad de Talca from 1998-2000, and as Dean of the Faculty of Agricultural Sciences from 2000 to 2003. His research program has mainly focused on understanding berry crop physiology (blueberries and strawberries) and crop management factors that control fruit productivity and quality. In January 2018, Dr. Retamales retired from the Universidad de Talca. He is senior author of the two editions (2012 and 2018) of the book "Blueberries" published by CABI. He has co-authored more than 100 scientific papers, has taught fundamental crop physiology and berry crop production courses and has mentored numerous undergraduate and graduate students. He is a member of several ISHS Working Groups. He was a member of the ISHS publications committee from 2010 to 2014. Dr. Retamales has chaired two ISHS symposia (Pear and Mineral Nutrition of Fruit Crops) and also served as Chair of the ISHS Working Group on Strawberry Culture and Management from 2008 to 2016. ●

› ISHS awards bestowed

At its meeting in Quebec City (2016) and Istanbul (2018), the ISHS Council decided to bestow the ISHS Fellow Award to four ISHS members and honored eight members of the Society with Honorary Membership. According to the Society's Rules of Procedure, the ISHS Fellow Award is presented to a person who is a member of ISHS, in recognition of this person's outstanding contribution to horticultural science worldwide, while Honorary Membership is given to a person who is a member of the ISHS, in recognition of his/her exceptional service to the Society. After receiving nominations from individual members, the Nominations and Awards Committee made selections, which they forwarded with a motivated recommendation to the ISHS Council for final decision. The Council also decided to bestow two ISHS Horticulture Innovation Awards. This award is the highest recognition granted by ISHS Council to a person or institution for exceptional contribution to horticulture innovation. This award is especially addressed to those with innovative ideas to create new products and services that are seen as important landmarks in the progress of horticulture at an international level.

ISHS Fellow Award

Prof. Dr. Guglielmo Costa (Italy)



Prof. Dr. Costa has been an active ISHS member since 1974. He organized ISHS symposia in 2009, 2010 in Bologna and at the IHC2014. He served two terms as Chair of the ISHS Working Group on Kiwifruit and its Culture, and served as Secretary and as Chair of the ISHS Working Group Bioregulators in Fruit Production, as Chair of the EUFRIN Network on Fruit

Chemical Thinning, and as Chair of the ISHS Section Pome and Stone Fruits (2010-2014). Guglielmo is full professor of Fruit Science at the Department of Agricultural Science of Bologna University. He is author/co-author of at least 600 publications, of which 85 are papers in more than 36 separate volumes of *Acta Horticulturae*. He has been very active in promoting international collaboration, in particular by organizing the International Mastercourse in Horticulture (IMaHS), which now involves eight universities.

Prof. Dr. Theodore M. DeJong (USA)



Prof. Dr. DeJong has a long and distinguished career in the broad area of whole tree physiology, with a particular emphasis on stone fruit species that are relevant to California. This research has led to an enhanced understanding of tree growth and development, especially in areas relating to carbon balance in the tree, tree architecture and growth of the vegetative canopy, fruit and roots. He has focused considerable effort on modelling these various processes. He has presented numerous talks at grower meetings and scientific conferences. He has also maintained a regular teaching program and supervised a large number of Masters and PhD candidates at UC Davis. Dr. DeJong has supported many ISHS symposia and published 29 papers in 23 volumes of *Acta Horticulturae*. He was Chair of ISHS Section Pome and Stone Fruits until recently and is now elected Chair of ISHS Division Temperate Tree Fruits.

Prof. Dr. John Donough Heber (Dyno) Keatinge (UK, Ireland & Taiwan)

Prof. Dr. Keatinge has made numerous contributions to international horticulture



throughout his nearly 40-year career. Since 2008, Prof. Keatinge, as Director General of AVRDC, has used his international platform to advance recognition of the role of horticultural crops in human nutrition and to advance human livelihoods. He was highly sought as an influential speaker on the value of vegetables for human health, and championed the idea that aid and development programs should focus more on nutritious, high value horticultural crops rather than mostly grains. He occupied various leadership positions at ICARDA, IITA, ICRISAT, was full time professor and is still visiting professor at the University of Reading, UK. Dyno was Convener of many international symposia, and lately on Promoting the Future of Indigenous Vegetables Worldwide. He published over 125 papers in refereed journals and over 60 papers in conference proceedings.

Dr. Christian Patermann (Germany)

Dr. Christian Patermann, member of ISHS, is an outstanding personality with excel-



lent knowledge in the field of agricultural research. He served the ISHS and the horticultural research community on various occasions in his past position as Director of Research for Agriculture of the European Union. He is a driving force behind the Kompetenz Center for Horticulture of Bonn University, and Horticultural Programs of Jülich Research Center of the Federal Government in Germany. He continues to serve the International Society for Horticultural Science and the horticultural science profession from his current advisory positions while being officially retired. Christian Patermann is an outstanding specialist for bilateral and multinational agreements. His performance in communication of very demanding subjects is excellent. He is and further will be of great service to ISHS.

ISHS Honorary Membership

Dr. Damiano Avanzato (Italy)



Dr. Avanzato has been an active member of the ISHS for some 20 years, always dedicating his energy to expand the ISHS scientific impact in emerging economy regions, embracing new themes and promoting the involvement of scientists and extension specialists of these regions in the ISHS. Damiano has served the Society covering the entire portfolio of scientific activities. He has organized and convened ISHS symposia, and followed this with editing of *Acta Horticulturae* volumes. Damiano has contributed to the Society, editing and writing several volumes of *Scripta Horticulturae*. Several scientific manuscripts have been written by Damiano in *Acta* volumes and some papers have been reported in *Chronica Horticulturae*. Damiano's great achievements are certainly related to his activity as a member of the Executive Committee of the ISHS: he led ISHS Section Nuts and Mediterranean Climate Fruits for eight years and then ISHS Commission Plant

Genetic Resources. As Chair of this Section and Commission, Damiano has included into the ISHS a new series of activities covering crops and stimulating ISHS events in areas not connected with ISHS.

Prof. Dr. Yves Desjardins (Canada)



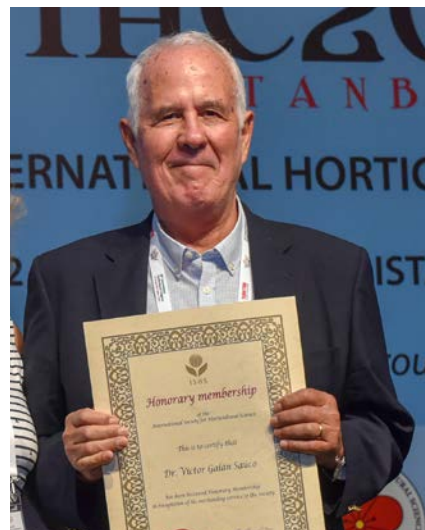
Prof. Dr. Desjardins has contributed intensively as an active member of ISHS for over many years, contributing widely and consistently to the Board and to the scientific program of the Society during that time. His leadership of the publications portfolio has been particularly noteworthy. He was member of the ISHS Board for eight years, member of the Organising Committee of the International Horticultural Congress held in Toronto in 2002, Foundation Chair of the ISHS Commission Fruits and Vegetables and Health for four years, Convener/Co-convener of two ISHS symposia, Editor/Co-editor of two *Acta Horticulturae* volumes, author/co-author of 32 papers in 23 volumes of *Acta Horticulturae* over a 17-year period.

Dr. Desjardins' term on the Executive Committee (2006-2010) was particularly noteworthy given that this was the first term of the new Commission Fruits and Vegetables and Health. This area of horticultural science had become of enhanced international interest in the early part of that decade and Dr. Desjardins' leadership resulted in a strong ISHS involvement in this area.

Notwithstanding his contribution within the Executive Committee, his most important contributions have been during his term on the ISHS Board as the member responsible for publications. With the support of staff from headquarters, he worked tirelessly over the 2010-2018 period to develop and introduce a number of enhancements to the ISHS publications portfolio. This included: the development of a Responsive Online System for *Acta Horticulturae* submission and review (ROSA), the assignment of unique identifiers

to ISHS manuscripts (the DOI number), the adoption of the *European Journal of Horticultural Science* as an ISHS publication and the acquisition of the journal *Fruits* (co-published with CIRAD).

Dr. Victor Galán Saúco (Spain)



Dr. Galán Saúco has been an active member of ISHS for at least 30 years, contributing widely and consistently to the scientific program of the Society during that time.

He played a particularly important role in the development of ISHS activity in the field of tropical and subtropical fruit crops by attracting new members and organizing symposia in countries where the Society was not well represented, such as Asia and South America.

During his long involvement with the ISHS, he participated as member of Scientific or International Advisory Committees, and as invited speaker in many ISHS international meetings related to tropical fruits, particularly mango and banana. He was the convener of two ISHS banana symposia.

Dr. Galán Saúco also served as ISHS Council member for 24 years. His presence was always active and enthusiastic, and he has participated in the preparation of many new initiatives of the Society.

Most relevant was his role as Co-president of the IHC2010 in Lisbon, a highly successful Congress that attracted a record number of participants and presentations.

Dr. Galán Saúco has received prestigious invitations for lecturing, participating in meetings or technical visits from tropical fruit producing countries all over the world. He had the merit of using these contacts to promote the ISHS and to open the gate for the ISHS to enter in new countries and areas of horticulture and to build new initiatives there. Some of these initiatives were fundamental for the Society to gain critical mass in many developing countries.

Dr. Kim Hummer (USA)



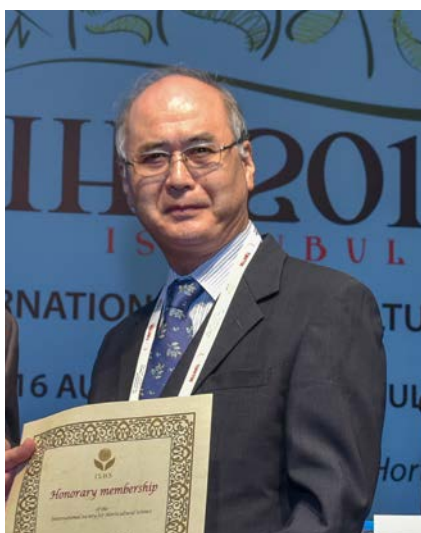
Dr. Hummer has been an active member of ISHS for at least 28 years, contributing widely and consistently to the scientific program of the Society during this time. In particular, during the past 12 years she has been an effective and diligent contributor to the activities of the Executive Committee, especially with regard to leadership of ISHS Commission Plant Genetic Resources, and as a member of the ISHS Board of Directors as Vice-President of ISHS. In that role she held the position of Chair of the Executive Committee – one of the more demanding positions on the Board with a very large portfolio and a large number of symposia to monitor and audit. During her time in that role, Kim made a considerable effort to regularise and streamline the reporting processes for the Chairs of Sections and Commissions.

It is also noted that Dr. Hummer was a strong advocate for the PubHort initiative. This was specifically through her links with the American Pomological Society and her efforts to have all previous volumes of the Journal of the American Pomological Society scanned and uploaded on the PubHort website (www.pubhort.org). This has provided fruit scientists worldwide with ready access to over 70 years of manuscripts in the wider pomology area.

Dr. Hummer was Convener/Co-convener of three ISHS symposia, Editor of five *Acta Horticulturae* volumes, author/co-author of 24 *Acta Horticulturae* papers, and ISHS Science Editor for four years.

Prof. Dr. Koki Kanahama (Japan)

Prof. Dr. Kanahama served ISHS as the Council member from Japan for the period 2010-2013. He was a prominent professor in the area of horticultural science at Tohoku University. He is well known in Japan as the editor of three university text books on gen-



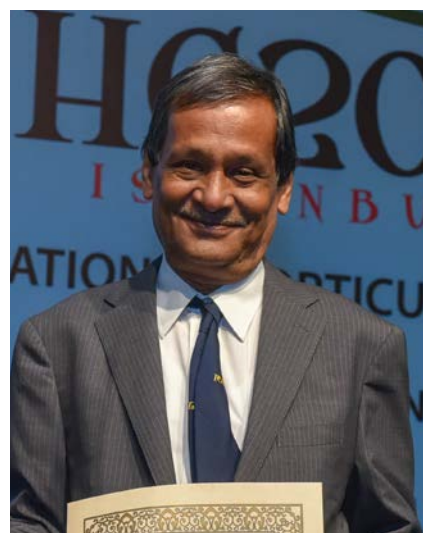
eral horticulture, vegetable crop science, and pomology. Although these text books are all written in Japanese, he also edited “Horticulture in Japan 2006”, which is an English book published by JSHS to introduce the Japanese horticultural science and industry status to the world at IHC2006 in Korea. He published over 50 papers in refereed journals.

In addition to his contributions to horticultural industry and science, he contributed significantly to the first Asian Horticultural Congress (AHC2008), convened by the Korean Society for Horticultural Science jointly with the Chinese Society for Horticultural Science (CSHS) and the Japanese Society for Horticultural Science (JSHS) in Jeju Island, Korea in 2008. Although he was about to organize the second AHC, planned to be held in Tsukuba, Japan in 2012, the meeting was cancelled because of the catastrophic earthquake and tsunami that hit the Pacific coast of north-eastern Japan on March 11, 2011.

Prof. Kanahama was the JSHS president when the Great East Japan Earthquake happened. He himself, his family and his hometown suffered severely from the disaster. Although he had to cancel the AHC2012 in Japan, he made all possible efforts to continue the AHC in cooperation with China, Korea, Thailand and many other Asian countries and regions as well as ISHS. He paved the way for the symposium “Impact of Asia-Pacific Horticulture” at IHC2014. His efforts finally bore fruit: the AHC organization was taken over by the CSHS and AHC2016 was held in Chengdu, China under the auspices of ISHS.

Prof. Dr. Sisir Kumar Mitra (India)

Prof. Dr. Mitra has been an active member of ISHS for over 34 years, contributing widely and consistently to the scientific program of the Society during that time. In particular, during the past 12 years he has been an effective and diligent contributor to the activities of the Executive Committee, especially with



regard to leadership of ISHS Section Tropical and Subtropical Fruits.

A summary of his involvement in ISHS is as follows: Vice-Chair and Chair of ISHS Section Tropical and Subtropical Fruits for 12 years, Chair of four Working Groups, Convener/Co-convener of nine ISHS symposia, Editor/Co-editor of seven *Acta Horticulturae* volumes, author/co-author of 36 papers in 30 different volumes of *Acta Horticulturae*, and Associate Editor (2016 – present) of the journal *Fruits*.

Prof. Dr. Silvana Nicola (Italy)

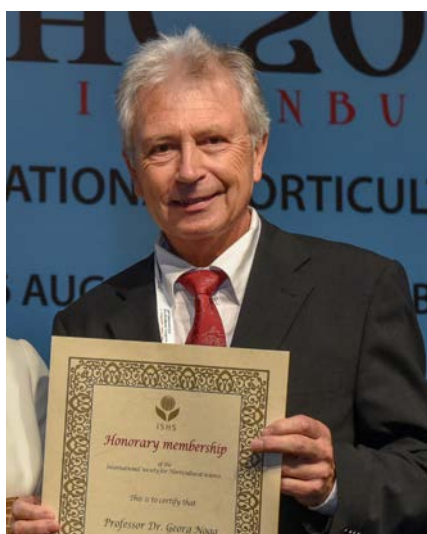


Prof. Dr. Nicola has been an active member of ISHS for at least 25 years, contributing widely and consistently to the scientific program of the Society during that time. In particular, during the past 12 years she has been an effective and diligent contributor to the activities of the Executive Committee, especially with regard to leadership of ISHS Section Vegetables. This Section was one of the largest in the ISHS during her term of office. The workload in managing the large

number of Working Groups together with the very active program of symposia associated with this Section was considerable. During Dr. Nicola's terms, the scientific program in the Section was very successful. The Section was subsequently split into two Sections at the start of the 2014-2018 term.

Prof. Nicola was member of the ISHS Board of Directors from 2014-2018, where she held the position of Vice-President and Chair of the Executive Committee – one of the more demanding positions on the Board with a very large portfolio and a large number of symposia to monitor and audit. She was Convener/ Co-convener of three ISHS symposia, Editor of one *Acta Horticulturae* volume, and author/ co-author of 19 *Acta Horticulturae* papers.

Prof. Dr. Georg Noga (Germany)



Prof. Dr. Georg Noga has been an extremely active member of the Society over the years. He represented Germany on the Council of ISHS until 2010 and he was Internal Auditor of the Society from 2004 until the end of 2009. He was elected to the Board of ISHS as Treasurer from 2010-2014. He is now again Internal Auditor of ISHS for the period 2014-2018. Georg became professor, Head of the Division of "Horticultural Sciences", Institute of Crop Science and Resource Conservation (INRES), at Bonn University in May 1998, Vice-Director of the Botanical Gardens in October 2006, and Director of INRES in October 2009. In 2002, he founded and became President of KoGa (Center of Competence for Horticulture as represented by Bonn University – Jülich Research Center – Horticulture Extension Services of Rhineland-Palatinate). He is a member of the Board of the German Society for Horticultural Science, member of the German Society for Applied Botany, the American Society of Plant Biologists, the Scientific Advisory Board and the Steering Committee of Geisenheim Research Cen-

ter, the Fruit Crop Advisory Board of North Rhine-Westfalia and the Board of the Fruit and Vegetable Crop Association of North Rhine-Westfalia, Germany. He is a member of the Alumni Association of Stuttgart-Hohenheim University, where he was professor from March 1997 to April 1998. He contributed numerous papers to scientific and professional journals.

ISHS Horticulture Innovation Award

Shaanxi Haisheng Fresh Fruit Juice Co., Ltd.

Shaanxi Haisheng Fresh Fruit Juice Co., Ltd. was founded in 1996, located in Xi'an, Shaanxi province, China. In 20 years, Haisheng has established 10 main divisions, including fresh fruit and vegetables, fruit juice concentrate and processed products. It has become the largest manufacturer and supplier of juice concentrate in the global market, with a share of 25%.

Haisheng pioneered the modernization of the apple industry in China, which facilitated early fruit production and greatly increased yields. As the founder and leader in the apple dwarfing system in China, Haisheng built a collaborative bridge between global advanced technology resources and local traditional apple growers.

As the leaders in this industry, Haisheng provides many services to fruit growers. One of these is offering the turn-key project for new orchards. Many growers who have only tried traditional orchard systems, don't have the knowledge and confidence to try new systems. Hence Haisheng provides an all-in-



> Prof. Rod Drew (left), past ISHS President, handing out the ISHS Horticulture Innovation Award to Ms. Xie (Maggie) Haiyan (right), Vice-President of Shaanxi Haisheng Fresh Fruit Juice Co., Ltd.

one product, including knowledge and technology support from plantlets to orchard development.

Haisheng is a company that focuses on modern technology. They saw the urgency and responsibility to encourage young Chinese to devote themselves to agriculture and horticulture. By recruiting educated graduates from rural backgrounds, Haisheng's aim is to help the industry form.

Suntory Flowers Ltd.



> Prof. Rod Drew (left), past ISHS President, handing out the ISHS Horticulture Innovation Award to Dr. Yasunori Yomo (center), Director of Research, Development and Production, and Dr. Masahiro Yamada (right), Breeder, of Suntory Flowers Ltd.

Suntory Flowers Ltd. in Japan is famous as the first company to commercialize transgenic carnation plants bearing blue flowers, called Moondust. The company then commercialized a blue rose, called Applause. In addition to the utilization of novel technologies, Suntory Flowers Ltd. has developed unique approaches for producing and commercializing ornamental nursery plants by clonal propagation methods. Suntory Flowers Ltd. uses in vitro techniques to preserve virus-free stock plants to produce clones by conventional clonal propagation methods such as propagation by cuttings. Suntory Flowers Ltd. also utilizes intergeneric and interspecific hybridization to introduce beneficial traits such as disease resistance and new growth habits to existing ornamental herbaceous plants. Since its establishment, Suntory Flowers Ltd. keeps growing and runs a worldwide business with annual sales of over 4 billion Japanese yen or over 35 million US dollars. 🌱



> What use is a PhD in horticulture?

Julian Heyes

Horticultural industries around the world are thriving. Global trade in fresh products from temperate countries is expanding with exciting new cultivars offering improved flavour, texture or appearance. New technologies are allowing increased quantities of highly perishable tropical products to be sold far from where they are grown. Advanced horticultural industries are highly sophisticated operations that may use satellite data to guide their tractors, remote sensing to target inputs, biocontrol to manage pests, mechanised harvesting, on-line grading, sophisticated packaging, track-and-trace technologies and consumer science to understand which quality attributes are most desirable. At the other end of the scale, small farmers in developing economies with adequate access to water are finding that devoting at least part of their land to horticulture can increase both their total income, and the frequency of their income, as long as they know who wants to buy their products and how to reach that market. Underlying these advances is an enormous wealth of horticultural knowledge, which is expanding each year and much of which is emerging from the efforts of PhD students around the world. Some of these students may expect their PhD to be a ticket to employment as a researcher or University academic. But every year some PhD graduates find employment with private

sector horticultural employers: and it is my contention that this proportion needs to grow.

But what can an employer expect from a horticultural PhD graduate? Firstly, I need to acknowledge that there are very many kinds of 'horticultural' PhD research areas, from social science analysis of a supply chain problem to mathematical modelling of air flow during pre-cooling. As a horticultural supervisor, I love being involved in peripheral projects, for example where fruit pomace is screened for efficacy against breast cancer. Clearly, not all graduates who have had contact with 'horticulture' will have extensive horticultural knowledge, but this should be evident from the topic of their thesis.

Nevertheless, there are some characteristics and attributes that I would expect a candidate to develop during any PhD. They come about because of the transformative power of the lengthy PhD process. The word 'education' literally means 'drawing out'. 'A mind is not a vessel to be filled, but a fire to be ignited' (Plutarch, ca. 46-125 CE). As we encourage our students to exercise their powers of reflection, we are helping to shape the unique blend of critical faculties they offer to the world.

The process of training the new student's mind begins as soon as they arrive to begin their PhD. Without exception they come to



> Janyawat Vuthijumnonk. Her PhD was supervised by a team led by Julian and she graduated with a PhD from Massey University in 2016 for her work on blueberries and the risk of breast cancer.

us as intelligent and self-motivated individuals. But once the discipline of intense concentration begins, we see how those students respond under the most severe academic pressure they have ever experienced. They learn the excitement of designing experiments and the necessary tedium of carrying them out. They learn to cope with the grim reality of missing data points, equipment failure, and unpredicted weather events. They may become ground down by the long hard slog of data processing and interpretation, constantly re-assessing their own conclusions in the light of new data or newly published research. And they have to learn to write in a way that is clear and precise and conveys meaning, not just facts.

And out of this intensely personal struggle we look for a number of characteristics to emerge. The first is the ability to stick at an enormous task and not give up. 'Giving up' (or 'reclaiming your life', as some may describe it) becomes very tempting for some students when facing endless rounds of highly critical feedback as they reach the final stages of assembling their thesis.

In addition, we expect our students to acquire a measure of healthy scientific scepticism; just because these data fit my hypothesis does not 'prove' anything. What else



> Dr. Palash Biswas, whose PhD was on the use of intermittent warming to reduce chilling injury in tomatoes.



> Dr. Abdul Jabbar, whose PhD was on predicting storage outturn for kiwifruit.



> A group of students visiting a kiwifruit export facility.

might explain the data? How do I handle biological diversity; is a non-significant trend telling me I should repeat the experiment with greater replication, or telling me there is no real effect? By the time they finish their degree, PhD students are forced to doubt themselves, their work, their supervisors and everything they have ever read.

What emerges from this refining fire is deep, intricate and subtle knowledge in one specific area; this is an absolute requirement of a PhD. The candidate must show they are familiar with all that has been published in their chosen area, and what is novel about their own work. PhD graduates in experimental sciences will develop technical skills in precise data capture and manipulation. They know how to record, analyse and present information and the limits of what their findings imply. They should have strong abilities in communicating accurately, both verbally and in writing, according to the needs of different audiences. We love to see them attending ISHS symposia to present their work and handle curly questions from the floor.

One of the particular attributes we look for as a student progresses through their PhD is insight. This is the ability to go beyond what they have found and speculate on what might be (and if possible, design a way to investigate that new idea). We want to develop students who are able to look at apparently unrelated pieces of information and let their mind roam into the unknown; is it possible that these bits of information could be interpreted in a new way? This is one of the most valuable skills to emerge from a PhD. It is not always well learnt by our students; and is practically impossible to teach. Educational principles would suggest that we need to 'scaffold' our student's learning; providing small steps that are teachable so they can progress to a more complex integrated task. For example, from very early in each student's PhD journey, we may ask them to produce graphs with a few underlying bullet

points for their supervisory meetings. Those bullets need to tell us what they think the data say; what they might mean; and what new questions spring to mind from what they now believe. Until we ask them to do this, it is easy to fall into the trap of assuming they can spot underlying patterns or inconsistencies; it is our duty to help them learn to do this for themselves.

Some examples might help make my meaning clear. A graph of data from an experiment may indicate that treatment A is better than treatment B in some way. The bullets need to confirm that this difference is statistically valid, i.e. it is unlikely to have occurred by chance. But the students have to show they are thinking about 'meaning', not just numbers. They may have just shown that disease incidence is significantly reduced by a treatment, and we can share their satisfaction at this evidence of an effect. But if the observed difference is between 80 and 50% incidence, a grower would probably still not have a business! Or, perhaps, a treatment leads to increased productivity of a conventional greenhouse crop leading to an extra 'x'

kg of product in first grade per annum. That is a good result, but we want the student's mind instantly to be roaming around; what are the extra labour or agrichemical inputs required, is the market for that product saturated so increased production may lead to a price collapse, could this result apply to a higher-value alternate crop?

As they practise this approach, we usually see students becoming more skilled in describing what they have achieved, but we do not always see them developing insight. In desperation, I have been known to prescribe a course of cryptic crosswords, honing their skills with half-implicit associations of ideas that need to be decoded.

All of the above skills should give rise to graduates who are highly desirable employees in many different industries. People who think for themselves, don't accept the obvious, and care about details, are highly valuable.

For academics supervising horticultural PhDs, I contend that our students should acquire a degree of broad horticultural industry awareness, well beyond the specific topic of their thesis, so they understand the con-



> A group of students and supervisors from the Centre for Postharvest and Refrigeration Research at Massey University.

text in which their work sits. As part of their formation, as supervisors, we have a duty of ensuring they are aware of domestic and global trends in their sector: why do some horticultural sectors flourish and others languish? Field trips to horticultural businesses are a useful way of introducing our students to the grim reality of an industry dependent on the vagaries of weather, of labour supply, and of market forces. Exposure to seminars outside their own research area is another essential component of PhD preparation; how do other disciplines tackle problems that my skills do not equip me for? Taking on supervisory or undergraduate teaching opportunities provides a different learning experience for a PhD candidate. And informal discussions about the business of horticulture, from production to global trade, should sharpen their ability to identify 'disruptive' tools or technologies that may spark a new period of growth.

For PhD candidates, I would argue that any horticultural PhD graduate needs to have a clear understanding of the difference between scientific evidence and business impact. They need to be aware of the multiplicity of real-world constraints (such as technology, labour, climate, land quality, supply chain factors, market attributes) that may prevent careful scientific findings from ever having an impact on the profitability of a business. Another attribute of a horticultural doctoral graduate working in any part of the horticulture industry should be relentless curiosity: a desire to integrate what they see and hear into a 'mental model' of the business. Anticipating climatic trends or the trade implications of troubling international politics should be within the scope of a horticultural graduate. And certainly understanding that market demands vary dramatically between people groups is vital. Our graduates should naturally consider a problem from a wide range of angles and from different people's points of view. They

should not assume the problem someone tells them about is actually the problem they need to focus on, if they want to improve the overall operation of a process. Employers of these graduates should find that they bring a willingness to challenge dogma, an insistence on evidence-based decision making, and a love of detail that does not cloud their ability to see the big picture.

For fresh product industries involved in global trade, I believe you need to hire an increasing number of students with masters and PhD degrees. You should expect to find people capable of deep thinking, but with a practical mindset. If we have done our academic job properly, they should be fast at working out who needs to know what information, by when, and what it will take to generate that information. They should be skilled at critical assessment of what is already known, and able to tell the difference between anecdote and current scientific knowledge. A skill they may still need to learn on the job is how to give a 'good enough' answer; not necessarily the 'best' answer. When confronted with a problem, a PhD graduate is inclined to want to gather as much potentially relevant information as possible and to be very wary of leaping to conclusions. This can be frustrating for a business person requiring a good answer in a short time. Good managers will recognise this sense of conflict experienced by a new doctoral graduate and try to give them some leeway to probe more deeply into underlying causes or researching solutions that may have been found in a related industry elsewhere; but making it clear when the decision just requires a 'good enough' answer.

I will have missed many issues in this brief consideration of the value of a PhD in horticulture and welcome feedback, particularly from industry employers of our graduates, telling us what we are doing well and what needs to improve. Tweets to @ISHS_CMFV would be welcomed... 🟢



> Julian Heyes

> About the author

Julian Heyes is Head of the Massey Institute for Food Science and Technology and Professor of Postharvest Technology at Massey University, New Zealand. Prof. Heyes was Chair of the ISHS Commission Fruits and Vegetables and Health until August 2018. Julian obtained his D.Phil. from the University of Oxford, working on boron deficiency and cell membranes. His research is now centred around maintaining quality during postharvest storage of fresh products. This work ranges from supporting export-oriented industries in New Zealand to working with supply chains in developing countries. He has been chief- or co-supervisor for 19 completed PhD students. E-mail: J.A.Heyes@massey.ac.nz

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> Guglielmo Costa

Position or previous position

Full Professor and Fruit Trees & Woody Plant Science Department Head, retired at the end of 2015, still frequenting the Department

ISHS honour

ISHS Fellow since 2016

1. Tell us a bit about yourself (hometown, current locale, family, hobbies, community involvement).

I was born in Bologna, Italy, and most of my study and professional life has also been in Bologna. My wife Roberta was likewise born in Bologna; we (she) raised three kids: Fabrizio, who also studied agriculture and is now a researcher at the E. Mach Foundation in San Michele all'Adige (Trento), and Filippo and Matilde, who instead studied physics: Filippo is working at the CERN lab in Geneva while Matilde is working on health physics for a company producing hospital equipment in Udine, where she did part of her PhD. All three of our children have masterates and PhDs.

Fabrizio is married to Silvia Vezzulli, a viticulturist also working at the E. Mach Foundation. Four years ago, they made my wife Roberta and I grandparents to Melissa.

I have many hobbies (tennis, fishing, traveling, etc.), although I have to admit that I talk/dream a lot about them but I do not dedicate a lot of time to them because of my work, and since most of the sports I would like to practice require better fitness. In any case, my work has allowed me to travel and see many other countries and a lot of conference rooms all over the world (they all look the same).

2. What got you started in a career in horticultural science?

I decided to study agriculture because I imagined that the Faculty of Agriculture, more than any other faculty, would allow me to also work part-time (I was also interested in engineering and architecture). I soon realized that it was not like this and I decided to dedicate myself (body and soul) to study. When I started my thesis in fruit science, I fell in love with fruits. Immediately after graduation in 1969 (the day after), I started my career in hor-



> Guglielmo (Mimmo) Costa, PhD graduation day, Bologna University, 1969.

tical science at Bologna University at the Institute of Coltivazioni Arboree, Faculty of Agriculture. Prof. Baldini was the Head of the Institute and Prof. Sansavini was my thesis tutor, and they certainly played an important role in my decision. They entrusted me with some research topics; the completion of my thesis on apricot rootstocks and the testing of plant growth regulators (SADH and CEPA on apple and CEPA on peach for fruit chemical thinning). They introduced me to national and international symposia and conferences and they pushed me to spend a sabbatical period abroad. So I had the opportunity to take a sabbatical period (almost two years) at the University of California, Davis.

3. Give a brief overview of your career/achievements.

I was Assistant Professor in Fruit Science in 1971 and Associate Professor in 1983 at Bologna University, and Full Professor of Fruit Science at the University of Udine from 1986 until 1997, when I returned to Bologna University as Full Professor. I served as Head of Department and Director of the Experimental Agricultural Farm in Udine and as a Department Head in Bologna for two terms. I retired at the end of 2015 although I still come to the University regularly.

Both Prof. Baldini and Sansavini taught me how to seriously set up a research trial and in the first years they reviewed and corrected all my research publications. They also

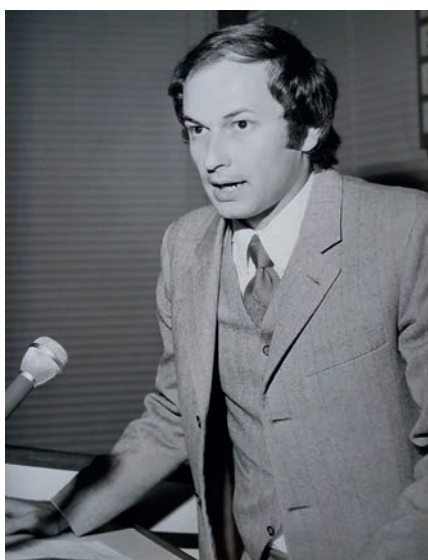
helped me understand the importance of teaching students and the respect for the institution to which I belonged. If I have lived up to their teachings, I consider it a great achievement.

4. What do you consider your greatest achievement to be?

I do not know what my greatest achievements were; posterity will judge. I dedicated all my efforts to maintaining the reputation of Udine and Bologna Universities and to whatever section of horticulture I faced.

From the beginning of my career, I started to work on plant bioregulators (fruit thinning, growth control, ripening control), mechanical harvesting (development of harvesting equipment for plums, apricots and sour and sweet cherries), kiwifruit domestication (orchard design, training systems, pruning, pollination, frost protection, post-harvest physiology, breeding – Dori™); and fruit ripening (physiology and development of a non-destructive fruit quality device – the DA-meter).

I have been asked twice to prepare a review on fruit thinning for *Horticultural Reviews*, one was published in 2010 and the last will appear soon in Volume 46 this year. I started my career carrying out research on fruit chemical thinning in peach and apple. I always searched for a valid alternative to hand thinning and I actually lead the Working Group (WG) on “Fruit chemical thinning”



› Guglielmo (Mimmo) Costa presenting a paper at a conference in Bologna, 1975.



› Guglielmo (Mimmo) Costa (left) and Jules Janick (right) rafting the Shotover River, New Zealand, after the II International Symposium on Kiwifruit in Palmerston North, New Zealand, 1991.

within EUFRIN (European Fruit Research Institutes Network), formed by several colleagues from different European research centres and universities and some chemical companies. The WG meets regularly every year to share the results achieved in different growing areas and tested all the new chemical thinners introduced onto the market in the last few years.

When kiwifruit arrived in Italy, I started to work on this “new” species. I established connections with New Zealand, inviting known and renowned colleagues to come to Italy and sending young researchers and students to New Zealand, to complete their PhD there. I also led the WG on Kiwifruit within the Italian Society for Horticultural Science (SOI) and I organised kiwifruit seminars and technical workshops throughout the country to improve the knowledge of scientists and growers on kiwifruit cultivation. A joint project on breeding with Udine University resulted in a recent selection of an early-maturing, yellow-fleshed kiwifruit cultivar, ‘AC1536’, to be patented by the two universities and marketed as Dori™.

I am still involved in some of these topics and I am realizing that however much I do, there is always a lot more to do to fully understand fruit trees.

Since 1983, I have had the responsibility to teach Bachelor, Masters and PhD students, delivering lessons and dedicated seminars to particular aspects. In Bologna and Udine I was a thesis supervisor for 61 graduate students and 18 PhD students.

As far as teaching achievement is concerned, I consider my involvement in the following to be worthwhile: the establishment of an International Masterate of Science in Horticulture and the successful funding of an Erasmus

Mundus European Union project, together with colleagues from Munich and Vienna. The International Masterate in Horticulture (IMaHS – International Masters Course in Horticultural Science), involving several universities in five European countries, started in 2005 and still represents one of the best examples of international cooperation at Bologna University. Besides the satisfaction of actually developing this Masterate course, what I liked the most, was the opportunity it gave me to meet students from all over the world, to listen to their “horticultural” problems in their countries, to learn about new exotic and tropical fruits that I did not even know existed, and to understand the potential that some countries have.

What I consider achievements are some of the international awards received during my career:

- HortResearch, New Zealand, Honorary Fellowship
- ISHS Working Group Kiwifruit and its Culture award for research on *Actinidia*
- Dedication of a volume of *Horticultural Reviews* in recognition of my contributions to horticulture and horticultural research both in Italy and throughout the world.
- ISHS Fellow Award in 2016.

5. Did you encounter difficulties along your career path and how did you deal with them or how did you turn them into opportunities?

Yes, I had difficulties when I investigated complicated research topics. I have been lucky in having good “leaders” and I am extremely grateful to them (rare quality) and to all my mentors (both inside and outside academia) and to some colleagues that in different ways encouraged me to help myself by

turning difficulties into opportunities. Nothing comes for free and borrowing a motto from the sport world: “no pain no gain”.

I had the fortune of having some outstanding colleagues at Bologna University as well as in other Italian and foreign universities, as well as growers and friends that I always listen to carefully: some of them have suggested solutions to me that I would never have imagined.

The best research I had the chance to participate in came from a large group of selected young and outstanding colleagues from Italian and foreign universities and research institutions with whom I had the chance to exchange experience and knowledge.

6. Tell us about one funny/exciting/interesting experience that happened to you during your career.

Everything I had the opportunity to do in my career was funny (I always spent most of my day in the department and I had/still have enjoyment while working); exciting (everything that is new is exciting); and interesting (nothing is more interesting than science). I formed in Bologna and Udine strong groups of very active and motivated young scientists as well as BSc, MSc and PhD students. Working alongside young people, understanding their potential and curiosity and eventually being able to solve/create a piece of good research is funny/exciting/interesting.

7. What made you become a member of ISHS and why did you keep the membership? What contribution or role has ISHS played in your career?

It is now many years ago that I attended my first symposium (on apricots in 1971) and my first International Horticultural Con-

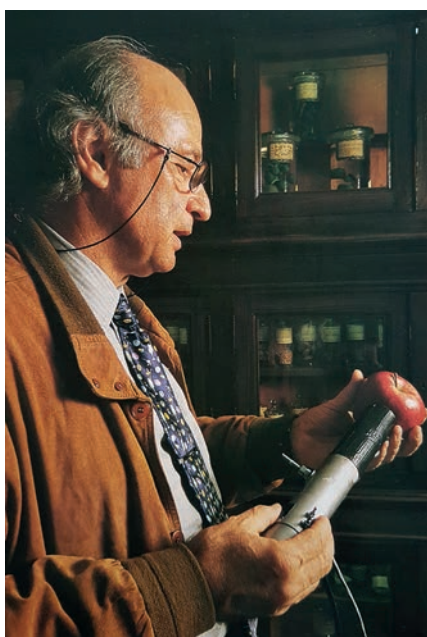


› Visiting HortResearch, New Zealand, in 1996. Left to right: Ian Warrington, James McWha, Guglielmo (Mimmo) Costa, Ross Ferguson, Raffaele Testolin.

gress in Warsaw (1974). I still remember that I felt very honoured (happy/excited) to be part of an international forum for the first time, having the possibility to talk to important and renowned researchers I knew only from literature. I was very young, but I still remember the friendly manner in which I was accepted and I am very proud to be able to say that most of the renowned and important colleagues became my friends and we are still friends. I contributed to 40 different

volumes of *Acta Horticulturae*, belonging to several ISHS Working Groups and I attended many symposia, where I published my contributions all over the world. A few years ago, being elected as Chair of ISHS Section Pome and Stone Fruits, I had the duty to participate in and open the symposia of all the Working Groups belonging to the Section, illustrating the ISHS activity and mission. I have been recently elected Vice-Chair of ISHS Division Vine and Berry Fruits and I will continue to contribute to the ISHS activities. I do not know what role ISHS played in my career; I hope to have done something valuable for the ISHS. I certainly have more friends abroad than in my hometown, Bologna. Most of these friendships were established at events organized by ISHS, so this is why I feel indebted to ISHS and I am proud to belong to ISHS.

Read “Harvesting the Sun”, an analysis of horticulture sponsored by ISHS (<http://harvestingthesun.org/>), written by my colleagues: Errol Hewett, Ian Warrington and Chris Hale. Read the message between the lines and listen to Errol’s presentation (<https://www.youtube.com/watch?v=MvIFcEyAezA>), to realize how important and fundamental horticulture is and how great horticultural science is, because it is really a science.



› Guglielmo (Mimmo) Costa testing a prototype non-destructive device for measuring fruit quality.

8. What advice would you give to young people interested in a career in horticulture/horticultural science?

Never stop being curious and remember that we are doing one of the best “jobs” in the world. We have no economic pressure: even a negative research result is appreciated since the fruit industry will not repeat the same error. Never stop experimenting and consider carefully all the new solutions for horticulture wherever they come from: academia, growers, etc.; listen carefully to their ideas and try to understand who you are facing (some scientists/people are outstanding). Keep studying, reading books, visiting orchards and do not just look but watch carefully what you are seeing.

9. What are the most interesting new roles or opportunities you see emerging in the future within horticultural science?

Tough question: feed the world, the population is increasing and agricultural land is decreasing. I want to believe that technological innovation in horticulture will help us fill this gap and increase quantity and quality of horticultural products, allowing us to continue to eat the marvellous food we are able to produce instead of eating insects and algae. Another aspect is to find scientific and suitable solutions (disease and pest control, clever cold storage, etc.) to reduce food waste. Let me conclude according to my style (“Mimmo’s one”): it would not be the first time that what is proposed by science fiction books or movies became reality. Why not consider an opportunity for horticulture: the possibility to cultivate plants on other planets or to realize in a reasonable amount of time what has been written by some colleagues in the book “Gold from Asteroids and Asparagus from Mars”. ●



> Professor Keatinge MBE made an Honorary Doctor of Science



Professor John D.H. (Dyno) Keatinge MBE was made an Honorary Doctor of Science by the University of Reading at a ceremony on 4 July 2018. Prof. Keatinge worked as a Professor of Agricultural & Rural Systems and Management at the University of Reading between 1993 and 1999. His time spent at Reading, and at a range of other international agricultural research centres, helped him gain global expertise in crop agronomy. He presently chairs the Wallingford-based Centre for Agriculture and Biosciences International's external advisory panel on horticultural products.

Prof. Keatinge became Fellow of the International Society for Horticultural Science in 2016 and was awarded an MBE for services to the alleviation of global poverty and overcoming human malnutrition in 2017. Prof. Keatinge said: "I was very honoured and delighted to be recognised by the University of Reading, which has an outstanding international agricultural research pedigree. It was most gratifying to see the continued success and positive contributions made to agriculture worldwide by my old friends, colleagues and mentees at Reading." ●

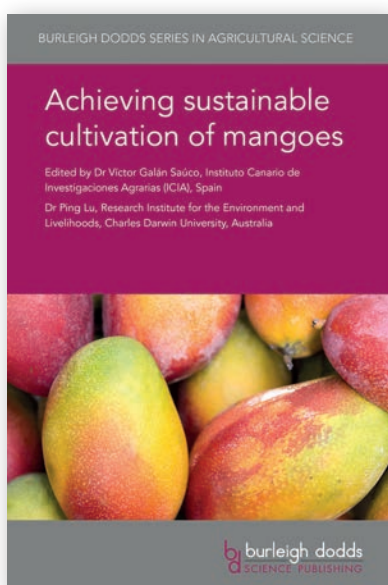
> Professor John D.H. (Dyno) Keatinge MBE after the award ceremony for his Honorary Doctor of Science. Photo credit: The University of Reading.



> New books, websites

Book reviews

The books listed below are non-ISHS-publications. For ISHS publications covering these or other subjects, visit the ISHS website www.ishs.org or the *Acta Horticulturae* website www.actahort.org



Galán Saúco, V., and Lu, P., eds. (2018). **Achieving Sustainable Cultivation of Mangoes** (Cambridge, UK: Burleigh Dodds Science Publishing), pp.570. ISBN 9781786761323 (hardback). £190.00.

A 20% discount will be received by entering the code "ISHS20" when ordering through <https://shop.bdspublishing.com/checkout/Store/bds/Detail/WorkGroup/3-190-56000>

The latest tome in the Burleigh Dodds Series in Agricultural Science focuses on achieving sustainable cultivation of mangoes – which is exactly what its title says. With the ever-burgeoning world population coupled with the increasing number of climate change stressors facing agriculture, agriculture needs to remain relevant, adaptable and

ultimately become more sustainable. While mangoes grow naturally in Southeast Asia in typically tropical to subtropical climates, formal cultivation occurs across several continents including Asia, Africa, North and South America as well as parts of Europe in more than 100 countries. In addition to these fresh fruit being highly sought-after across the globe, many value-added products such as juices and dried fruit have been developed, as well as cooked products being used in many food dishes. Furthermore, mangoes are nutritionally- and nutraceutically-rich, making the fruit even more popular. The book is divided into four sections, each of which draws upon expert knowledge from around the world. The first section focuses on the importance of understanding the phenology of a mango tree, where advances in the understanding of tree growth,

flowering, pollination and ultimately fruit development are critical to understanding plant performance in the field. Furthermore, this section covers mango genetics and the molecular tools such as marker-assisted selection that are available to researchers. This highlights the need for an integrated approach to mango breeding and improvement and understanding mango field performance. The second section reviews various cultivation practices. It includes the good agricultural practices required for cultivation as well as cultivation practices for the subtropics, greenhouse cultivation, ultra high density plantings, and organic production.

There is also a chapter on nutrient and water use efficiency in mango cultivation – areas critical to climate-smart and sustainable cultivation. Section three highlights the importance of postharvest management of fruit quality including physical, nutritional and microbial breakdown during processing and storage. The final section describes pests and diseases associated with mango cultivation and the management thereof. Foliar and floral diseases as well as soilborne diseases are presented in this section, as well as biocontrol strategies for pest and disease control. The book provides an excellent overview of mango cultivation across the world

and several chapters highlight exactly how apparently sub-optimal cultivation conditions could be overcome by understanding how mango responds to these conditions and how implementation and adaptation of inter-disciplinary management strategies ensures sustainable production. Each chapter of the book has an extensive reference list that guides the reader towards further literature on each topic, making this volume a comprehensive foundation of knowledge on which future research strategies can be built.

*Reviewed by Karin Hannweg,
ARC-ITSC, South Africa*



Symposia and Workshops

› III International Orchid Symposium

Division Ornamental Plants

#ishs_dorn



› Participants during the technical tours of the symposium.

The III International Orchid Symposium (Convener: Dr. Ki Sun Kim, Professor of Seoul National University), organized by the Korean Society for Horticultural Science (KSHS) under the aegis of the International Society for Horticultural Science (ISHS), and co-man-

aged by the Korean Society for Floricultural Science (KSFS), National Institute of Horticultural and Herbal Science, and Korea National Arboretum, was successfully held from March 7 to 9, 2018, with more than 150 participants from 16 countries around the world.

Since orchids have become one of the most common flowers of the world and the orchid industry is growing and is important, not only academically but also industrially, the III International Orchid Symposium was held in Seoul, Korea, following Taiwan in 2010 and

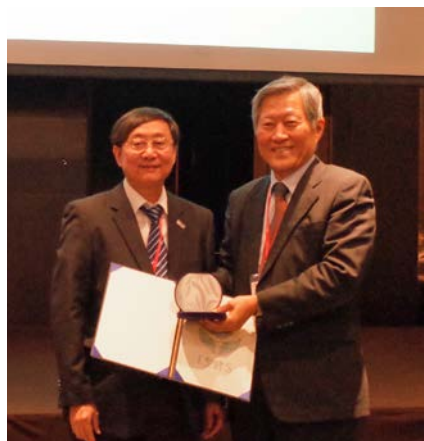


› Technical tour to A. Lee Won Orchids Nursery, B. Cactus and Succulent Plant Research Institute.

Thailand in 2014, the countries with large-scale orchid industries.

The symposium had a total of 88 presentations, including five keynote talks, five invited talks, and 22 oral and 56 poster presentations. The themes of this symposium were: 1) current status of orchids; 2) biodiversity, conservation and classification; 3) cultivation; 4) physiology; 5) micropropagation and biotechnology; 6) genetics and breeding; and 7) pests and postharvest physiology. In each session, ideas and information on recent developments were exchanged among the participants through interesting presentations and in-depth discussions on a wide range of topics, including orchid genetic resources and conservation, genetics, latest breeding and cultivation physiology, biotechnology, insects/diseases, and postharvest management.

Technical tours were arranged to visit the aT Flower Business Center, Lee Won Orchids Nursery, Cactus and Succulent Plant Research Institute, and an orchid show held by the local orchid grower groups along with the National Institute of Horticultural and Herbal Science, Rural Development Administration in Sejong University in Seoul. Throughout the symposium and technical tours, participants saw a few cross-sections of the Korean orchid industry and culture, exchanged the latest information and ideas, and built lasting friendships. Foreign participants of the technical tours were deeply impressed with the diversity of orchid genetic resources, research capability, and status of the orchid industry of Korea.



› ISHS representative Professor Sek-Man Wong (left) presenting the ISHS medal award to Symposium Convener Prof. Ki Sun Kim (right).



› Symposium Convener Prof. Ki Sun Kim (left) presenting the ISHS young minds award for the best poster to Yogendra G. Magar (right).

The ‘Domestic Orchid Variety Fair’ and ‘Oriental Orchid Exhibition’, hosted by the National Institute of Horticultural and Herbal Science, Rural Development Administration, introduced Korean domestic orchid cultivars and promoted unique Korean orchids, thereby contributing to the expansion of Korean orchid cultivars and vitalization of local orchid industry. In addition, it was an opportunity to make a breakthrough for a stagnant Korean flower industry caused by various factors.

The symposium provided an opportunity for participants, especially those from abroad, to glimpse the individuality and excellence of Korean culture through a short experience

of the Korean traditional heritage, including Korean classical music (Pansori Epic Chant, Jindo Arirang, and Sinawi) played during the welcome banquet and post-symposium tour. An ISHS young minds award was presented to Yogendra Gharti Magar from Tokyo University of Agriculture, Japan, for the best poster entitled “Effects of light quality during supplemental lighting on the flowering in *Phalaenopsis*”.

The IV International Orchid Symposium will be organized by Prof. Dr. Genfa Zhu at the Guangdong Academy of Agricultural Sciences, China, in 2022.

Ki Sun Kim, So-Young Park and Yoon-Jin Kim



› Keynote speakers: A. Prof. Edward Yeung (Canada), B. Prof. Erik S. Runkle (USA).

› Contact

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Assoc. Prof. So-Young Park, Department of Horticultural Science, Chungbuk National University, Naesudong-ro 52, 361-763 Chungbuk, Cheongju, Korea, e-mail: soypark7@cbnu.ac.kr

Assist. Prof. Yoon-Jin Kim, Seoul Women's University, Hwarangro 621, Seoul, Korea, e-mail: yj1082@swu.ac.kr

➤ III International Symposium on Plant Cryopreservation

Division Plant Genetic Resources and Biotechnology

#ishs_dbio



➤ Dr. Bart Panis (right), Vice-Chair of former ISHS Commission Molecular Biology and In Vitro Culture, presenting the ISHS certificate and medal award to Symposium Convener Assoc. Prof. Dr. Kanchit Thammasiri (left).



➤ Assoc. Prof. Dr. Kanchit Thammasiri and Dr. Bart Panis presenting the ISHS young minds awards to A) Ms. Miriam Valle Arizaga for the best oral presentation and B) Mr. Tagrid Imsomboon for the best poster.

The III International Symposium on Plant Cryopreservation (Cryo-Symp 2018) was successfully held on March 26-28, 2018, in Bangkok, Thailand. The symposium was organized by the Department of Plant Science, Faculty of Science, Mahidol University, under the auspices of the International Society for Horticultural Science (ISHS) and with the support of the Plant Genetic Conservation Project, under the Royal Initiative of HRH Princess Maha Chakri Sirindhorn (RSPG), the Department of Agriculture (DOA), the Thailand Institute of Scientific and Technological Research (TISTR), the Asia-Pacific Association of Agricultural Research Institutes (APAARI), and the Asia-Pacific Consortium on Agricultural Biotechnology and Bioresources (APCoAB). The symposium attracted 114 participants, including presenters, accompanying people, staff, researchers and government agents from 25 countries around the world (Belgium, Brazil, Canada, China, Colombia, Czech Republic, Finland, France, Germany, India, Indonesia, Italy, Japan, South Korea, Malaysia, Mexico, New Zealand, Nigeria, Norway, Philippines, Russia, Thailand, Turkey, United Kingdom and USA), who shared their knowledge and experiences on a wide range of topics in plant cryopreservation.

The symposium was opened by Assoc. Prof. Dr. Kanchit Thammasiri, Symposium Convener, Assoc. Prof. Dr. Puangpaka Umpunjun, the Head of Department of Plant Science, and Assoc. Prof. Dr. Sittiwat Lertsiri, the Dean of Faculty of Science, followed by a welcome address and ISHS presentation by Dr. Bart Panis, ISHS representative and Vice-Chair of former ISHS Commission Molecular Biology and In Vitro Culture. Dr. Bart Panis presented the ISHS certificate and medal award to the convener. The souvenirs to the symposium sponsors were presented by the convener, and the opening ceremony ended with group photographs.

There were two days (March 26 and 27) of scientific program, starting with three invited speakers, namely Dr. Bart Panis, Senior Researcher at Bioversity International, Leuven, Belgium; Dr. Takao Niino, Senior Scientist at Gene Research Center, University of Tsukuba, Japan; and Prof. Dr. Hugh Pritchard, Head of Comparative Seed Biology, Royal Botanic Gardens, United Kingdom. Then, 31 oral presentations were divided into three sessions: Research in plant cryopreservation, Cryobanking, and Methods in plant cryopreservation. In addition, 34 posters were presented over the two days. All oral and poster presentations were of interest to participants, who responded and shared knowledge and experiences with questions, suggestions and discussion. Further discussions occurred during the breaks, lunches, welcome dinner and technical tour, which encouraged the participants to exchange research ideas, projects and common interests, as they renewed friendships and established new ones.

The social program of the symposium included a welcome dinner, a cultural show in the venue hotel and a technical tour. The participants enjoyed food and were entertained by a cultural show related to the old Thai history. Many pictures were taken and the participants enjoyed talking with old friends and meeting with new friends.

At the end of the second day, an ISHS business meeting was arranged by Dr. Bart Panis. Dr. Bart Panis and Assoc. Prof. Dr. Kanchit Thammasiri presented ISHS young minds award certificates to Ms. Miriam Valle Arizaga, Ph.D. candidate from University of Tsukuba, Japan, for the



> Participants of the symposium.

best oral presentation entitled “Cryopreservation of in vitro shoot tips of chayote (*Sechium* spp.) by D cryo-plate method”, and to Mr. Tagrid Imsomboon, Ph.D. candidate from Mahidol University, Thailand, for the best poster entitled “Cryopreservation of non-cultured protocorms of *Acampe rigida* (Buch.-Ham. ex Sm.) P.F. Hunt using V-cryo-plate and D-cryo-plate methods”. Subsequently, it was decided to hold the IV International Symposium on Plant Cryopreservation in Norway by the Norwegian Institute of Bioeconomy Research (NIBIO) in June 2021. The conveners of the next symposium will be Dr. Dag-Ragnar Blystad and Dr. Zhibo Zhang. At the end of the symposium, Assoc. Prof. Dr. Kanchit Thammasiri expressed his appreciation to all participants, to sponsors of the symposium and to all members of the Organizing Committee for their efforts and contributions. The last day (March 28) was entirely dedicated to a technical tour in Pathum Thani province. In the morning, the participants visited

the Genebank, Department of Agriculture, which conserves seeds for medium-term storage (5°C, 60% RH, storage for 5-20 years). An Automatic Bullet Crane System is used to conserve seeds in PET plastic bottles with a capacity of 150,000 accessions. For long-term storage (-10°C, storage for 20-50 years), seeds are packed in vacuum-sealed aluminum foil packages with a maximum capacity of 40,000 accessions. The participants also visited the Pathum Thani Rice Research Center, Department of Rice, which conducts research on wild Thai rice and collects germplasm. After lunch at the Pathum Thani Rice Research Center, participants went to the National Center for Genetic Engineering and Biotechnology Development Agency, which has four thematic research programs, namely Agriculture and food, Health and medicine, Energy and environment, and Bioresource center and utilization. It has established multiple laboratories for conducting research and/

or providing technical services on industrial applications, community development and international collaborations. The participants were very interested in all research programs.

The book of abstracts is available at the symposium website: www.sc.mahidol.ac.th/scpl/cryosymp2018. The proceedings of the symposium will be published as a volume of *Acta Horticulturae* after editorial review.

Kanchit Thammasiri

> Contact

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> Participants observed Automatic Bullet Crane System at the Genebank, Department of Agriculture.

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› IV International Symposium on Citrus Biotechnology

Division Plant Genetic Resources and Biotechnology

#ishs_dbio



› Participants of the symposium.

The IV International Symposium on Citrus Biotechnology (IV ISCB) was held from April 16 to 18, 2018, in Canelones (Uruguay). A three-day post-symposium technical tour to the main Uruguayan citrus regions was offered from April 19 to 21. This symposium was organized by the National Agricultural Research Institute (INIA) of Uruguay, under the aegis of the International Society for Horticultural Science (ISHS) and the International Society of Citriculture (ISC). The venue of the scientific sessions was INIA “Las Brujas” Experimental Station, a facility located in Canelones Province. In addition, INIA “Salto Grande” Experimental Station, at Salto Province, organized all activities for the post-symposium technical tour. A total of 25 INIA researchers, technicians and support personnel from both experimental stations joined the Organizing Committee to guarantee the quality of the symposium organization. The symposium aimed to gather knowledge in a wide range of fields in which biotechnology is applied to improve the citrus industry worldwide. The applications and approaches based on biotechnology, widely used in all research fields, for greatly reducing the time span and improving reliability in citrus studies for breeding, genomics and genet-

ics; physiology and fruit quality; pest and disease management; and the advance and application of new emerging technologies were discussed in the four scientific sessions of the symposium. Overall, a total of 63 submissions were received and presented either as oral presentations (24), keynote lectures (4) or posters (35). A total of 104 participants attended the symposium, representing 18 countries from all continents: Argentina, Australia, Brazil, Chile, China, Croatia, Cuba, France, Guadalupe Island, Israel, Italy, Japan, Morocco, Peru, South Africa, South Korea, Spain, USA and Uruguay. Both opening and closing ceremonies were presided by important authorities from Uruguay. Speeches by Dr. José Luis Repetto, President of INIA, Dr. Fernando Rivas, Symposium Convener, and Dr. Tokuro Shimizu, ISHS representative, highlighted the importance of the symposium and opened the event. The closing ceremony was attended by the Minister of Agriculture, Livestock and Fisheries of Uruguay (MGAP), Agr. Eng. Enzo Benech, Dr. Fernando Rivas and Dr. Tokuro Shimizu. The symposium provided a framework over three days for academic exchange about biotechnology applications for citrus studies. Researchers, growers and commercial com-

panies’ representatives enriched the discussions, which will contribute to improving the citrus industry. Three out of four sessions of the event were opened with one or two related keynote lectures. Session 1, dealing with Breeding, genomics and genetics, had keynote presentations by two important researchers on these topics, Dr. Manuel Talón (IVIA, Spain) and Prof. Fred G. Gmitter, Jr. (University of Florida, USA), entitled “New evolutionary framework for the genus *Citrus*” and “Fruit color, flavor and quality: understanding genetic control and devising strategies for improvement”, respectively. Session 2, addressing Physiology and fruit quality, began with the plenary lecture “Transcriptional regulation of abiotic stress-responsive genes in *Citrus* and its related genera: from mechanism elucidation to gene exploitation”, by Prof. Ji-Hong Liu (Huazhong Agricultural University, China). Finally, Session 4: Development of emerging technologies and their applications, opened with the lecture “Citrus improvement via CRISPR technology”, by Prof. Nian Wang (University of Florida, USA). The symposium was sponsored by SYMBORG, Natural Growing. During the sessions, SYMBORG delivered a presentation related to the product they provide to farmers, enti-



› Part of the organizing team of the symposium.

itled “Actividad del hongo micorrízico arbuscular *Glomus iranicum* var. *tenuihypharum* var. Nova en Cítricos” (“Activity of the arbuscular mycorrhizal fungus *Glomus iranicum* var. *tenuihypharum* var. Nova in citrus”), by Francisco José García Luna, SYMBORG, Spain. After the end of the symposium, the post-symposium technical tour was attended by 55 participants. During the tour, participants were able to gain an overview of all the key components along the whole citrus chain in Uruguay, starting from the Virus-free Foundation block of Citrus, maintained by the National Seed Institute (INASE), to commercial nurseries, and several important producing areas. The Experimental Station INIA “Salto Grande” was visited during the tour, in which participants received detailed information about the National Citrus Research Program, and the main challenges and results obtained in the last few years. Also, participants exchanged experiences with all researchers and technicians and heads of the different facilities they visited. Finally, the symposium served and contributed not only to highlight progress and findings in citrus biotechnology, but also to extend the citrus scientific cooperation network worldwide.

During the symposium, an ISHS business meeting, presided by ISHS representative



› Opening ceremony. From left to right: Dr. Fernando Rivas (Symposium Convener), Dr. Tokuro Shimizu (ISHS representative) and Dr. José Luis Repetto, president of INIA Uruguay.

Prof. Tokuro Shimizu (Division of Citrus Research, NIFTS, NARO, Japan), was held to announce the next symposia of the Society. In the meeting Prof. Maria Antonietta Germanà (Dipartimento di Scienze Agrarie e Forestali, Italy) was ratified as Chair of the ISHS Working Group Citrus Biotechnology and the proposal of Dr. Franck Curk (INRA de Corse, Corsica, France) to hold the V International Symposium on Citrus Biotechnology in 2022 was accepted.

Carlos Fernando Rivas and Lester Hernández Rodríguez

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› Visit to field trials at INIA “Salto Grande” experimental station.



› Visit to the National Seed Institute (INASE).

> XXI International Congress on Plastics in Agriculture

Division Precision Horticulture and Engineering

Division Protected Cultivation and Soilless Culture

#ishs_deng

#ishs_dpro

The XXI International Congress on Plastics in Agriculture, organized in conjunction with the International Committee for Plastics in Agriculture (CIPA) and the International Society for Horticultural Science (ISHS) was held from May 29-31 in Bordeaux-Arcachon, in the New Aquitaine, a leading region of agri-plastic use in France.

Over 250 participants from 35 countries attended the congress, gathering users, converters, distributors and researchers along with, for the first time, representatives of the recycling industry. Dedicated to the theme “Agriculture, Plastics and Environment”, the congress was focused on two key topics: plasticulture and circular economy, and biodegradable plastics in agriculture.

Fifty-five scientific contributions, 50 oral presentations and 5 posters, with speakers from all over the world (China, USA, Europe, and Latin America, among others) were presented during the two days of sessions. The third day was dedicated to a field demonstration covering most of the uses of plastics in agriculture.

Bernard Le Moine, CIPA General Secretary, opened the congress with a plenary lecture: to face the alimentary needs of the growing population, the consumption of plastics will increase by 50% (9.5 million tons) by 2030. By then, the agri-plastics waste will grow as well, up to 17 million tons, increasing the plasticultors’ responsibility to not leave

this used plastic in nature, but to develop management schemes in every country. If plastics are to be an ally for the farmers and growers, they need to consider two factors that reduce the environmental impact of plastics. Firstly, they need to improve the production of plastics, by improving quantity and quality, with less input, and secondly by considering the plastic’s end-of-life. This is why Bernard Le Moine urged the plasticulture community, converters, distributors, and researchers to take a strategic and public position, as well as collective and individual initiatives, for a better management of the agri-plastics end-of-life.

The congress counted five main sessions: protected crops, plasticulture and circular economy, animal production, vegetable production, and biodegradable plastics in agriculture. Thanks to simultaneous translation the participants were able to follow the presentations and discussions in their own language. This allowed better exchanges, especially during the two major sessions: plasticulture and circular economy, and biodegradable plastics in agriculture.

- **Plasticulture and circular economy.** It was first time this topic had been covered in a CIPA Congress and an occasion to develop the eco-responsibility of the whole plasticulture community, from research to end-user, including industry and distribution. The negative externalities

of discarded agri-plastics and the solutions were analysed. Prof. Yan Changrong from the Chinese Academy of Agricultural Sciences (CAAS) introduced his scientific findings on the harmful consequences for crops, ground structure and water circulation of soil contamination by plastics, the so-called “white pollution”. Then a presentation was given on collection schemes to help farmers dealing with their agri-plastic waste, followed by a lecture on a French R&D project to reduce the soil deposit and the collection costs. A round-table concluded the session in which better ways to improve collection rates and schemes at a global level were discussed.

- **Biodegradable plastics in agriculture.** This session focused on the sustainability of biodegradable plastics, analysing their impact on the soil, and agronomic and economic benefits. Since biodegradable plastics remain in the soil, Prof. Andreas Kuenkel from BASF, Germany, addressed the key question of the bio-assimilation of plastic molecules by soil microorganisms, explaining his work and positive results. Other speakers dealt with the behaviour and conception of biodegradable plastics (mechanical behaviour, principles behind the standards, type of applications available, life-cycle analysis vs. conventional plastics, etc.). The second part



> Participants of the congress on the Arcachon beach in front of the congress center.

of the session focused on applied research and user testimonies about biodegradable plastics (impacts on root development, yield improvement, weeds reduction, etc.). The session was concluded by a round-table discussion on “brakes” on biodegradable plastics development and how to address it. More than ever, biodegradable plastics are part of the solution for the tremendous challenge represented by the agri-waste management from the plasticulture industry.

- **The XXI century needs** were the core of the other sessions. Prof. Gene Giacomelli from Arizona University, USA, exposed a forefront reflection on the role of greenhouses in the years to come, as a way to fully control the crop’s environment, illustrated by various research and new products in light spectrum management. In the animal production session, Mr. Jean-François Abraham from Tama, France, proposed that delegates consider reducing the amount of plastic and replace it with regenerated plastic. The vegetable production session focused on the reduction of inputs or chemicals, which, according to Prof. Pasquale Mormile from CNR, Italy, could be achieved through use of better formulations or innovative products in soil cleaning, mulching, small tunnels or irrigation.

After a gala dinner gathering all participants, the third day of the XXI CIPA Congress was dedicated to an open field tour to discover the diversity of agri-plastic applications in France. Various demonstrations on conventional and biodegradable mulching, irriga-



› Opening session.

tion, greenhouse cover and management, forage wrapping, asparagus cultivation under plastic and film removal and recovery were organized on two different sites near Arcachon.

The general assembly of the CIPA selected China for the XXII CIPA Congress in 2021, and Prof. Yan Changrong was elected as CIPA’s president for three years.

More information on the congress is available at the CIPA website, <http://cipa-plasticulture.com/cipa-congress-2018>.

Thanks to the cooperation between CIPA and ISHS, the congress proceedings will soon be available in *Acta Horticulturae*.

The organizing committee also wants to thank the speakers, moderators and participants for the quality of presentations and exchanges that led to a stronger eco-responsible commitment of the whole plasticulture community. More than ever we noted the will to, not only address the question of the end-of-life of agri-plastics, but also to improve their contribution to protection of nature. This would not have been possible without the support of our sponsors who we want to thank here.

As a non-profit international organization, CIPA acts in the interest of the entire plasticulture community in order to promote the responsible use of plastic in agriculture. Plasticulture improves production in quantity and quality, using less pesticides, fertilizers, and water, etc. Since the beginning, the plasticulture community has been involved in the protection of the environment, reducing the negative impact of the agricultural production: how to produce more with less! Once collected, plastic wastes from agriculture are recycled.

Bernard Le Moine and Xavier Ferry



› One of the demonstrations during the open field tour.

› Contact

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› IX International Congress on Hazelnut

Division Temperate Tree Nuts

#ishs_dnut



› Participants of the congress at Ataturk Convention Center of Ondokuz Mayıs University.

The IX International Congress on Hazelnut was held with great success on 15-19 August, 2017, in Samsun city, Turkey. The congress was organized by Ondokuz Mayıs University in Samsun, under the aegis of the International Society for Horticultural Science. Ordu University in Ordu was the co-organizer. The congress was held in the Ataturk Convention Center in the main campus of Ondokuz Mayıs University. The International Congress on Hazelnut is the only international meeting dedicated to hazelnut, and has been organized for more than 40 years, at four-yearly intervals, in one of the main hazelnut growing countries. The congress brings mostly scientists together, but also attracts growers, suppliers, sellers and fellows in the processing industry, to exchange their experiences and research results on hazelnut. The previous hazelnut congress was held in Chile (2012) where Turkey was elected for the next congress to be held in 2016. However, the congress was postponed to 2017 by ISHS because of another overlapping congress in Ondokuz Mayıs University at the same time. The congress offered a good opportunity for participants to see the hazelnut sector in

Turkey, which has been the leading hazelnut producer with about 600,000 t of annual production on about 700,000 ha land. Over 200 people from 20 different countries attended the congress. In addition, a lot of people from several local and governmental organizations attended daily. The sessions were held over four days, and a one-day field trip was organized from Samsun via Ordu to Giresun province, which covers the largest hazelnut growing area in the world. Some demonstration orchards, hazelnut oil and processing factories in Ordu province and the Hazelnut Research Institute in Giresun province were visited during the excursion. This meant that participants had the opportunity to see large hazelnut plantations and the hazelnut industry in Turkey, as well as socialize with the hazelnut community. The congress consisted of 11 oral and 5 poster sessions, and 59 oral and 94 poster presentations were submitted. Two invited lectures were given at the beginning of the congress: “Advances in genetic improvement of hazelnut” by Shawn A. Mehlenbacher from Oregon State University, USA, and “Hazelnut production in Turkey: current situation,

problems and future prospects” by Veli Erdogan from Ankara University, Turkey. During the congress, the topics covered germplasm and genetic improvement, biology, physiology, propagation, rootstocks, orchard management, postharvest, pests, diseases, food processing and health benefits, marketing, economics, industry and miscellaneous. The number of oral and poster submissions to the congress was significantly higher than in the previous hazelnut congress held in Chile. Regarding germplasm and genetics, topics mostly included genetic variation, diversity and characterization, clonal selection, genomic tools and mapping. Studies on genomic resources and new cultivars, especially for nut yield, quality and resistance for Eastern Filbert Blight disease, showed some new and promising results. Several hundreds of hazelnut accessions and cultivars from different countries have been examined for nut and kernel quality traits and disease resistance through molecular studies. In relation to cultivars, a new book on “Hazelnut Cultivars (2016)” by H.I. Balık, S.K. Balık, N. Beyhan and V. Erdogan (in Turkish and in English) was handed out to the participants during the congress.

A new invasive species, Brown Marmorated Stink Bug (BMSB), and similar damaging insect species, mainly affecting the kernel quality as well as yield, were the focus of several presentations. BMSB became a very serious pest of hazelnut orchards in some countries such as the USA, Italy and Georgia in recent years. It is also a threat for orchards in Turkey, as highlighted by a 3-year study in which kernel examinations after harvest from all provinces revealed an average of 7.44% kernel damage caused by all bug species. Findings about the possibility to use the electronic nose to discriminate the damaged and healthy kernels have been very promising. These insects were still of interest for scientists, as in previous congresses. Ambrosia beetles were another serious pest group of interest and the studies on trap tree approaches resulted in satisfactory achievement. In the last 2-3 years, a new and damaging form of powdery mildew disease, *Erysiphe corylacearum*, has become widespread in hazelnut orchards of Turkey and Georgia. Studies on potential resistance genes from genetic resources in orchards identified some resistant individuals for mildew. Both new BMSB and mildew disease problems were very common issues discussed by hazelnut researchers in coffee breaks and during the field trips.

In addition, many reports focused on issues relating to adaptation, and orchard management, such as pruning, fertilization and irrigation, propagation by cuttings and tissue culture, physiology and marketing. Irrigation will be a serious issue in the coming years, especially in Turkey due to global warming, since hazelnut plants are grown in rain fed orchards. More submissions were observed in food, processing, health benefits and industry sessions compared with the previous congresses. Having some submissions from international cooperation projects and from countries such as Canada and Croatia showed a growing hazelnut community.

ISHS young minds awards were presented to Süleyman Can Öztürk from Izmir Institute of Technology, Turkey, for the best oral presentation entitled "Association mapping of nut and kernel traits in Turkish hazelnut (*Corylus avellana* L.) germplasm" and to Lorenzo Ascari from the University of Turin, Italy, for the best poster entitled "Artificial pollination on hazelnut in South Africa: preliminary results and perspectives".

The congress was considered a great success. The next congress will be organized by Shawn A. Mehlenbacher from Oregon State University in Oregon, USA in 2021. Hope to see you all there!

Celal Tuncer



› Prof. Roberto Botta (right), ISHS representative, presenting the ISHS medal award to Prof. Tuncer (left), Convener (as a token of appreciation of the ISHS for his efforts in organizing the meeting).



› Prof. Celal Tuncer presenting the ISHS young minds awards to A) Süleyman Can Öztürk for the best oral presentation and B) Lorenzo Ascari for the best poster.



› Field tour to hazelnut orchards and hazelnut oil and processing factories was led by Professor Celal Tuncer and Professor Veli Erdoğan.

› Contact

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> XII International Mango Symposium

Division Tropical and Subtropical Fruit and Nuts

#ishs_dtro

The XII International Mango Symposium was held in Baise, Guangxi, China, from 10-16 July, 2017. The symposium was jointly organized by the Baise Municipal Government, Guangxi University and Guangxi Institute of Botany, Chinese Academy of Sciences, under the auspices of former ISHS Section Tropical and Subtropical Fruits and ISHS Working Group Mango. The symposium brought together 198 delegates, including 106 overseas delegates from 23 countries.

The symposium was run over five days, which included 3.5 days of scientific presentations and 1.5 days of technical field tours. Fifty-five oral lectures and 33 posters were presented in four sessions on Genetic resources, breeding and biotechnology; Physiology and horticultural practices; Pest and disease control; and Postharvest technology, processing and marketing.

There were five plenary presentations on “World mango production, trade and future development” (Dr. Ping Lu, Chair ISHS Working Group Mango, Australia), “Current status of mango production and related research progress in China” (Dr. Yeyuan Chen, China), “A review on mango rootstocks” (Dr. Víctor Galán Saúco, Spain), “Research advances on the flowering mechanism of mango” (Dr. Xinhua He, China), and “Prospects for increasing the concentrations in healthy beneficial phytochemicals of mango fruits by using environmental levers before and after harvest” (Dr.



> Dr. Ping Lu (center), Chair of ISHS Working Group Mango, presenting ISHS young minds awards to Ms. Stacey Cook for the best oral presentation (right), and Ms. Haixia Yu for the best poster (left).

Laurent Urban, France). There were also four keynote lectures on “The status of mango cultivars, growers’ perspectives and mango breeding for the future” (Dr. Noris Ledesma, USA), “Developments in Australian mango improvement” (Dr. Ian Bally, Australia), “Reproductive biology and fruit set in mango” (Dr. Jose Inaki Hormaza, Spain), and “Understanding the epidemiology of mango malformation

disease leads to a new integrated management strategy” (Dr. Stanley Freeman, Israel). The theme of the symposium was “Sustainable mango industry and poverty alleviation”. Guangxi province is now the most important mango producing province in China in terms of area and production. Within Guangxi province, Baise municipality is the most important mango producing region,



2017. 7. 11

> Participants of the symposium.



> Delegates tasting mangoes at one of the mango demonstration zones.



> Delegates inspecting the drones used for insecticide spray of a mango farm.

which boasts close to 66,000 ha of mangoes, representing about 80% of Guangxi's total mango production area. Baise is one of the poorest municipalities in China and it had 516,000 people living in poverty in 2017. The government has alleviated the poverty of many via development of the mango industry in the region. This was highlighted by the field tours to the Chengbi mango industry core demonstration zone, three other mango farms/production bases and one of the largest mango wholesale markets in the region. Delegates were also entertained with local traditional cultural shows in the evenings and during the field tours.

At the ISHS Business meeting, Dr. Ping Lu, Chair of ISHS Working Group Mango, announced that the XIII International Mango

Symposium will be held in Malaga (Spain), between 26 and 29 October 2020, and Dr. Inaki Hormaza and Dr. Víctor Galán Saúco will be the co-conveners. This will be the first time that the symposium will be held in Europe. The symposium will be in Spanish and English with simultaneous translation, which will encourage the participation of people from Latin American countries.

Congratulations to the two ISHS young minds award winners: Ms. Stacey Cook, a PhD student at University of Queensland, Australia, for the best oral presentation entitled "Effect of temperature, potassium nitrate and thiourea on expression of flowering related genes in *Mangifera indica*", and Ms. Haixia Yu, a PhD student at Guangxi University, China, for the best poster entitled

"Transcriptomic analysis of floral initiation in mango (*Mangifera indica* L.) based on RNA-sequence". Both were awarded a one-year complimentary ISHS membership.

Xinhua He

> Contact

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Ping Lu, Chair ISHS Working Group Mango, Energy Resources of Australia Ltd, GPO Box 2394, Darwin NT 0801, Australia, e-mail: ping.lu@riotinto.com



> From left to right: Dr. Xinhua He (Co-convenor), Mr. Wenming Huang (Co-convenor) and Dr. Ping Lu (Chair ISHS Working Group Mango) congratulating Dr. Víctor Galán Saúco for hosting the next symposium in Spain.



> Volunteers and staff made the symposium a success.

> XII International Conference on Grapevine Breeding and Genetics

Division Vine and Berry Fruits

#ishs_dvin



> Participants of the conference.

After the XI Conference (Yanqin, China, 2014), the XII International Conference on Grapevine Breeding and Genetics was held in Bordeaux (France) between July 15 and July 20, 2018 (GBG2018). Grapevine, one of the most important fruit crop species in the world (table grapes and wine grapes), presently faces major environmental constraints, such as the need to reduce pesticide treatments, and to adapt to climate change. It is urgent to find alternative solutions for grapevine protection because more and more pesti-

cides are banned, and consumers are now particularly sensitive to the potential effects of pesticides on the environment and on human health. Climate change has already significantly affected grapevine phenology (with earlier harvest dates), and berry composition at harvest: more sugars and less acidity. In some places, it has become difficult to maintain acceptable yields because of wood decay/dieback and/or availability of water resources. Changes in viticultural practices may give useful results within a relatively

short period to solve these issues to some extent. In contrast, and complementing this first approach, genetic improvement through breeding is a longer term goal, which should result in wider and more integrated adaptation strategies. However, the new genotypes released from breeding programmes must be accepted by the consumers, while maintaining the typicality of the wines, and breeding is a long term strategy for perennial crops. For example, the marketing of four cultivars resistant to mildews in France results from the pioneering work initiated in the seventies. The conference paid a tribute to the late Alain Bouquet who paved the way to these approaches at that time.

Genetics and breeding of grapevine extend to many disciplines, coinciding with a better understanding of the physiology of the plant under normal and stress conditions. Thus, GBG2018 provided an excellent overview of the progress made, not only in breeding strategies, but also in all the scientific domains directly or indirectly related to breeding. This covered the maintenance, the classification and extension of genetic resources, the genetic, phenotypic and physiological characterization of grapevine populations, the functional characterization of genes involved in the control of development, berry ripening and composition, and adaptation to biotic and abiotic stress. GBG2018 was organized into nine sessions reflecting these different approaches and



> Field trip at INRA.



› Serge Delrot (left), Convener, and Bruce Reisch (center), Chair of the award selection committee, presenting the ISHS young minds award for the best oral presentation to Jake Dunlevy (right).



› Serge Delrot (left), Convener, and Ian Dry (center), Chair of the award selection committee, presenting the ISHS young minds award for the best poster to Antoine Gautier.

goals. It gathered almost 260 contributions, including one plenary lecture, nine keynote lectures, 62 selected talks, and 187 posters. Several presentations highlighted the progress made since the last conference in high throughput sequencing and systems biology, that now make available more and more genome sequences of different cultivars, and improve the functional annotations of genomes and the design of molecular markers. Major efforts are being made in different countries to explore and maintain the genetic diversity of grapevine, although this diversity has already been significantly eroded. Particularly interesting are the releases on the market of grapevine cultivars with resistance against downy and powdery mildews, of genome editing strategies adapted to grapevine, and of tools for high throughput phenotyping. Present efforts focus on the design of genotypes pyramiding various sources of resistance, but progressive loss of resistance is always possible even for these genotypes. Most vineyards over the world are grafted, and the importance of rootstocks and rootstock/scion interactions on plant performance have been underlined.

All these approaches generate an enormous flow of data that must be organized. Viticulture, like many other domains, thus enters the era of big data. So, in addition to the nine sessions, the conference also hosted a presentation of the Integrate COST action that is presently starting, a workshop dedicated to high throughput phenotyping, a meeting of the Steering Committee of the International Grape Genome Programme and a meeting of the phylloxera group. Almost 330 participants from 25 different countries actively exchanged and interacted to think of future research programmes. Field trips allowed the participants to visit local facilities (genetic resources, long term field trials for the study of adaptation to climate change, rootstock physiology, disease resistance, phenotyping platform for water stress tolerance) and wine estates. Dr. Jake Dunlevy, CSIRO, Australia, was awarded the ISHS young minds award for the best oral presentation (on rootstock tolerance to sodium chloride) and Antoine Gautier (PhD student, INRA, France) was awarded the ISHS young minds award for the best poster presentation (on the control of scion phosphorus content by the rootstock).

The conference clearly demonstrated that new and powerful tools may now improve and accelerate grapevine breeding, but these tools will be fully efficient only if they allow further organization and cooperation at the international level. This is the challenge that must be faced as soon as possible by grapevine scientists and wine industries through strong initiatives. The XIII International Conference on Grapevine Breeding and Genetics will be organized in 2022 by Prof. Reinhard Töpfer and his colleagues at the Julius Kühn Institute in Siebeldingen (Germany).

Serge Delrot, Elisa Marguerit and Nathalie Ollat

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> New ISHS members

ISHS is pleased to welcome the following new members:

New Individual Members

Australia: Mr. Andrew Harty, Mr. David Hudson, Prof. Dr. Ian Porter, Mr. Matt van Oosterom; **Belgium:** Dr. Michel Loots; **Brazil:** Mr. Leonardo Soldatelli Paim; **Cambodia:** Ms. Gekly Chhea; **Canada:** Ms. Evelyne Barriault, Ms. Francoise Levesque; **China:** Prof. Dr. Shengshan Bi, Ms. Jia Chaoshuang, Dr. Jinlong Dong, Simeng Duan, Dr. Shuxin Fan, Hui Fang, Assoc. Prof. Peiyao Hao, Prof. Xiaohui Hu, Prof. Weijie Jiang, Assist. Prof. Tao Li, Assoc. Prof. Xun Li, Assoc. Prof. Yuxin Tong, Hu Xiaosong, Yang Yong, Dr. Jie Zhang, Ms. Lili Zhang; **Chinese Taipei:** Prof. YuSen Chang, Dr. Chun-lin Chen, Yi Hsuan Chen, Wen-Ling Chung, Assoc. Prof. Wen-Ling Deng, Dr. Hung-Chih Hsu, Ms. Ching Yi Huang, Mr. Yi Shan Wang, Yen-Chung Wu, Ms. YuChen Yeh, Ms. Chih-Ying Yu; **Colombia:** Assoc. Prof. Giacomo Barbieri; **Costa Rica:** Prof. Dr. Marta Fermina Valdez, Mr. Johan Vásquez Rodríguez; **Finland:** Prof. Mauri Ahlberg, Dr. Titta Kotilainen; **France:** Ms. Laure Barrot, Florian Boullisset, Ms. Louise Paillat; **Germany:** Mr. Karsten Kramer, Luis Miranda, Mr. Felix Schuhmann, Dr. Frank Spieth; **Greece:** Dr. Anastasia Martzopoulou, Mr. Thomas Tsolakis; **Hong Kong:** Yuen Yee Connie Fung; **India:** Prof. Dr. Vasant Ganiger, Dr. Purkha Ram Meghwal, Mr. Ranjeet Panse, Mr. Vineet Sachdeva; **Israel:** Mr. Hanan Hay Ben Shalom, Ms. Maayan Friman Peretz; **Italy:** Dr. Giovanni G. Bazzocchi, Dr. Nicola Michelon, Giuseppe Scamolla; **Japan:** Hasib Ahmad, Assist. Prof. Naomichi Fujiuchi, Dr. Ryuji Hakuzan, Assist. Prof. Naoya

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Year 2018

■ October 15-17, 2018, Plovdiv (Bulgaria): **III International Symposium on Horticultural Crop Wild Relatives**. Info: Prof. Stefan Gandev, Fruit Growing Institute, Ostromila

12, 4004 Plovdiv, Bulgaria. Phone: (359)32 69 23 49, E-mail: s.gandev@abv.bg E-mail symposium: symwildfruits2018@abv.bg Web: <http://symposium.fruitgrowinginstitute.com>

NEW

■ October 22-25, 2018, Xi'an, Shaanxi (China): **II International Symposium on Beverage Crops**. Info: Prof. Dr. Roderick A. Drew, Griffith Sciences, Logan Campus, Griffith University, University Drive, Meadowbrook, QLD 4131, Australia. Phone: (61)733821291, Fax: (61)737357618, E-mail: r.drew@griffith.edu.au or Hu Xiaosong, China Agricultural University, No.17 Qinghua Donglu, Haidian District, Beijing, China. E-mail: huxiaos@263.net Web: <http://www.hortres-conference.org>

■ November 13-16, 2018, Taichung (Chinese Taipei): **International Symposium on Horticultural Therapies: Past, Present and Future**. Info: Dr. Hsueh-Shih Lin, Director, TDAIS, Council

of Agriculture, No.370 Song-Hwai Road, 51544 Changhua Tatsuen Village, Chinese Taipei. Phone: (886)48522624, Fax: (886)48521148, E-mail: hslin@tdais.gov.tw or Prof. Dr. Sheng Jung Ou, No.168 Jifeng E. Rd., Wufeng District, 41349 Taichung, Chinese Taipei. E-mail: sjou@cyut.edu.tw or Prof. Dr. Chun-Yen Chang, No. 138 Sec. 4, Keelung Road, National Taiwan University, Taipei, 10673, Chinese Taipei. Phone: (886)233664859, Fax: (886)223699085, E-mail: cycmail@ntu.edu.tw E-mail symposium: hortitherapy2018@gmail.com Web: <http://www.2018hortitherapy.com.tw/>

- December 4-7, 2018, Montevideo (Uruguay): **XIII International Pear Symposium**. Info: Dr. Roberto Zoppolo, INIA, Km. 10 Ruta 48, Rincon del Colorado (Canelones), 90200 Las Piedras, Uruguay. Phone: (598)23677641, Fax: (598)23677609, E-mail: rzoppolo@inia.org.uy or Carlos Danilo Cabrera Bologna, Ruta 48 km 10, Rincón del Colorado, Canelones, Uruguay. Phone: (598) 23677641, E-mail: dcabrera@inia.org.uy E-mail symposium: info@pear2018.uy Web: <https://www.pear2018.uy/>

Year 2019

- January 27-31, 2019, Tenerife (Spain - Canary Islands): **XI International Symposium on Protected Cultivation in Mild Winter Climates & I International Symposium on Nettings and Screens in Horticulture**. Info: Prof. Dr. Juan A. Fernandez, Dpto. Producción Vegetal, Univ. Politécnica de Cartagena, Paseo Alfonso XIII, 48, 30203 Cartagena (Murcia), Spain. Phone: (34)968325446, Fax: (34)968325435, E-mail: juan.fernandez@upct.es or Dr. Francisco Moisés Del Amor Saavedra, Instituto Murciano de Investigación y, Desarrollo Agrario (IMIDA), C./Mayor s/n. La Alberca, 30150 Murcia, Spain. E-mail: franciscom.delamor@carm.es or Dr. Avi Sadka, ARO, The Volcani Center, Department of Fruit Trees Sciences, 68 HaMaccabim Rd., P.O. Box 15159, Rishon LeZion 7528809, Israel. Phone: (972)3-9683343, Fax: (972)3-9669583, E-mail: vhasadka@volcani.agri.gov.il Web: <http://www.mildwinter2019.org>
- February 25 - March 1, 2019, Singapore (Singapore): **VII International Symposium on the Taxonomy of Cultivated Plants**. Info: Dr. Nigel Taylor, National Parks Board, 1 Cluny Road, Singapore Botanic Gardens, 259569 Singapore Singapore, Singapore. Phone: (65) 64719901, Fax: (65) 64674832, E-mail: nigel_taylor@nparks.gov.sg
- March 12-15, 2019, Orihuela (Spain): **X International Symposium on Artichoke, Cardoon and their Wild Relatives**. Info: Prof. Dr. Daniel Valero, University Miguel Hernandez, Ctra. Beniel Km. 3,2, 3312 Orihuela (Alicante), Spain. Phone: (34)966749743, Fax: (34)966749677, E-mail: daniel.valero@umh.es Web: <http://www.artichoke2019-orihuela.com/>
- May 1-3, 2019, Seoul (Korea (Republic of)): **XIII International Symposium on Flower Bulbs and Herbaceous Perennials**. Info: Prof. Dr. Ki-Byung Lim, Department of Horticulture, College of Agriculture and Life Sciences, Kyungpook National University, 41566 Daegu, Korea (Republic of). Phone: (82)53-9505726, Fax: (82)53-9505722, E-mail: kblim@knu.ac.kr E-mail symposium: info@flowerbulb2019.org Web: <http://flowerbulb2019.org/>
- May 6-9, 2019, Taichung (Chinese Taipei): **VI International Symposium on Tomato Diseases**. Info: Dr. Lawrence Kenyon, World Vegetable Center, PO Box 42, Shanhua, 74199 Tainan, Chinese Taipei. Phone: +886 6 5837801, Fax: +886 6 5830009, E-mail: lawrence.kenyon@worldveg.org or Dr. Ruey-Jang Chang, 189, Chung-Cheng Road, 41362 Taiwan Wufeng, Taichung City, Chinese Taipei. Phone: (886)4-23317500, Fax: (886)4-23302803, E-mail: raychang@tari.gov.tw or Prof. Dr. Fuh-Jyh Jan, Department of Plant Pathology, National Chung Hsing University, 250 Kuo Kuang Road, 40227 Taiwan Taichung, Chinese

Taipei. Phone: (886)4-22854145, Fax: (886)4-22854145, E-mail: fjjan@nchu.edu.tw E-mail symposium: info@2019tomato.org Web: <https://2019tomato.org/>

- May 15-18, 2019, Tirana (Albania): **II International Symposium on Medicinal, Aromatic and Nutraceutical Plants from Mountainous Areas**. Info: Alban Ibraliu, Koder Kamez 1029, Tirana, Albania, 1029 Tirana, Albania. Phone: (35)682042424, E-mail: albanibraliu@ubt.edu.al Web: <http://mapmountain2019.com>
- May 19-24, 2019, Liège (Belgium): **V International Symposium on Postharvest Pathology: From Consumer to Laboratory - Sustainable Approaches to Managing Postharvest Pathogens**. Info: Prof. Dr. Haissam Jijakli, Integrated and Urban Plant Pathology Lab, Gembloux Agro bio tech, Passage des Déportés, 2, 5030 Gembloux, Belgium. Phone: (32)81-622431, Fax: (32)81-622432, E-mail: mh.jijakli@uliege.be Web: <https://events.uliege.be/postharvest2019/>
- June 7-11, 2019, Hanoi (Vietnam): **VI International Symposium on Lychee, Longan and Other Sapindaceae Fruits**. Info: Ms. Thi Ha Le, Fruit and Vegetable Research Institute, Trau Quy town, Gia Lam district, Hanoi, 84 Hanoi, Vietnam. Phone: (84)934347046, Fax: (84)2438276148, E-mail: leharifav2001@yahoo.com E-mail symposium: secretariat@lycheelongan2019.com Web: <http://lycheelongan2019.com>
- June 9-12, 2019, Molfetta (Italy): **VI International Symposium on Applications of Modelling as an Innovative Technology in the Horticultural Supply Chain - Model-IT 2019**. Info: Dr. Maria Luisa Amodio, Via Napoli 25, 71100 Foggia, Italy. Phone: (39)0881-589105, Fax: (39)0881-589244, E-mail: m.amodio@unifg.it or Prof. Giancarlo Colelli, Dip.SAFE Università di Foggia, Via Napoli 25, 71100 Foggia, Italy. Phone: (39) 320 4394535, E-mail: giancarlo.colelli@unifg.it Web: <http://www.unifg.it/modelit2019>
- June 16-20, 2019, Angers (France): **Greensys 2019 - International Symposium on Advanced Technologies and Management for Innovative Greenhouses**. Info: Prof. Dr. Pierre-Emmanuel Bournet, Agrocampus Ouest, 2, rue Le Nôtre, 49045 Angers, France. Phone: (33) 2 41 22 55 04, Fax: (33) 2 41 22 55 53, E-mail: pierre-emmanuel.bournet@agrocampus-ouest.fr or Dr. Hicham Fatnassi, INRA 400 Route des Chappes, 06903, Sophia Antipolis, France. Phone: (33)492386400, E-mail: hicham.fatnassi@inra.fr or Eric Brajeul, Centre CTIFL de Carquefou, ZI Belle Etoile Antarès, 35 Allée des Sapins, 44483 Carquefou Cedex, France. Phone: (33)240508165, Fax: (33)240509809, E-mail: brajeul@ctifl.fr E-mailsymposium:greensys2019@agrocampus-ouest.fr Web: <https://www.greensys2019.org/>
- June 17-20, 2019, Matera (Italy): **IX International Symposium on Irrigation of Horticultural Crops**. Info: Prof. Dr. Bartolomeo Dichio, Università degli Studi della Basilicata, DICEM, Via S.Rocco, 75100 Matera, Italy. Phone: (39)08351971422, E-mail: bartolomeo.dichio@unibas.it or Prof. Cristos Xiloyannis, Università degli Studi della Basilicata, DICEM, Via S.Rocco, 75100 Matera, Italy. Phone: (39)08351971416, Fax: (39)0971205378, E-mail: cristos.xiloyannis@unibas.it E-mail symposium: info@irrigationmatera2019.com Web: <http://www.irrigationmatera2019.com>
- June 18-21, 2019, Hoce (Slovenia): **IV International Symposium on Underutilized Plant Species**. Info: Prof. Dr. Franc Bavec, University of Maribor, Faculty of Agriculture and Life Sciences, Pivola 10, 2311 Hoce, Slovenia. Phone: (386)2-3209030, Fax: (386)2-6161158, E-mail: franci.bavec@um.si E-mail symposium: ishs2019@galileo3000.si Web: <http://www.ups2019.si/>
- June 24-28, 2019, Milan (Italy): **III International Symposium on Growing Media, Composting and Substrate Analysis**. Info: Dr. Patrizia Zaccheo, DISAA, University of Milan, Via Celoria 2, 20133 Milano, Italy. Phone: (39)0250316536, E-mail:

patrizia.zaccheo@unimi.it or Dr. Costantino Cattivello, ERSA-FVG, Via Sabbatini 5, 33050 Pozzuolo del Friuli (UD), Italy. Phone: (39)0432529241, Fax: (39)0432529273, E-mail: costantino.cattivello@ersa.fvg.it or Prof. Dr. Francesco Giuffrida, Di3A - Catania University, Via Valdisavioia 5, 95123 Catania, Italy. Phone: (39)095234323, Fax: (39)095234329, E-mail: francesco.giuffrida@unict.it E-mail symposium: susgro2019sci@promoest.com Web: <http://www.susgro2019.com>

NEW ■ June 25-28, 2019, Zürich (Switzerland): **XII International Rubus and Ribes Symposium: Innovative Rubus and Ribes Production for High Quality Berries in Changing Environments**. Info: Dr. Christoph Carlen, Agroscope, Route des Vergers 18, 1964 Conthey, Switzerland. Phone: (41) 27 345 35 11, Fax: (41) 27 346 30 17, E-mail: christoph.carlen@agroscope.admin.ch or Dr. Erika Krüger, Hochschule Geisenheim University, Dept. of Pomology, Von-Lade-Strasse 1, 65366 Geisenheim, Germany. Phone: (49)6722502561, Fax: (49)6722502560, E-mail: erika.krueger@hs-gm.de or Gunhild Muster, Staatliche Lehr- und Versuchsanstalt, Wein- und Obstbau Weinsberg, Traubenplatz 5, D-74189 Weinsberg, Germany. E-mail: gunhild.muster@lvwo.bwl.de Web: <http://www.rubusribes.agroscope.ch>

NEW ■ June 30 - July 4, 2019, Ghent (Belgium): **VI International Symposium on Cucurbits**. Info: Dr. Peter Bleyaert, Landmansstraat 51, Rumbeke 8800, Belgium. Phone: (32)51-273270, Fax: (32)51-240020, E-mail: peter.bleyaert@inagro.be or Prof. Dr. Marie-Christine Van Labeke, Department of Plant Production, University of Gent, Coupure links, 653, 9000 Gent, Belgium. Phone: (32) 9-2646071, Fax: (32) 9-2646225, E-mail: mariechristine.vanlabeke@ugent.be or Mr. Raf De Vis, Stuivenbergvaart 85, 2800 Mechelen, Belgium. E-mail: raf.de.vis@proefstation.be, E-mail symposium: info@cucurbits2019.org Web: <http://cucurbits2019.org/>

NEW ■ July 6-10, 2019, Malatya (Turkey): **XVII International Symposium on Apricot Breeding and Culture**. Info: Prof. Dr. Sezai Ercisli, Ataturk University Agricultural Faculty, Department of Horticulture, 25240 Erzurum, Turkey. Phone: (90) 442-2312599, Fax: (90) 442 2360958, E-mail: sercisli@atauni.edu.tr Web: <http://www.apricot2019.org>

NEW ■ July 14-18, 2019, Charlotte, NC (United States of America): **II International Symposium on Vegetable Grafting**. Info: Prof. Frank J. Louws, Department Head, Horticultural Science, North Carolina State University, Campus Box 7609, NC State University, Raleigh, NC 27695-7609, United States of America. Phone: (1)9195156689, Fax: (1)9195152505, E-mail: fjlouws@ncsu.edu

NEW ■ August 12-17, 2019, Taian, Shandong (China): **IV International Conference on Fresh-Cut Produce**. Info: Prof. Qingguo Wang, Room 304, No.61 Daizong Street, Taian, 271018, China. Phone: (86)538-8249204, E-mail: wqgyyy@126.com E-mail symposium: freshcut2019@126.com Web: <http://www.fresh-cut2019.com>

NEW ■ September 2-5, 2019, Rovinj (Croatia): **VI International Symposium on Fig**. Info: Smiljana Goreta Ban, Karla Huguesa 8, Porec, Croatia. E-mail: smilja@iptpo.hr or Zeljko Prgomet, Collegium Fluminense Polytechnic of Rijeka, Trpimirova 2/V, HR-52210 Rijeka, Croatia. Phone: (385)98255791, E-mail: skink@pu.t-com.hr E-mail symposium: fig2019@iptpo.hr Web: <http://fig2019.iptpo.hr>

NEW ■ September 14-18, 2019, Istanbul (Turkey): **IV Balkan Symposium on Fruit Growing**. Info: Prof. Dr. Sezai Ercisli, Ataturk University Agricultural Faculty, Department of Horticulture, 25240 Erzurum, Turkey. Phone: (90) 442-2312599, Fax: (90) 442 2360958, E-mail: sercisli@atauni.edu.tr

NEW ■ September 30 - October 3, 2019, Guadalajara (Mexico): **IX International Symposium on New Ornamental Crops**. Info: Dr. Rodrigo Barba Gonzalez, CIATEJ a.c., Av. Normalistas # 800, Colinas de la Normal, Guadalajara Jalisco CP 44270, Mexico. Phone:

(52)3333455200, Fax: (52)3333455245, E-mail: rbarba@ciatej.mx Web: <https://sites.google.com/site/newornamentalcrops/>

■ October 7-11, 2019, Palermo (Italy): **International Symposium on Precision Management of Orchards and Vineyards**. Info: Dr. Riccardo Lo Bianco, Università degli Studi di Palermo, Dept. of Agricultural and Forest Sciences, Viale delle Scienze 11, 90128 Palermo, Italy. Phone: (39) 09123896097, Fax: (39) 09123860813, E-mail: riccardo.lobianco@unipa.it or Dr. Antonino Pisciotta, viale delle Scienze, 11, 90128 Palermo, Italy. E-mail: antonino.pisciotta@unipa.it or Assist. Prof. Luigi Manfrini, Università di Bologna, 40127 Bologna, Italy. E-mail: luigi.manfrini@unibo.it

■ November 10-13, 2019, Pretoria (South Africa): **II International Symposium on Moringa**. Info: Ms. Sunette Laurie, ARC - Roodeplaat, Private Bag x293, 0001 Pretoria, South Africa. Phone: (27)128419639, Fax: (27)128080844, E-mail: slaurie@arc.agric.za Web: <http://www.ism2019.co.za/>

NEW ■ December 2-4, 2019, Bangkok (Thailand): **I International Symposium on Botanical Gardens and Landscapes**. Info: Dr. Kanchit Thammasiri, Department of Plant Science, Faculty of Science, Mahidol University, Rama VI Road, Phyathai, Bangkok 10400, Thailand. Phone: (66)89-132-7015, Fax: (66)2-354-7172, E-mail: kanchitthammasiri@gmail.com E-mail symposium: bgl2019thailand@gmail.com

Year 2020

■ May 3-6, 2020, Rimini (Italy): **IX International Strawberry Symposium**. Info: Prof. Dr. Bruno Mezzetti, Dip.Sci. Agrarie, Alimentari ed Ambientali, Università Politecnica delle Marche, Via Breccia Bianche, Ancona 60100, Italy. Phone: (39)0712204933, Fax: (39)0712204856, E-mail: b.mezzetti@univpm.it or Prof. Dr. Maurizio Battino, Dept of Clinical Sciences, Sect Biochemistry, Università Politecnica delle Marche, Via Ranieri, 65 - 60100 Ancona, Italy. E-mail: m.a.battino@univpm.it or Dr. Gianluca Baruzzi, via La Canapona, 1 bis, Magliano, 47100 Forlì, Italy. Phone: (39) 543 89566, Fax: (39) 543 89077, E-mail: gianluca.baruzzi@crea.gov.it Web: <https://tinyurl.com/ISS2020rimini>

NEW ■ May 7-9, 2020, Bangkok (Thailand): **III Asian Horticultural Congress AHC2020**. Info: Mr. Ananta Dalodom, Horticultural Science Society Thailand, Department of Agriculture, 50 Paholyothin Rd., Chatuchak, Bangkok 10900, Thailand. Phone: (66)29406578, Fax: (66)29406579, E-mail: ananta.dalodom@gmail.com E-mail symposium: ahc2020bangkok@gmail.com

■ May 20-22, 2020, Torino (Italy): **IV International Symposium on Woody Ornamentals of the Temperate Zone**. Info: Dr. Valentina Scariot, Università degli Studi di Torino, Largo Paolo Braccini 2, 10095 Grugliasco, Torino, Italy. Phone: (39)0116708932, Fax: (39)0116708798, E-mail: valentina.scariot@unito.it or Prof. Dr. Gabriele Loris Beccaro, Università degli Studi di Torino, Dept. Agric., Forestry & Food Sci., Largo Braccini, 2, 10095 Grugliasco Torino, Italy. Phone: (39)0116708802, Fax: (39)116708658, E-mail: gabriele.beccaro@unito.it

NEW ■ June 8-12, 2020, Malmö (Sweden): **IX International Symposium on Light in Horticulture**. Info: Assist. Prof. Most Tahera Naznin, Department of Biosystems and Technology, Swedish University of Agricultural Sciences, Box 103, 23053 Alnarp, Sweden. Phone: (46)40415019, E-mail: naznin.most.tahera@slu.se or Dr. Maria Karlsson, Växtskyddsvägen 3, skne, Hunnestorpsvägen 29, skne, 23053 BstadAlnarp, Sweden. Phone: (46)40-415370, E-mail: maria.e.karlsson@slu.se or Prof. Dr. Beatrix Waechter Alsanius, Dept. of Biosystems and Technology, SLU, Box 103, 230 53 Alnarp, Sweden. Phone: (46)40415336, E-mail: beatrix.alsanius@slu.se E-mail symposium: ishs2020@slu.se

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