A publication of the International Society for Horticultural Science

Chronica Horticulturae

Horticultural highlights

An invitation to the V All Africa Horticultural Congress (AAHC2024), Marrakech, Morocco • Brazilian citrus industry: a sustainable production chain

Symposia and workshops

Beverage Crops • Postharvest Unlimited • Postharvest Quality of Ornamental Plants • Applications of Modelling as an Innovative Technology in the Horticultural Supply Chain (Model-IT 2023) • Growing Media, Compost Utilization and Substrate Analysis for Soilless Cultivation • Cherry • Almonds and Pistachios • Chestnut • Pineapple • UrbanFarm2023 – International Student Challenge

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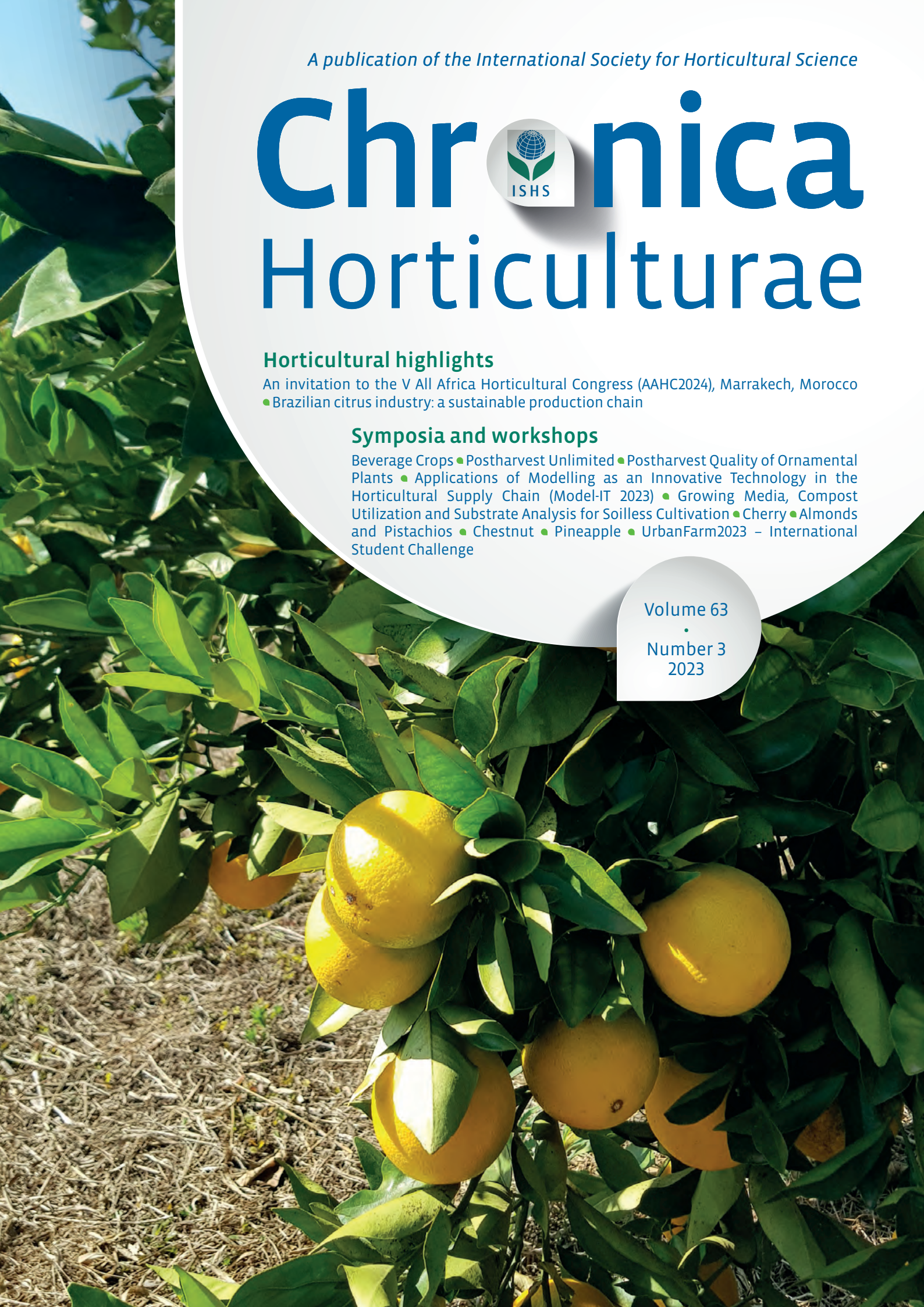

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Cover photograph: Orchard of 'Natal' orange trees in the municipality of Perdões-MG, Brazil.
See article p.22.

› From the cockpit

Peter J. Batt, Editor, *Chronica Horticulturae*

› Peter J. Batt

Welcome to this spring/autumn edition of *Chronica Horticulturae*. Irrespective of where you are in the world, September is a month of change. And for this edition, changes abound…

For and on behalf of the Board, having analysed the results of our membership survey, we are now in a much better position to make informed decisions about how we intend to change ISHS in the future.

It's immediately apparent from the survey results that we have an age demographic that few organisations want to see: our membership is getting older and we're currently failing to attract young people.

While we have much to do in this space, it's the youth that have made the major contributions to this edition. The lead author for our review of the Brazilian citrus industry, Ana Claudia Costa Baratti, is an early career researcher, and her two co-authors, Maíra Ferreira de Melo Rossi and Alexandre Dias da Silva, are both PhD students. Ana and her colleagues describe the steps that orange growers in Brazil are taking to make their industry more sustainable. Industry has set aside designated protected areas to provide a refuge for pollinating insects and predators. Insect traps monitor the spread of the citrus fruit borer (*Gymnandrosoma aurantianum*) and the psyllid (*Diaphorina citri*), which is the disease vector for citrus greening or Huanglongbing (*Candidatus liberibacter*). With more precise information about the presence of these insects in the orchard, growers can spray at the right moment, not only increasing the efficiency of applications, but also ensuring that pollinating insects are not targeted. Furthermore, through the application of precision farming techniques, the amount of chemical applied has been drastically reduced and new bio-insecticides, which are more environmentally friendly, are currently under development. As Brazil is the world's leading producer of orange juice, new opportunities are emerging for the processing of waste products for subsequent application in the cosmetic, food and pharmaceutical industries.

Turning our attention to our Young Minds awardees: Stan Durand looks at the physical characteristics of compost and how, as a result of drying, the water holding capacity and porosity of peat changes. Giorgio Gusella undertakes a detailed investigation of the fungal diseases affecting pistachio in Italy. Suong Tuyet Thi Ha explores the interaction between the role of ethylene and/or ethylene inhibitors on the incidence of *Botrytis cinerea* during the storage of cut roses. Zhixian Lin develops a model to predict the maturity of strawberries under intensive farming systems. Ioannis Moutsinas demonstrates how the use of the AgroNIT smart-farming model is able to quantify the impact of climate variability on the evapotranspiration and thermal growing conditions of peaches grown in two different regions in northern Greece, over three growing seasons. Emily Santos explores how the availability of stored carbohydrates (fruit sink) affects the yield and quality of pistachio nuts. Alice Varaldo evaluates the impact of UV-B radiation on the nutraceutical and physical properties of blueberry. Melissa Venturi examines the effects of different irrigation levels on the physiological performance and fruit quality of sour cherries. Yan Wang eloquently describes the work that her research team from Sichuan Agriculture University is undertaking to collect, identify and evaluate germplasm for Chinese cherry (*Cerasus pseudocerasus* Lindl.). Yong Zhao demonstrates how the hairy root transformation system can be used to evaluate the efficiency of gene editing of sgRNA targets in watermelon. And finally, it would be remiss of me not to highlight the achievements of the eight international student groups who participated in the UrbanFarm2023 challenge. Congratulations to all, and indeed to all past awardees, for you are the future of ISHS.

However, let us not forget that we also have within our Society, some of the best and most experienced horticultural minds in the world, and while inevitably, all of us will make the decision to retire at some point in time, we need to find a way to both retain and indeed reward our most loyal membership base. Watch this space, for under the leadership of Dr. Lukas Bertschinger, a sub-committee is currently exploring a range of new benefits and new membership categories to hold and retain our base.

It's this loyal and experienced base that I shall also utilise. The spotlight for this edition of *Chronica Horticulturae* falls upon none other than Professor Chris Watkins, a globally renowned postharvest physiologist and a Fellow of ISHS. In talking about his illustrious career, Chris highlights the importance of mentors, partnerships and friendships. While our core business is facilitating the exchange of information through symposia, the regional and international congresses and publication of proceedings, it's the opportunity to meet face to face with colleagues during the breaks, social outings and tours that builds the enduring friendships and partnerships. ISHS is a community, where world renowned leaders work alongside and interact with new and emerging researchers. It's this sense of community that will enable us to harness the skills, enthusiasm and commitment of a new generation of researchers that will forge new approaches for the future.

It was reassuring from the results of our membership survey that the three things that were most important to you were the opportunity to develop international research contacts, the ability to download papers from *Acta Horticulturae* and the opportunity to participate and present, at a discounted registration rate, at one or more of the 40+ specialized symposia convened every year under the auspices of ISHS. In late February 2024, the V All Africa Horticultural Congress will be convened in Marrakech, Morocco. Africa is fast becoming one of the most important regions for horticulture worldwide. With more than 60% of the African population deriving their living from agriculture, horticulture can contribute to economic growth through generating local employment, especially for women and youth. Not only does horticulture provide the rapidly growing population with a valuable source of healthy nutritious food, but amenity horticulture also contributes to health and wellbeing, reducing the environmental impact of growing cities on the environment. With abstracts due NOW, if you have not already submitted an abstract, please do so immediately. Abstracts are to be submitted through the ROSA system.

In concluding, I would like to call upon both our experienced members and our emerging future leaders for contributions in preparing discussion papers for this publication on a range of global issues including climate change, sustainability, the conservation of water and biodiversity, and the role horticulture plays in good health, nutrition and wellbeing. While we have in several previous editions discussed food security, it's apparent that there is an element of consumer resistance to new technology, particularly in differentiating between genetic modification and gene editing. As *Chronica Horticulturae* is the principal communication vehicle for our Society, I shall welcome short contributions from our membership on any of the above topics. Hopefully these short papers will spark a healthy debate, leading to the preparation of a more comprehensive, collaborative document for future publication.

Understanding who you are and what you most value about us – implications for ISHS

Peter J. Batt, François Laurens, Ted DeJong, Patricia Paiva, Lukas Bertschinger, Moctar Fall, Yao-Chien Alex Chang, Ryutaro Tao and Peter Vanderborght

› Peter J. Batt

Like any other organisation, for ISHS to better meet your expectations, we need to know who you are, what you do, what you most value and what you most like – and what you even dislike about us – so that we may seek to improve.

The Board is delighted, in this article, to present the results of our recent membership survey, and from some of the positive feedback, it's apparent that you, our members, have also welcomed the opportunity to provide your inputs.

From our membership base of around 5,500, we received 448 responses. Most of the respondents came from the USA (13.2%), Italy (6.9%), Spain (5.6%), Germany (5.4%), Australia (4.7%) and Japan (4.5%), but overall, we had responses from 75 countries. ISHS truly is an international society. However, as it's impractical to analyse the results from each country, given the composition of the Board – as determined by Council – our respondents were grouped into one of six regions (Table 1).

Most of the respondents came from Europe (43.1%), Asia (16.1%), North America (15.2%) and Africa (10.7%).

It was no surprise to find that the majority of our respondents were male (61%). Comparing that with our membership records, where 55% of our members are male, this group was slightly over-represented.

Not unexpectedly, most of our members were engaged in horticultural research and development (53%), with some 22% employed in education (Table 2). Consequently, over 58% of our membership were affiliated with academia and some 19% with a government organisation.

Over half of the respondents (51.8%) were older than 56 years (Table 3).

As the Society – unlike many – does not record your date of birth when you apply for membership, we are unable to verify these findings with the data base. However, what is immediately apparent, is an age demographic that few organisations want to see: our membership is getting

■ Table 1. Region of membership. N=448.

	N	%
Europe	193	43.1
Asia	72	16.1
North America (including Caribbean and Central America)	68	15.2
Africa	48	10.7
Oceania	31	6.9
South America	27	6.0
Not specified	9	2.0

■ Table 2. Occupation of respondents. N=448.

	N	%
Horticultural research/development	238	53.1
Teaching	98	21.9
Consultant	37	8.3
Student	19	4.2
Extension officer/industry liaison officer	13	2.9
Retired	11	2.5
Horticultural manager/practitioner	9	2.0
Marketing/distribution/sales (inputs or outputs)	9	2.0
Public administration officer	5	1.1
Industry association	2	0.4
Other	7	1.5

■ Table 3. Age of respondents. N=448.

	N	%
Under 25	4	0.9
26-35	38	8.5
36-45	73	16.3
46-55	98	21.9
56-65	151	33.7
Over 66	81	18.1
Not specified	3	0.7

■ Table 4. Years of membership. N=448.

	N	%
Less than one year	63	14.1
2-5 years	70	15.6
6-10 years	65	14.5
11-20 years	118	26.3
20+ years	122	27.2
Not specified	10	2.2

older and we're currently failing to attract young people. While we will talk about the results of our past membership survey in another edition of *Chronica Horticulturae*, those under the age of 25 years are primarily students who join, almost invariably through their institution, to present their research findings at one of our symposia or congresses. The main reasons for them not to renew, after graduation, is that they are no longer employed in the industry or they simply can't afford to pay the membership renewal, especially if they are from one of the transitional economies: Africa, Asia or South America. Our target group are the young professionals aged 26-35 years who have recently entered the industry and are actively pursuing a career in horticultural research and development, which may or may not be associated with a teaching or extension activity. For this reason, the Board has recently reviewed the criteria for the ISHS Young Minds Award and, under the leadership of Professor Patricia Paiva, is seeking to extend the range of benefits available to this group to facilitate their professional development.

In parallel, an analysis of the number of years a respondent has been a member of ISHS also impacts on our membership strategies. It is not unusual for our membership to surge immediately at the conclusion of one of our four-year International Horticultural Congresses. On this occasion, around 14% of the respondents had been a member for less than one year (Table 4). Our challenge is to hold and retain them, for as above, many of these new members are young professionals. However, it's also apparent if we look at Tables 2, 3 and 4, that we, as a Society, have seriously neglected our most loyal members. An increasing number of our members are either approaching retirement age or have already retired. As of yet, we have no membership category to capture and retain this group, for while they may not be presenting papers at symposia, they still value the personal contacts and the networks they have established with colleagues over decades of involvement with ISHS. Watch this space. Under the leadership of Dr. Lukas Bertschinger, a number of new membership categories are currently being proposed and developed.

Just as our membership is diverse, so are their research interests. Most of the respondents were members of Division Temperate Tree Fruits (25.9%), which, in part, should not be unexpected given that most of our members are from Europe and North America (Table 5).

However, these results should not be seen as a popularity contest, as our Divisional structure caters to the diverse needs of our members and as most members belong to more than one Division, the key implication here is the need for the Commission Agroecology and Organic Farming Systems to be elevated to Division status. This issue was on the agenda at the joint meeting of the Board and the Executive Committee earlier this month in Kyoto, Japan.

Having now profiled the respondents, why were they members of ISHS? What were the key benefits our members obtained as a result of their membership? In the first instance, we asked an open-ended question, where respondents could provide multiple answers. In Table 6, respondents listed as many as six benefits. The most frequently

■ Table 5. Divisions/Commissions to which respondents are a member. N=448.

	N	%
Temperate Tree Fruits	116	25.9
Physiology and Plant-Environment Interactions of Horticultural Crops in Field Systems	93	20.8
Plant Genetic Resources and Biotechnology	91	20.3
Postharvest and Quality Assurance	87	19.4
Protected Cultivation and Soilless Culture	86	19.2
Tropical and Subtropical Fruit and Nuts	82	18.3
Vine and Berry Fruits	71	15.8
Ornamental Plants	69	15.4
Precision Horticulture and Engineering	67	15.0
Vegetables, Roots and Tubers	64	14.3
Horticulture for Development	62	13.8
Agroecology and Organic Farming Systems	54	12.1
Horticulture for Human Health	49	10.9
Temperate Tree Nuts	41	9.2
Landscape and Urban Horticulture	39	8.7
Banana	16	3.6
Cultivar Registration	6	1.3

■ Table 6. Benefits of membership (open-ended responses). N=400.

	Benefits of membership						Sum	%
	1	2	3	4	5	6		
Access/participation in symposia	100	36	8	2	1		147	36.8
Acta Horticulturae	39	47	10	3			99	24.8
Up-to-date information	56	10	5		1		72	18.0
Lower fees for symposia	44	18	2	3			69	17.3
Professional networking	27	21	11	4	1		64	16.0
International connections/ collaboration	19	9	7	6	1	1	43	10.8
Information exchange	14	9	2	2	1	1	29	7.3
To present/publish my work	12	7	9		1		29	7.3
Access to publications	15	7	3				25	6.3
Chronica Horticulturae	7	10	7				24	6.0
Knowledge	8	7	1	2			18	4.5
Personal friendships	5	3	5	1		2	16	4.0
Research findings	9	2	3				14	3.5
Attendance at the IHC	5	5	2	1	1		14	3.5
None/nothing	14						14	3.5

cited benefit of being a member of ISHS was the ability to participate in symposia (36.8%). Fundamentally, ISHS is an organisation that is globally recognised for the quality of the 40+ symposia that our many conveners prepare somewhere in the world. These symposia provide an opportunity for our members to travel to different countries and to collaborate and cooperate, to network and to share knowledge. These symposia were particularly valued by our early career professionals as they sought to present their work and to build enduring long-term relationships with international colleagues.

Despite much of the criticism directed towards *Acta Horticulturae* – and we acknowledge that there are problems associated with the submission of abstracts and papers, the review process, the inordinate amount of time it takes for some conveners to present the manuscripts for publication, and the ongoing debate about the absence of any impact factor – our members did gain considerable benefit from *Acta Horticulturae*. As Emeritus Professor Ted DeJong discussed in the last issue of *Chronica Horticulturae*, *Acta Horticulturae* is a conference proceedings. It is not a peer refereed journal and publication within *Acta Horticulturae* does not preclude publication in either eJHS (*European Journal of Horticultural Science*) or *Fruits - The International Journal of Tropical & Subtropical Horticulture* – the two peer refereed journals that are currently managed by ISHS.

It was also encouraging to see the benefit that many of our members obtained from this publication: *Chronica Horticulturae*.

Nevertheless, it was distressing to see that for some 3.5% of our members, they were unable to list any benefits. As indicated earlier, a sub-committee chaired by Dr. Lukas Bertschinger is currently exploring a range of new benefits and indeed, a number of new membership categories to broaden our base. Some of these were explored in the next question, which we will present in two parts: Part 1 – our existing benefits and Part 2 – our proposed benefits. On this occasion, respondents were asked to rate the value of the benefits they had obtained from being a member of ISHS on a scale of 1 to 6, where 1 was "I don't value this benefit at all" and 6 was "I value this benefit very much". The three most highly rated benefits were the opportunity to develop international research contacts (4.20), free downloads from *Acta Horticulturae* (4.20) and the opportunity to participate in one of the many horticulture symposia organised by ISHS at a discounted price (4.18) (Table 7).

The first of these benefits (the opportunity to develop international research contacts) was equally valued by all of our members, irrespective of their gender, their age, years of membership or the region in which they were based. However, and not unexpectedly, the opportunity to participate in symposia at a discounted rate was more highly valued by respondents from Asia, Africa and South America, and those who had just joined the Society.

■ Table 7. Benefits of membership (fixed response).

	Mean	SD
Opportunities to develop international research contacts	4.20	0.95
Free downloads (15 per year) from more than +73,000 *Acta Horticulturae* full text articles	4.20	1.09
Opportunity to participate, at a discounted registration rate, and to present at one or more of the 45-50 specialized symposia held every year	4.18	1.03
Opportunity to publish results of research and development projects in well edited, scientific committee reviewed symposium proceedings (*Acta Horticulturae*)	4.00	1.15
Opportunity to attend and participate in, at a discounted registration rate, the International Horticultural Congress held every 4 years	3.99	1.13
It is important to be a member in a society undertaking research, development, education, training, consulting, and production of products and services essential for human health, nutrition and wellbeing	3.98	0.99
A free electronic copy of *Chronica Horticulturae* 4 times a year	3.88	1.11
Pride in belonging to the largest professional society for horticultural scientists and horticulturists	3.80	1.13
The € 80 abstract submission fee for symposia and congresses is waived	3.76	1.16
Opportunities to develop joint international research projects	3.70	1.09
Opportunity to access other horticultural journals and subsequent downloads online through PubHort	3.69	1.13
Close professional links to members in any ISHS Division and Commission and the about 100 Working Groups	3.59	1.11
Obtain free downloads of *Scripta Horticulturae*	3.59	1.21
Membership list containing names and email addresses of all ISHS members and officers	3.48	1.17
Opportunity to convene and organise an ISHS symposium based on your professional interest	3.45	1.20
Be creative and pro-active in initiating new specialized professional interest/working groups	3.41	1.09
A € 325 discount to publish an article in eJHS or *Fruits,* the fully peer-reviewed, print + online Open Access international horticulture journals of the Society	3.23	1.23
Opportunity to advertise for professional placement through the ISHS website	3.00	1.24
Possibility to participate in ISHS summer schools	2.88	1.30

1 = "I don't value this benefit at all"; 6 = "I value this benefit very much".

■ Table 8. Proposed benefits of membership.

	Mean	SD
Discussion papers (white papers) on key issues	3.82	1.01
Collaboration centre	3.80	0.97
Professional development/mentoring support group for early career researchers and practitioners	3.71	1.11
Teaching and research methods support group	3.71	1.02
Dialogue events on key issues	3.68	1.03
Regional groups	3.66	1.17
Leadership academy for early career researchers and practitioners	3.59	1.08
Internship support group	3.51	1.13
Postdoc fellowship group	3.48	1.18
Consultants register	3.45	1.20
Careers centre	3.41	1.10
International Women in Horticulture Group	3.27	1.24
Young Minds group	3.25	1.17

1 = "I don't value this benefit at all"; 6 = "I value this benefit very much".

■ Table 9. Aspects of ISHS that respondents most liked (open-ended). N=202.

	Like			Sum	%
	1	2	3		
Symposia	34	7	1	42	20.8
Planning/support for symposia	32			32	15.8
Publications	13	6	3	22	10.9
Communication with members	10	6		16	7.9
IHC	5	8	2	15	7.4
Professionalism	14	1		15	7.4
Network	9	4	1	14	6.9
Awareness/advocacy	10	4		14	6.9
All good	11			11	5.4
Dissemination of information	8	2	1	11	5.4
Diversity of topics/interests	8	2		10	5.0
Global network	7	2	1	10	5.0

Once again, the value of *Acta Horticulturae* as a conference proceedings was highly valued by all respondents, but more so by females. Given also that women placed significantly more importance on the value of the free downloads from *Acta Horticulturae*, a discounted registration rate, the waiver in abstract submission fees and a discount to publish in eJHS or *Fruits*, it was apparent that many women, particularly those in the transitional economies, still struggle to be recognised.

One of the proposed new benefits that the Board is currently considering (Table 8) is the establishment of an international women's group. Not unexpectedly, support for this initiative was significantly higher among female respondents.

Among the proposed benefits, the most support was forthcoming for the preparation of discussion (white) papers (3.82) and the development of a collaboration centre (3.80). In recent months there has been a growing call for ISHS to provide an unbiased, independent commentary on a range of global issues including climate change, sustainability, the conservation of water and biodiversity, food security and the role of horticulture in diet, nutrition and wellbeing, and consumer resistance to new technology. As the Society has access to some of the best and most experienced minds in the world, some activity within this space will be forthcoming in the immediate future.

You, our members, would also like to see more targeted symposia to address these global issues. Here we have two broad strategies: new stand-alone symposia that we can organise with our partners and affiliated organisations, or we build these into our current program of symposia as themed sessions. Irrespectively, it is important that ISHS be seen as actively promoting good sustainable practice and that we utilise sound scientific data to support our advocacy within this space.

There is also a desire among the membership for new regional groups. As there is already a very strong North American group, due largely to the activities of the American Society of Horticulture Science, and a strong group in Europe – which is responsible for convening the European Horticultural Congress – the most support for new regional groups was evident from Africa, Asia, Oceania and South America.

Similarly, many of the other proposed benefits such as a collaboration centre, professional development and mentoring for early career researchers, a teaching and research methods support group, and a postdoc fellowship group were most highly valued by those respondents from Africa, Asia and South America. Coincidentally, these very same benefits were more highly valued by females and the younger cohort. As ISHS is actively seeking to recruit more members from these regions, this information will be invaluable.

While the formation of a Young Minds group was the least appealing to our membership at large, this should not come as any surprise, given the age profiles of our members. However, as highlighted in Table 3, for ISHS to be sustainable, we must not only attract but also retain a greater number of early career researchers. Globally, this is becoming increasingly difficult as horticulture often struggles to attract young people and as more institutions abandon tertiary education programs in horticulture.

While the majority of respondents (44.2%) were unable to list or to describe any other benefits that they might like to receive, the most frequently cited response was the need for more free downloads from *Acta Horticulturae* (8.6%). While most members do not currently utilise their entitlement of 15 free downloads, there is a group of active researchers that need greater access to *Acta Horticulturae*. As many of these members are early career researchers from the transitional economies, and as the cash flow generated from additional downloads is minimal, with immediate effect, all members will now have access to twenty free downloads.

However, the other most frequently cited additional benefit sought is a little more problematic. For some 4.9% of respondents, primarily from the transitional economies, the cost of individual membership is simply too high. While ISHS already offers members from low-income countries a discounted two-year membership, the problem, it seems, is at an institutional level, for when respondents submit their applications for funding to attend an ISHS symposium, the costs of membership are usually included. However, when the membership comes up for renewal, it's no longer the institution, but rather the individual who must pay. So once again, we are exploring new modes of institutional membership that might alleviate this problem in the future.

Broadening and expanding the membership base is perhaps the biggest issue currently facing the Society, for the other major benefit sought was more interaction with industry. With over 80% of our membership coming from either academia or government, our links to industry are weak. Under two sub-committees chaired by Dr. Lukas Bertschinger and Mr. Moctar Fall, the Board is developing strategies to extend our membership base to include the corporate sector, NGOs and other global development partners, and to strengthen our relationship with affiliated organisations and institutions including FAO, the World Bank, the African Development Bank and others.

As the incoming Board, we also acknowledge that we currently face a number of problems with both our peer refereed journals: eJHS and *Fruits*, our website and our social media presence. Under the chairmanship of Prof. Yao-Chien Alex Chang, the publications sub-committee has agreed to consolidate eJHS and *Fruits* into one journal. However, the emergence of what will probably be a new journal is not without problems, for in the absence of any track history, it may have no impact factor for up to two years. Furthermore, in managing the new journal, we have yet to determine whether it will be business as usual – publication in-house – or whether we will sub-contract the process to one of the many publication houses. Regardless, we acknowledge that the delays in publication are not acceptable and we are seeking to find ways to accelerate the process.

In relation to our media presence, our website and indeed our entire communication strategy, the Board has recently engaged with services of a professional communication company to guide us. While the cost is very modest, there are long-term financial implications, for the key constraint noted by our members was that our website and our social media platforms are not updated frequently enough. At this point in time, no one within our Secretariat is responsible for managing our social media presence, as all staff, both directly and indirectly, are engaged in our core business: the publication of *Acta Horticulturae*.

As part of the communication strategy and our membership drive, some amendments to our website will be forthcoming. We acknowledge that we must improve our public image and use both the website and social media to more effectively communicate who we are and what we do, but we must also provide a wider range of benefits and services to you, our members. This will require us to build a members only portal, where both individual and corporate members will need to log in to view the new services.

So where did we excel? What things did you most like about ISHS? Once again, we used an open-ended question, and on this occasion, we received up to three responses. Fortuitously, it was our core business: the symposia (20.8%), the planning and support provided for those symposia (15.8%) and our publications (10.9%) that our members most appreciated (Table 9).

We must also acknowledge and thank on your behalf, the great work that our Secretariat provides to us all under the leadership of our Executive Director Peter Vanderborght. You rated the performance of our Secretariat very highly.

■ Table 10. Aspects of ISHS that respondents most disliked (open ended). N=158.

	Dislike			Sum	%
	1	2	3		
Poor recognition	17	1		18	11.4
Poor links with industry	14	1	1	16	10.1
Untimely publication	12			12	7.6
Little collaboration with other organisations	7	3		10	6.3
Poor communication	6	2	1	9	5.7
No impact factor for *Acta Horticulturae*	7	2		9	5.7
Lack of transparency	6	2		8	5.1
Exclusivity/elitism	8			8	5.1
Poor participation from low income countries	7		1	8	5.1
High cost of symposia/membership	8			8	5.1
No discount for students/early career researchers/low economic countries	6	1		7	4.4
Poor quality publications	5	1		6	3.8
Low quality papers	5		1	6	3.8
Too few regional events	5			5	3.1
Gender discrimination	1	2	1	4	2.5
Poor social media	4			4	2.5
Acta Horticulturae is not open access	1	2	1	4	2.5
Election of President	3	1		4	2.5
Poor website	2	2		4	2.5
Election of Board		1	3	4	2.5

However, there are a number of issues where you were less satisfied with our performance. With some respondents citing as many as three issues, the two most frequently cited issues were the poor recognition of ISHS (11.4%) and our poor links with industry (10.1%) (Table 10).

Both of these issues and our failure to engage and collaborate with other organisations will be addressed through our improved communication strategy and membership drive. We would also expect our improved communication strategy to deliver against your concerns about the lack of transparency and, in the past, our failure to appropriately communicate with our membership.

As already discussed, *Acta Horticulturae* is a conference proceedings and therefore it will never have an impact factor. Nor will *Acta Horticulturae* ever become an open access publication, for our sales of *Acta Horticulturae* to both conference participants and libraries is the major source of revenue for the Society.

We are concerned that some of our members perceive an element of exclusivity and elitism within the senior management of the organisation. We are a very democratic organisation in that all nominations for the President, the Board and both Division and Commission Chairs come from the membership. However, whereas the votes for Division and Commission Chairs are determined by the membership, the election of the President and the Board is determined by Council. We are actively working to increase the level of participation from Africa, Asia and South America and to explore alternative mechanisms for institutional membership that might reduce some of the problems associated with the individual renewal of membership from the low income countries.

We are also actively addressing your concerns about the quality and the timeliness of our publications.

We are indebted to those of you who took the time to talk about your experiences, both positive and negative with ISHS, and indeed, about how much you value your Society. So let us conclude with some general comments, where 21% of respondents took the time to thank us – the Board – for reaching out to our membership base. Another 14.7% were very satisfied with their experience and 6.6% rated their experience with ISHS as outstanding. Thank you!

Spotlight on Honoured ISHS Members

› Christopher B. Watkins

Position

Herman M. Cohn Professor of Horticulture
Director, Cornell Cooperative Extension, and Associate Dean, College of Agriculture & Life Sciences, and College of Human Ecology

ISHS honour

ISHS Fellow

Your involvement with ISHS

My first ISHS meeting was the International Symposium on Postharvest Handling of Fruit and Vegetables convened by Professor M. Herregods in 1988 at the Catholic University of Leuven, Belgium. It was an amazing experience with 220 participants from 37 countries. This symposium exposed me to the international postharvest community beyond Australasia and the USA, where I had completed my PhD. I remember how nervous I was about giving my presentation, for in those days, slides were prepared weeks in advance and there was no opportunity to modify a talk before its presentation.

Since then, I have attended many ISHS meetings, several as an invited keynote speaker as my career developed. My opportunity to give back to the Society came in 2014 when I was elected as Chair of Commission Quality and Postharvest Horticulture (since 2018, Division Quality and Postharvest Horticulture), for which I served two four-year terms. In addition to representing the postharvest community, I experienced firsthand the dedication of the two ISHS Boards and my fellow Division/Commission partners during my terms. Meeting as a group each year (the pandemic aside) was wonderful. Everyone involved was dedicated to addressing the challenges and opportunities that ISHS faced and to provide meaning and value to their membership at a time of incredible change. As Chair, I worked with the conveners of the meetings associated with the Quality and Postharvest Horticulture Commission and I saw the tireless work that they and their teams do behind the scenes to make every meeting successful. It would be remiss of me not to recognize the hard-working team in Belgium that does so much great work to assist the conveners with the planning and publication process.

What encouraged you to select horticulture as a career?

My career in horticulture was actually serendipitous. As a native-born New Zealander (Kiwi), one is part of the incredible outdoor environment and closeness to nature that seems to come as a birthright of the country. From my earliest memories, I was always interested in nature, and my first exposure to the press was at the age of six years old! The caption of an old newspaper article reads in part 'budding naturalist Christopher Watkins, the class's best man, takes a Sherlock Holmes look at one of his finds'.

My major at the University of Auckland, New Zealand, was Botany. My passion was never about naming specific plants, but rather what they did. I was not a great student, but during the third year of my BSc I was 'captured' in one of my plant physiology courses on C3/C4 and CAM photosynthesis by Prof John Brown. I ended up completing my Master of Science degree with first class honors on ecophysiology of a sand dune plant, climbing New Zealand spinach. As I was completing my thesis writing, I interviewed successfully for a scientist position in what was then known as the Postharvest Physiology and Storage Section of the Division of Horticulture and Processing within the Department of Scientific and Industrial Research in New Zealand.

› The first press release at the age of 6.

It was a unique time in history in that the Director preferred to hire Masters students and then, once they had proven themselves, to apply for a scholarship to complete a PhD. I found wonderful mentors in Errol Hewett, the postharvest group lead-

› With most of the class of the First ISHS Summer School on Pre- and Postharvest Physiology of Temperate Fruit Crops (2018). Soaking up the atmosphere in Heidelberg, Germany.

› Chris Watkins receiving the 2021 ISHS Fellow award from Prof. Dr. Yüksel Tüzel, ISHS President 2018-2022, at the XXXI International Horticultural Congress (IHC2022) in Angers, France.

er, and in Ian Ferguson, who was a great colleague not only in experimentation, but who instilled in me that our work was not completed until it was published. I was successful in my scholarship application, and went to Rutgers, The State University of New Jersey, USA, where I worked on the effects of mannose on pear fruit ripening with Prof. Chaim Frenkel. I returned to New Zealand for eight years before taking my current position at Cornell University in the USA.

Highlights of your career

Throughout my career I have travelled extensively around the world, mostly to attend ISHS meetings. Irrespective of where people live and work, their commitment to their research and pride in their country is inspiring. We are truly part of a thriving international community.

One of the highlights of my career is that so many individuals have had the confidence in my program that they have sought to work in my laboratory at Cornell University. Whether they are students or active researchers, one of the motivations for them is publication. Their work has contributed to over 185 peer reviewed papers and 52 conference proceedings papers, mainly in *Acta Horticulturae*. Furthermore, many of them have become great friends and colleagues, and I hope I have been and will continue to be a mentor to many of them in the same way that mentors were so critical to my success.

Related to mentorship, it was my honor to be involved with the First ISHS Summer School on Pre- and Postharvest Physiology of Temperate Fruit Crops organized by the late Jens Wünsche at the University of Hohenheim in Germany. There were 20 students from 17 countries who participated in the two-week program. Along with Jens, it was a great experience to partner with Ted DeJong from UC Davis in a program that included information on the principles of crop management, fruit growth and development, stress physiology, product quality, postharvest physiology, market and supply chain management and modelling, and very importantly German culture of which Jens was so proud.

Recognition, of course, is very much appreciated and humbling. I was honored to be inducted as Fellow of the ISHS at the 2022 International Horticultural Congress in Angers, France, an award that recognizes outstanding contribution to horticultural science worldwide. I was recognized by the American Society for Horticultural Science (ASHS) for the Outstanding Extension Educator Award in 2005, and became a Fellow of ASHS in 2015. In 2016, I was invited to present the B.Y. Morrison Lecture.

Reflecting on my career, however, the major highlight has been my close association with the fruit growing industry. In my first position in New Zealand, and currently at Cornell University, I work on a variety of crops, but primarily apples. While my research program ranges from basic to applied, I love being part of vibrant fruit industries where the results of the research are urgently needed and it is possible to have immediate impact. The last 20 years have been exciting with the development of new technologies to better understand the effects of the ethylene inhibitor, 1-methylcyclopropene, and dynamic controlled atmosphere storage being introduced to the market. The application of these technologies has been a partnership with growers and storage operators to ensure their safe applications, a challenge made even more critical with the emergence of new apple cultivars such as 'Honeycrisp' and its progeny.

How your participation in ISHS has facilitated/encouraged your career

The science presented at any given conference can always be read later in *Acta Horticulturae* or in other scientific journals. What can never be captured are the discussions between scientific sessions without being there in person. The professional tours and social activities provide an informal venue for building friendships and partnerships. At my first ISHS meeting in Leuven, this included visits to orchards and cool stores as well as tasting excellent Belgian beers and cheeses. What I remember above all else, however, was the welcoming atmosphere to the postharvest community as a relatively new

scientist. The opportunity to meet with the renowned leaders in the field was exciting and I immediately felt part of an amazing postharvest community.

This sense of community has continued to this day, albeit now as a senior rather than junior researcher. While each meeting is one of connecting with old friends and creating new memories, it is also an opportunity to witness the skills, enthusiasm and commitment of the new generation of researchers that will forge new approaches into the future and hopefully build upon our effort, as we did for the individuals before us. It is special to this day when a student, postdoc or new scientist tells me that I have influenced their career though my work, either through a research paper or review.

What words of advice do you have for students/graduates/early career researchers?

Make sure that you are passionate about what you are doing. Science can be hard with a great deal more perspiration than inspiration. The environment has changed greatly with much more emphasis on grantsmanship and that can become wearying over time. At the same time, however, there have never been better opportunities for applying new technologies and transdisciplinary approaches. So, think expansively and look for collaborative opportunities where the sum of one plus one is more than two!

Learn to articulate what you do in a concise way to help people understand science. One of my favourite questions at student MS/PhD defence exams is one that I learned from Errol Hewett, now Professor Emeritus at Massey University, New Zealand: it goes along the lines of "if, as we hope, you are out tonight celebrating your successful examination and you meet a stranger who asks you what your research is about, what would you say to them that will make them want to continue the conversation?" It is amazing how difficult this question can be as students are so focused on scientific detail. Often the answer can be as simple as "ensuring that the fruit that you eat is safe and nutritious", and even better if you can relate it to something that that average person cares about. One student working on iron and photosynthesis for example, started his reply by saying "You know how important iron is for the human body!". In relation to that point, if you are working in the 'postharvest' field, always remember to articulate that we have a critical role in reducing food loss and waste. So much loss in resources can be reduced by appropriate postharvest management, but 'postharvest science' or 'postharvest physiology' does not have much resonance.

Finally, mentorship, partnerships and friendships. I have been blessed to have wonderful mentors throughout my career, although I didn't always recognize that at the time. Without their guidance I would never have achieved as much as I have been able to. My career has also been one of wonderful partnerships whether with fellow scientists within my former Institute, Cornell University and colleagues in Canada and the USA, or the many wonderful students and visiting scholars in my laboratory over the years. I have been honored to have students and visitors from many countries including China, Denmark, Egypt, Germany, Greece, India, Iran, Iraq, Japan, Korea, Madagascar, Mexico, Pakistan, Syria, Taiwan, Thailand and Turkey. Each individual has brought their skills and life experiences to share. If you are a student, embrace these learning opportunities if you are lucky enough to be part of a multicultural laboratory, and if you are an early career scientist, I hope that you are able to open your laboratory to these individuals and all that they bring with them. Notwithstanding, these mentors and partners result in lifelong friendships, many of whom you will see at that next ISHS symposium or congress!

An invitation to the V All Africa Horticultural Congress (AAHC2024), Marrakech, Morocco

Abdelhaq Hanafi

We cordially invite you to join us for the V All Africa Horticultural Congress, set to take place in the attractive city of Marrakech, Morocco, from February 26 to March 1, 2024. The congress is organized by Mohammed VI Polytechnic University under the aegis of the ISHS. It will bring together horticultural professionals, researchers, practitioners, and industry leaders from all across the African continent and beyond.

Africa is becoming an important region for horticulture worldwide. Today, more than 60% of the African population derive their living from agriculture. With the youth population in Africa growing faster than any other region in the world, around 74 million jobs need to be created in Africa over the next decade. Horticulture has the potential to generate local employment, with local food reducing the carbon footprint, creating urban green belts, recycling organic urban waste and providing healthy, nutritious food for the population. However, several challenges and exogenous shocks – including extreme weather events and climate change, recurrent outbreaks of pests and diseases and inappropriate adoption of technologies to enhance productivity – have exposed fragilities in Africa's horticulture system, undermining the ability of the continent to meet the food demand of a burgeoning population.

Under the theme "Unleashing the Potential of African Horticulture," this congress aims to foster the exchange of knowledge, innovative technologies and collaboration in the field of horticulture. It will provide an exceptional platform for attendees to explore the latest advancements, share insights, and discuss strategies to promote sustainable horticulture practices and enhance the continent's agricultural landscape.

Marrakech, known as the "Red City," is a captivating destination that successfully blends history, culture, and natural beauty. With its vibrant atmosphere, stunning architecture, and a rich tapestry of traditions, Marrakech will offer an unforgettable backdrop for this congress. The city's botanical gardens,

› Campus of University Mohamed VI Polytechnic in Marrakech, venue of AAHC2024.

› Kasbah Tamadot in the Atlas Mountains (45 minute-drive from Marrakech).

including the famous Jardin Majorelle, and its long-standing horticultural heritage, make it an ideal location for celebrating the achievements and potential of African horticulture.

During the congress, you can expect an array of engaging activities, including keynote speeches, plenary sessions, panel discussions and workshops. Renowned experts will share their experiences, present cutting-edge research, and provide valuable insights into horticulture's future. There will also be ample networking opportunities, enabling you to connect with like-minded professionals and to forge new partnerships and friendships.

We encourage you to participate in this event and contribute by submitting your research papers, case studies, and innovative ideas for presentation. Your participation will not only contribute to the exchange of knowledge, but also inspire and empower others, especially the young generation in Africa.

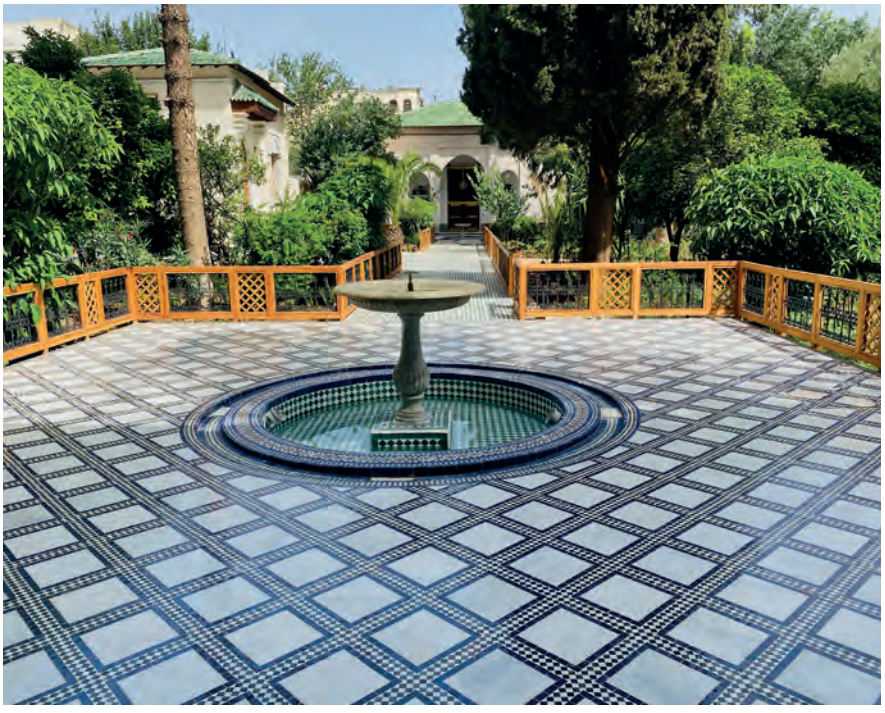
In addition to the scientific program, you will have the chance to explore Marrakech's cultural treasures, indulge in its culinary delights, and experience its warm hospitality. You will also have the opportunity to explore the imperial cities of Morocco during the post-congress tour from March 2-7, 2024. The congress organizing committee is dedicated to ensuring that your stay will be memorable and rewarding in every aspect.

We look forward to welcoming you to the V All Africa Horticultural Congress in Marrakech, Morocco. Mark your calendars and save the date for this momentous event that promises to shape the future of African horticulture. Together, let us unleash the potential of our continent's green growth!

› Koutoubia minaret Marrakech.

› View of Atlas Mountains from Marrakech in February.

› Jardins Majorelle in Marrakech (Yves Saint Laurent).



› Moroccan riads.

› About the author

› Abdelhaq Hanafi

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› ISHS Young Minds Award winner summaries

Below is a selection of research summaries from winners of ISHS Young Minds Awards for best oral and poster presentations at ISHS symposia. To view other exciting research summaries by other winners, please visit www.ishs.org/young-minds-award.

Compendium of pistachio diseases in Italy

› Giorgio Gusella

Pistachio (*Pistacia vera*) is an important crop in Italy, especially in Sicily (southern Italy), due to the suitability of the crop to the agro-ecological conditions. However, the phytopathological situation has been poorly investigated and little information is available. My research has focused on the investigation of fungal diseases affecting pistachio in Italy. Field surveys were conducted in different geographic regions of Sicily. Symptomatic samples, including leaves, fruit panicles and shoots, were brought to the laboratory and fungal pathogens were isolated and stored in our laboratory fungal collection. Morphological and molecular characterization, based on the multilocus phylogenetic analyses, were conducted on representative isolates. Pathogenicity tests were performed to fulfill Koch's postulates. Our results revealed that canopy diseases are the major issues for this crop, including Septoria leaf spot (*Septoria pistaciarum*), which is the most widespread disease, and Botryosphaeria panicle and shoot blight caused by *Botryosphaeriaceae* species, such as *Botryosphaeria dothidea, Neofusicoccum hellenicum* and *N. mediterraneum*. Canker pathogens were also identified including *Leptosillia pistaciae* (ex *Liberomyces pistaciae*), which causes pistachio dieback, and *Cytospora pistaciae* and *Eutypa lata*, which sporadically caused canker and gummosis. Moreover, the fungus *Arthrinium xenocordella* was reported, which is known to cause fruit blight, but this is only a minor disease. Further research will be needed to detect new diseases that may limit the cultivation of pistachio in Italy as well as in the Mediterranean basin.

Giorgio Gusella won the ISHS Young Minds Award for the best oral presentation at the VIII International Symposium on Almonds and Pistachios in USA in May 2023.

› Contact

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Impact of branch crop load on pistachio nut growth and ripening

› Emily Santos

Despite the physiological impact that variable crop loads have on the vegetative growth and reproductive processes of pistachio, very few studies have examined the effect of fruit-sink strength on pistachio nut growth and quality. In this study, considering the branch as a semi-autonomous unit, with regard to carbohydrate availability, we manipulated fruit load with the following two treatments: high crop load (3 nut clusters) and low crop load (1 nut cluster), and evaluated the impact on carbon assimilation, nut growth and quality parameters. Results showed that during early nut development, where nut growth relies strongly on resources from the previous year, high crop load treatments experienced greater competition for available resources, resulting in smaller nuts. Crop load significantly affected nut and kernel dry weight, but not other quality parameters. Although the photosynthetic rate in July was higher in the high loaded branches, at the beginning of August, photosynthesis declined, resulting in a significantly lower photosynthetic rate by September. This mid-season reduction in the photosynthetic rate observed in highly loaded branches may have compensated for the different sink strength of the branches. Furthermore, differences observed in kernel dry weight by the end of the season demonstrated competition during a later stage of nut development, which was probably amplified by the late season reduction in assimilation associated with early senescence. As competition for resources can have a strong and complex impact on pistachio nut growth, managing the crop load should be integrated into orchard management practices to improve nut quality.

Emily Santos won the ISHS Young Minds Award for the best poster presentation at the VIII International Symposium on Almonds and Pistachios in USA in May 2023.

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Postharvest UV-B treatments induce changes in bioactive compounds and reduce weight losses during cold storage in blueberry (*Vaccinium corymbosum* L.)

› Alice Varaldo

The postharvest chain for blueberry is challenging. Complications are related to the monitoring of ripeness, which manifests as coloring of the peduncular area. This leads to potential degradation during storage, a decrease in bioactive components and a reduction in quality characteristics. To mitigate these complications, the impact of increased artificial UV-B radiation on nutraceutical compounds of 'Cargo' blueberries (*Vaccinium corymbosum* L.) was evaluated.

Pot cultivated blueberries were harvested at a partially immature state (stalk point of insertion still green/pink) and immediately processed under UV-B. UV treatments were performed with a peak emission at 310 nm and 18.58 W m^{-2}. Two exposure times (5 and 20 minutes) were performed in triplicate. Samples were stored for 1, 2 and 24 h at 20°C (adaptation time) in a perforated plastic box, before cold storage at 2°C for 6 days (storage time), after which the berries were qualitatively analysed.

The findings show that shorter treatments and longer adaptation times provided significantly greater accumulations of anthocyanins than the control. Low irradiation (5 min) caused some distinctive changes in fruit pigmentation characterized by a color change towards darker shades compared to the control. The best treatment for retaining the quality of the berries was to hold the fruit for 2 h after treatment at 20°C. The weight loss results were significantly lower than the control during cold storage. On the other hand, the firmness of the berries declined significantly with increasing exposure to UV-B radiation. The accumulation of anthocyanin between the adaptation times were quite similar and the mechanical properties were better preserved with short UV treatments. Therefore, short adaptation times and low dosage treatments of UV-B radiation offer a means of improving the postharvest management of blueberries. These treatments should provide consumers with fully mature, defect-free, and nutraceutical compound-rich products.

Alice Varaldo won the ISHS Young Minds Award for the best poster presentation at the VII International Conference Postharvest Unlimited in the Netherlands in May 2023.

› Contact

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Roles of ethylene in regulating the susceptibility of cut roses to *Botrytis cinerea*

› Suong Tuyet Thi Ha

Suong Tuyet Thi Ha is a postdoctoral researcher at the Postharvest Physiology Lab, Department of Smart Horticultural Science, Andong National University, South Korea, under the supervision of Prof. Byung-Chun In. Her research interests are postharvest physiology, ethylene, the senescence of cut flowers, and the development of techniques to detect water stress and grey mould disease in cut rose flowers. Cut roses are susceptible to grey mould disease caused by *Botrytis cinerea*. The severity of the disease symptoms is influenced by the presence of ethylene during storage and transportation. The objectives of the current study were to elucidate the role of ethylene and/or ethylene inhibitors in the rose-*B. cinerea* pathosystem. In addition, the expression levels of genes related to the histidine kinase receptor, fungal growth and pathogenicity of *B. cinerea* were analyzed to understand how *B. cinerea* senses and responds to ethylene. The results showed that the susceptibility of cut roses to *B. cinerea* was positively correlated with flower senescence, which was induced by ethylene synthesis in petals. *B. cinerea* infection in cut roses activated ethylene biosynthesis and signaling pathways in rose petals. In this study, a working model for ethylene binding and plant and fungus actions in the rose-*B. cinerea* pathosystem was also established. Ethylene controlled and regulated the growth and infection of *B. cinerea* in cut roses both directly by binding to the fungal histidine kinase receptors and then activating the genes related to penetration and hypersensitive response, and indirectly by stimulating the ethylene response in the host plants. The inhibition of the fungal histidine kinase receptors and the suppression of ethylene responses in rose petals by 1-MCP made cut roses resistant to *B. cinerea*. Further explorations into the interactions between *B. cinerea* and ethylene inhibitors will help improve treatments for controlling grey mould disease in cut rose flowers.

Suong Tuyet Thi Ha won the ISHS Young Minds Award for the best oral presentation at the XII International Symposium on Postharvest Quality of Ornamental Plants in the Netherlands in May 2023.

› Contact

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Study on cherry resources located in China and breeding progress of Chinese cherry [*Cerasus pseudocerasus* (Lindl.) G.Don]

› Yan Wang

Chinese cherry [*Cerasus pseudocerasus* (Lindl.) G.Don], is an economically important fruit crop in China. Native to China, it is precocious, of high ornamental value, with a delicious taste and rich in nutrients. With funding from the National Natural Science Foundation of China and Sichuan Provincial Youth Science and Technology Innovation Research Team, our research group has been conducting field investigations to collect, identify and evaluate 1,000 cherry germplasm resources – including cultivated and wild Chinese cherry – from 32 species or varieties within *Cerasus* from 12 provinces across China. Based upon these collections, we have established a Cherry Resource Sharing and Service Platform and a Cherry Germplasm Repository in Sichuan Province. We have illustrated the genetic diversity, population structure, origin, and domestication history of fruiting cherries with extensive and typical cherry samples based on morphological, molecular markers and genomic profiling. The cultivated Chinese cherry originated from the wild Chinese cherry populations found in the Longmenshan Fault Zone, on the eastern edge of the Himalaya-Hengduan Mountains. A novel genomic-SSR marker has been identified, being species-specific in Chinese cherry, which can be used in accurately identifying Chinese cherry and its interspecific hybrids. Our group has carried out a cross breeding program to cultivate new varieties of Chinese cherry with early-ripening, large fruit size, sweet flavor, and improved shelf life. An index system for Chinese cherry DUS testing has been established based on 38 phenotypic characters with over 1,000 representative Chinese cherry samples. Based on a comprehensive evaluation of hybrids, 40 new cultivars, named 'Meiren' series, have been selected. We will attempt to construct a high-density genetic map, undertake QTL mapping and candidate gene discovery, and establish a database on Cherry Genomics, Genetics and Breeding, to accelerate the molecular-assistant selection and genetic improvement of Chinese cherry.

Yan Wang is a lecturer at the College of Horticulture, Sichuan Agricultural University, China, studying Pomology Germplasm Innovation and Genetic Improvement, under the supervision of Prof. Xiaorong Wang. Yan Wang won the ISHS Young Minds Award for the best oral presentation at the IX International Cherry Symposium in China in May 2023.

› Contact

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Can pre-harvest drought stress influence plant physiology and fruit metabolome in sour cherry?

› Melissa Venturi

Rising temperatures, reduced irrigation water and the occurrence of extreme drought events are only some of the challenges that the agricultural sector is currently facing. Deficit irrigation strategies have the potential to maximise water use efficiency without compromising crop quality or yield. This research paper, presented at the IX International Cherry Symposium, examined the effects of different irrigation levels on the physiological performance and fruit quality of sour cherry trees. A "stressed" (STR) treatment with trees receiving no irrigation from 55 days after full bloom (DAFB) was compared to a "control" (CNT) where trees received irrigation based on plant evapotranspiration (ETc). Plant physiological performance as well as fruit and shoot growth were monitored throughout the season, while fruit quality and yield were evaluated at harvest. In addition, fruit samples were collected for LC-MS2 analyses of untargeted metabolomics. The daily trend of stem, leaf and fruit water potentials was not affected by irrigation, according to the data. However, CNT trees had significantly ($p<0.05$) higher rates of photosynthesis, stomatal conductance, and leaf transpiration at 76 DAFB. The lack of irrigation had no effect on shoot growth, but negatively affected fruit diameter and weight at harvest, although yield did not differ significantly between treatments. STR and CNT fruit had similar levels of soluble solids content and acidity, but the sugar/acid ratio was significantly higher in the CNT treatment. The STR treatment significantly altered the landscape of the fruit metabolome. Specifically, STR fruit had a greater accumulation of lipids, carbohydrates, and other non-annotated specialised metabolites than CTN fruit. In contrast, a suppression of cinnamic and carboxylic acid, as well as terpenoid metabolites, was observed in CNT fruit. These findings suggest that pre-harvest irrigation can be successfully applied to sour cherry without impairing plant performance and may be used to modulate the fruit metabolome.

Melissa Venturi won the ISHS Young Minds Award for the best poster presentation at the IX International Cherry Symposium in China in May 2023.

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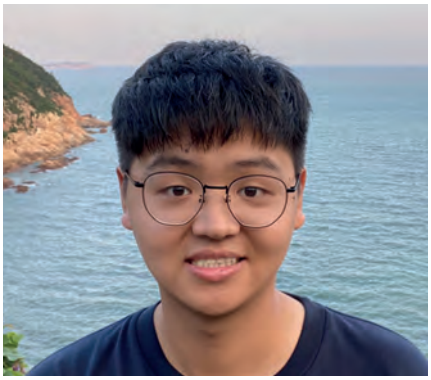
Deep learning-based strawberry ripeness prediction and growth analysis in vertical farming from time-series image data



› Zhixian Lin

Zhixian Lin is a Ph.D. candidate in the College of Biosystems Engineering and Food Science at Zhejiang University, Hangzhou, China. He works under the supervision of Prof. Dr. Tao Lin. His research focuses on data-driven based modeling for crop growth in plant factories. Strawberries have high consumer demand due to their palatability and nutritional benefits. However, strawberry farming can be challenging as it is susceptible to pests, diseases, and environmental fluctuations. Growing strawberries in vertical farming with LED lighting and precise environmental control can provide higher yields and better-quality fruit. Predicting strawberry ripeness and monitoring growth is critical to the precision management of strawberry cultivation. Detailed information on the strawberry ripeness stage, such as the optimal harvest date, can help farmers to plan and organize the timing and sequence of production activities to optimize the use of space, labor and resources, while meeting the market demand and maximizing profitability. In this study, an automatic approach based on deep learning was developed to predict strawberry ripeness and monitor strawberry growth in vertical farming. A time-series image dataset was constructed by experimenting with monitoring the strawberry fruit development after the de-greening fruit stage. The study proposed a dual-branch attention fusion (DBAF) model for strawberry fruit ripeness prediction using time-series image data, which comprises two parallel branches for feature extraction and incorporates an attention mechanism to enhance the presentation of features from in-field images. A segmentation network was trained to extract the boundary and geometric traits of fruits, enabling the generation of growth curves based on fruit size. The automatic approach based on deep learning showed superior performance and stability in the in-field scenario. The research highlights the potential of deep learning-based approaches for the precision management of strawberry cultivation in vertical farming.

Zhixian Lin won the ISHS Young Minds Award for the best poster presentation at VertiFarm2023: II International Workshop on Vertical Farming in China in May 2023.

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Peat shrinkage during drying according to particle size

› Stan Durand

For non-rigid porous materials like many soils and growing media, the ability to shrink during drying should be considered as it modifies the total pore volume and pore size distribution, which leads to changes in water holding capacity and air properties. Many studies have shown that the physical properties of growing media depend in part on their particle size. However, no study has been focused on the relationships between shrinkage and particle size for growing media to date.

A milled peat (H3 – H6) was fractionated by wet sieving into six particle size fractions. Shrinkage curves using Hyprop systems coupled to a linear variable displacement transducer (LVDT) were performed to simultaneously measure water content, water potential, and total volume during the drying process. The results were expressed in void and water ratios as a function of water potential.

The shrinkage curves suggested two types of physical behavior, differentiated by the presence or not of an initial shrinkage in the range of higher water potentials (from saturation to a maximum of -100 hPa). The initial shrinkage only concerned the finest particle size fractions and was characterized by little to no air entry in the porosity. It progressively decreased with increasing particle size and was not reported for >2 mm particle size fractions. Once the finest particle size fractions consolidated, but also for the other coarser particle size fractions, drying was accompanied by the absence or a very low shrinkage, with water potentials around -200 to -300 hPa. These previous drying phases refer to the drainage of interparticle porosity, whereas a last phase of shrinkage, corresponding to that of intraparticle porosity, was observed for lower water potentials. This study revealed significant shrinkage for fine particle size distribution materials over a range of water potentials which are of interest to irrigation management, confirming the importance of assessing shrinkage as one of the relevant indicators of physical properties.

Stan Durand won the ISHS Young Minds Award for the best oral presentation at the I International Symposium on Growing Media, Compost Utilization and Substrate Analysis for Soilless Cultivation in Canada in June 2023.

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A convenient and high-efficiency *Agrobacterium rhizogenes*-mediated hairy root transformation for CRISPR/Cas9-based gene editing efficiency evaluation in different *Citrullus* species

› Yong Zhao

The CRISPR/Cas9 genome-editing system has been widely used in crop genetic improvement. To rapidly select efficient single guide RNAs (sgRNAs) in the genus watermelon, which is difficult to genetically transform, the *Agrobacterium rhizogenes*-mediated hairy root method is often used to detect efficient target sites in different *Citrullus* species. In this study, hairy roots were induced in different plant tissues of *Citrullus lanatus, Citrullus mucosospermus* and *Citrullus amarus*, in a non-sterile environment. Using this method, targeted mutations in *ClCIPK17* could be detected in 90.9% of watermelon accessions. A total of 31 different mutation types in *ClCIPK17* were recorded, where deletion of nucleotides was most common. Among all examined hairy roots, 73.9% contained mutations at the sgRNA1 site. Using sgRNA1 of *ClCIPK17*, stable transgenic watermelon plants were obtained from explants and targeted mutations in *ClCIPK17* were confirmed. The results demonstrate that the hairy root transformation system can be used to evaluate the efficiency editing of sgRNA targets in watermelon.

Yong Zhao is enrolled as a PhD candidate at Zhengzhou Fruit Research Institute, Chinese Academy of Agricultural Sciences. He devotes himself to research on the natural variation and genetic basis of metabolites of watermelon. Yong Zhao won the ISHS Young Minds Award for the best poster presentation at the VII International Symposium on Cucurbits in China in June 2023.

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Data driven assessment of major fruit crops' shifting phenology under climate change in the Mediterranean with the combined use of field-based internet of things and remote sensing technologies

› Ioannis Moutsinas

Ioannis Moutsinas is an Agricultural Engineer currently working as a research scientist at the Networks Implementation Testbed Laboratory of the University of Thessaly, Greece. At the same time, he is a PhD student within the Laboratory of Pomology. His research mainly focuses on the assessment of major fruit crops' phenological responses to climate change in the Mediterranean to determine the most suitable adaptation strategies to improve crop resilience and sustainability. To attain that, a model-based approach is proposed that leverages real-time field data collection using the Internet of Things (IoT) and remote sensing technologies. The AgroNIT smart-farming IoT ecosystem was employed in a recent study to quantify the impact of climate variability and climate change on the evapotranspiration and thermal growing conditions of *Prunus persica* 'Everts' grown in two different regions in northern Greece, over three growing seasons (2019-2022). AgroNIT's architecture relies on distributed field data collection and analysis, in real-time, by leveraging energy-autonomous, wireless sensor networks, high performance cloud computing, and tailor-made decision-support systems. In northern Greece, the AgroNIT testbed comprises 43 IoT-enabled sensing and communication devices deployed on 23 peach orchards across the region. At its core, AgroNIT embeds crop-specific phenological and irrigation models to quantify the accumulated chilling and growing degree hours and real water needs of the studied orchards. The obtained results demonstrated a clear effect of the occurring temperatures on the timing of tree phenophases and their water needs, for two regions at different altitudes. Orchards at higher altitude exhibited longer phenophases (2-7 days) and consistently lower evapotranspiration rates (2-3 mm day^{-1}), attributed mainly to the lower mean temperatures recorded. While the effect of local climate variability was shown to differ between areas relatively close to each other, no significant variations were found to occur within 2019-2022 that could be attributed to climate change. The proposed data-driven approach shows great potential in identifying mechanisms behind crops' phenology shifts, enabling the prediction of regional phenological patterns and their consequences on ecosystem productivity.

Ioannis Moutsinas won the ISHS Young Minds Award for the best poster presentation at the International Symposium on Models for Plant Growth, Environments, Farm Management in Orchards, and Protected Cultivation (HorchiModel2023) in Spain in June 2023.

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Announcement of the 15th Albert Soenen Scientific Prize

The Professor Albert Soenen Foundation awards every 3 years a scientific prize to the best PhD thesis that makes a significant contribution to the advancement of temperate fruit production.

Professor Albert Soenen was the first director of the Royal Research Station of Gorsem in 1943, which subsequently merged in 2005 with two other institutes to form the Research Station for Fruit (pcfruit), which has since become the leading institute for applied fruit research in Belgium. The Foundation is supported by this institute and the city of Sint-Truiden, the main fruit growing region in the country.

The prize has a value of € 3000 and will next be awarded in 2024. The prize is personal but can be shared. It aims to stimulate young researchers to undertake outstanding research that leads to innovation in temperate fruit production.

The first prize was awarded in 1985, and since 2000 the award has been announced internationally. The theses, which should be submitted in English, are evaluated by a panel of independent, international experts. To date, 14 scientists of 7 different nationalities have received the award.

Even if the research is not directly undertaken on temperate fruit crops, but the findings have the potential to lead to innovation in pome fruit, stone fruit, berries or viticulture, the thesis will be considered. For example, in 1991, the prize was awarded to a candidate whose work focused on the mechanisms of ethylene biosynthesis. Although the research was conducted on tomatoes, the findings were applied some years later to improve the storage of pome fruit.

The main criterion for evaluation is the scientific quality of the PhD thesis and the potential for innovation in the temperate fruit sector.

No research disciplines are excluded. Insights or solutions with the potential to support sustainable fruit production are highly appreciated. Postharvest or processing themes are also within the scope of the prize.

Candidates must have obtained their PhD in the period between November 1, 2021 and September 30, 2023, and they should not exceed 35 years of age at the submission deadline, September 30, 2023.

More details on the foundation, the history of winners, and the criteria for submission can be found at the website: https://www.pcfruit.be/en/research-1/award-albert-soenen

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The world of Horticulture

Brazilian citrus industry: a sustainable production chain

Ana Claudia Costa Baratti, Maíra Ferreira de Melo Rossi and Alexandre Dias da Silva

The citrus industry in Brazil is of global importance. In 2019, Brazil was the second largest citrus producer, with 19.65 million tons, and the largest producer of oranges, with 17.07 million tons (FAO, 2020) (Figure 1).

Oranges produced in Brazil are used for both juice production and the fresh fruit market. However, the majority of the production is exported as frozen concentrate orange juice (FCOJ) (Mergulhão, 2018). Brazil is the largest producer and exporter of this commodity, processing approximately 10.15 million tons (FAO, 2020). The main markets for FCOJ are Europe (57.5%), the United States (30.0%), China (6.8%), Japan (2.4%) and Australia (1.0%) (CitrusBr, 2023).

While the volumes are much smaller, NFC (not from concentrate) orange juice has been rapidly gaining market share. The main difference between these two products lies in the water content, as NFC is exported in its natural state, while FCOJ is approximately five times more concentrated than NFC juice. It is estimated that three out of every five glasses of orange juice consumed worldwide were produced in Brazilian orchards (CitrusBr, 2023).

Most orange juice processing industries are located in the citrus belt (São Paulo and southeast of Minas Gerais state). Over the past 30 years, the cultivated area for citrus in this region has declined by approximately 40% as a result of Greening or Huanglongbing (*Candidatus liberibacter*), a disease first reported in Brazil in 2004. Fortuitously, with the high level of technology employed in orchards, combined with increased planting density, consistently high yields have been achieved without compromising the sustainability of the sector (Guerreiro Neto, 2019).

The sustainability of citrus farming is understood as an economic, agricultural and industrial process that provides food (fruit and juice), supports local economies (communities) and the national macroeconomy, generates direct and indirect employment, and provides income across all social strata, while also preserving natural resources by reducing environmental impacts. This is achieved through the use of selective pesticides, bioinsecticides, natural predators, and a reduction in the use of water, chemical pesticides and fossil fuels (Fundecitrus, 2018).

In 2020, the Fundecitrus (Fund for Citrus Protection) conducted a groundbreaking study aimed at quantifying the areas dedicated to preserving native vegetation and biodiversity within the citrus belt. The research revealed that while 459,060 ha were planted to citrus, some 181,750 ha were protected areas. This means that for every 2.52 ha cultivated in citrus, 1 ha is dedicated to environmental preservation (Fundecitrus, 2020) (Figure 2).

Citrus is a perennial plant. This facilitates and promotes the preservation of flora and fauna by creating favorable conditions for the establishment of wildlife. Citrus plants have a productive lifespan of about 20 years, so there is little need to clear forests, which contributes to the stability of forests and the safety of animals. Citrus farming also provides food for birds and animals (Fundecitrus, 2020).

These protected areas contribute to the maintenance of biodiversity and aid in the preservation of pollinator species, such as bees. The presence of these pollinators generates significant financial returns for the producers by increasing the quantity and quality of the fruit produced. Furthermore, data from the Brazilian Institute of Geography and Statistics (IBGE) indicates that approximately 80% of honey production in the state of São Paulo occurred in municipalities within the citrus belt (IBGE, 2023).

Figure 1. Oranges harvested in a Brazilian orchard.

Figure 2. Orchard of citrus fruits near a conservation area.

Figure 3. Yellow adhesive trap for monitoring the population of the citrus psyllid (*Diaphorina citri*).

In the state of Minas Gerais, the second-largest citrus producing area in Brazil, a study identified 12 species of bees in an orange orchard and 20 species in a tangerine orchard. The predominant species were *Apis mellifera* and *Trigona spinipes* in orange orchards, and *A. mellifera*, *T. spinipes*, and *Tetragonisca angustula* in tangerine orchards. The preservation of these species is important for pollination, which is why, during the flowering periods, producers avoid the application of pesticides (Nascimento et al., 2011).

The path to sustainable citrus farming involves improving orchard management practices to maintain their health, in line with modern production trends that are more resource-efficient and environmentally friendly. Precision agriculture is an important tool for citrus growers in the current context, as it increases efficiency through proper management and aids in technical sustainability by mapping productivity and assisting in decision-making. Recognizing the spatial variability in crops due to factors such as fertility, productivity, and tree eradication-related issues allows for increased profitability (Molin et al., 2012).

Plant health problems are the greatest challenge for sustainability in citrus cultivation. In 2022, the average incidence of orange trees with symptoms of greening in the citrus belt was 24.4%, which corresponds to approximately 48.67 million diseased trees (Fundecitrus, 2022). The management of greening on citrus properties involves the control of the psyllid (*Diaphorina citri*), the disease vector, and the immediate eradication of symptomatic plants in the field, which significantly increases production costs and compromises the economic viability of the activity (Paiva and Yamamoto, 2019; Vechia et al., 2019).

Scientific research has been focused on developing strategies for growers to maintain the productivity and viability of their orchards while minimizing their environmental impact. Several measures for sustainable crop protection management have been developed in citrus farming. The use of traps for pest monitoring is one such tool, considered to be cost-effective and highly efficient in monitoring and controlling pests such as the citrus fruit borer (*Gymnandrosoma aurantianum*) and psyllids (Figure 3). With more precise information about the presence of these insects in the orchard, growers can spray at the right moment, thereby increasing the efficiency of applications. Insecticides developed from natural compounds, such as bioinsecticides for psyllid control, are another example of sustainable tools (Arnosti et al., 2019). In 2017, the first bioinsecticide for controlling the psyllid *Diaphorina citri* was launched. The product was the result of a research partnership between the Luís de Queiroz College of Agriculture (ESALQ-USP), Fundecitrus and Koppert, a leading global company in biological control and natural pollination. The research led to the selection of the entomopathogenic fungus *Isaria fumosorosea* for this purpose.

Another bioinsecticide under research uses a plant known as “pimenta de macaco” (*Piper aduncum*). This substance is already used in other crops and has shown potential for psyllid control in tests. However, due to the risk posed by citrus greening disease, it is not possible to neglect control measures, and currently, chemical applications remain the most effective method (Volpe et al., 2018).

Significant advancements have also been made in the application technology for pest and disease control, such as for the psyllid and citrus leprosis (*Citrus leprosis virus*). Over

Figure 4. Orange orchard in the citrus belt (São Paulo and southeast of Minas Gerais state).

the past decade, research has made it possible to reduce the use of insecticides and to lower the spray volumes. These advancements have improved not only the control of psyllids and leprosis, but also black spot (*Phyllosticta citricarpa*), blossom rot (*Colletotrichum acutatum* and *C. gloeosporioides*), and more recently, the prevention of citrus canker (*Xanthomonas citri* subsp. *citri*). These developments have made applications more targeted, reducing the waste of pesticides and water, and delivered benefits for citrus growers, the soil, and protected water sources and groundwater from contamination. It is now possible to reduce water usage by up to 70% and costs by 58% in the control of citrus canker, with similar benefits arising from the more effective control of psyllids and blossom rot, black spot and leprosis (Fundecitrus, 2015).

There has been a conceptual shift in the calculation of the quantity of pesticides applied to target areas. Previously, the measurement used was liters per hectare (L ha^{-1}), but this resulted in significant waste. As the density of orchards increased, with the need to lower costs and minimize impacts, it is more intelligent to use milliliters per cubic meter of canopy (mL m^{-3}). This change has led to a 30% increase in operational efficiency, resulting in reduced diesel consumption and a decrease in CO_2 emissions (Scapin and Ramos, 2017).

The citrus belt is the only major production area that has been able to maintain productivity despite the presence of citrus greening disease (Figure 4). This can be attributed to the intelligent model and set of crop protection measures that have been developed and exported to various countries where the disease affects production, as well as to regions that are currently free from the disease. The expertise and knowledge gained from managing citrus greening in these regions has allowed effective control and mitigation strategies to be implemented, ensuring continued productivity and success in citrus cultivation.

Figure 5. High-quality orange fruits harvested in Brazilian orchards.

Other concepts that have revolutionized the control of the psyllid responsible for transmitting citrus greening have included the regional Crop Protection Alert System, an online system developed by Fundecitrus based on a network of georeferenced yellow sticky traps. Through the monitoring of the psyllid population, this system has led to considerable gains for small and medium-sized producers who now apply treatments only when necessary and in collaboration with neighboring farmers (Fundecitrus, 2023).

External management actions for greening involve mapping areas that are known to have psyllid breeding sources and greening contamination within a radius of at least 5 km from the property and implementing disease control measures in these locations. In this context, the release of *Tamarixia radiata*, a small wasp that is a natural predator of the psyllid is included (Milosavljević et al., 2021).

Agricultural processing industries must also adhere to the three pillars of sustainability: economic, social, and environmental. The utilization of by-products enables the complete use of the fruit, including the peel, pulp and seeds. These parts give rise to by-products such as animal feed and essential oils, which are used in the pharmaceutical and cosmetic industries. The utilization of all these parts promotes environmental preservation, as it prevents the disposal of solid waste into the environment (Pereira et al., 2022).

Another by-product is D-limonene, obtained from the citrus peel, which has high added value. Composed of fermentable sugars and low lignin content, it can be used for bioethanol production and in the food industry. Pectin, also derived from the peel and albedo of oranges, is widely used in the food industry as a stabilizer, thickener and gelling agent (John et al., 2017).

The citrus belt (São Paulo and southeast of Minas Gerais state) has the necessary conditions to maintain its status as a global benchmark in productivity and sustainability (Figure 5). The favorable climate and soil, along with modern infrastructure, contribute to this success. Additionally, the citrus sector benefits from two globally renowned institutions, Fundecitrus and CitrusBr. The expertise of citrus growers and the orange juice industry are also key differentiators in this sector, coupled with strong and dedicated scientific research aimed at proposing solutions for this product chain.

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Alexandre Dias da Silva is pursuing his PhD degree in Horticulture at Federal University of Lavras (UFLA), Brazil, with part of the research developed at Washington State University (WSU), USA. The focus of his PhD research is on innovative berry production. He obtained an M.S. degree in Horticulture at UFLA focusing on citrus seedling production in hydroponic systems. He also got a B.S. in Agronomy at UFLA, with an undergraduate exchange program at Technical University of Madrid (UPM), Spain. E-mail: alexandrediasufla@gmail.com

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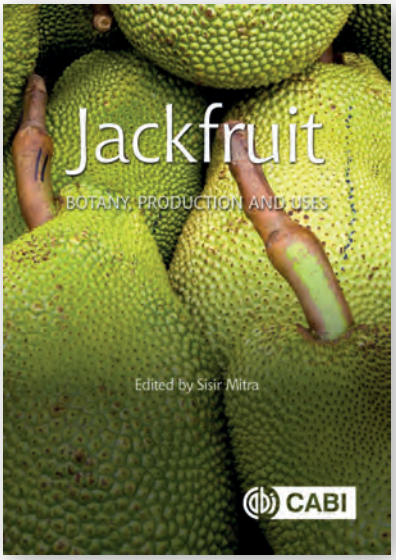

Mitra, S., ed. (2023). Jackfruit – Botany, Production and Uses (Wallingford, Oxfordshire, UK; Boston, MA, USA: CAB International), pp.296. ISBN 978-1-80062-229-6 (hardback) / 978-1-80062-230-2 (ePDF) / 978-1-80062-230-2 (ePub). £125.00 / $170.00 / €145.00 (hardback).

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This informative text on Jackfruit, *Artocarpus heterophyllus*, a fruit well known in the tropics but still relatively unknown in western temperate climates, is an excellent addition to the CABI library on tropical fruit.

Emeritus Professor Mitra, Faculty of Horticulture and Dean of Bidhan Chandra Krishi Viswavidyalaya (State Agricultural University, West Bengal, India) has brought together leading experts from India, Sri Lanka, Malaysia, Vietnam, the Philippines and Japan to share their knowledge on a traditional and valued fruit crop in the Asian subcontinent.

Jackfruit, a syncarp or composite fruit, a member of the *Moraceae* family and perhaps the most widely grown species in the genus *Artocarpus*, produces large edible fruit ranging from 5-12 kg in weight, but with many examples of fruit in the 12-30 kg range and reports of fruit up to 80 kg. Jackfruit would have been the ideal choice for the "Garden of Eden" for, as traditional users can attest, every part of the tree can be used to provide human sustenance (fruit and seed), furniture, musical instruments (wood), medicinal remedies and reportedly aphrodisiac properties (leaves, bark, latex, fruits and roots). Other relatively well-known species in the genus include breadfruit (*A. altilis*), chempedak (*A. integer*), marang or terap (*A. odoratissimus*) and monkey jack (*A. rigidus*). For the *Artocarpus* species collector, we should also include lakoocha (*A. lacucha*), kwai muk (*A. hypargyreus*) and keledang (*A. lanceifolius*).

The book chapters, thirteen in total, guide the reader through the traditional topics for a specialist fruit text. These include an introduction to the botany, origin, history and world production; composition and uses; breeding and varieties and biotechnology. Chapters on production and management include propagation, orchard management, nutrition and irrigation, flowering, fruit set and fruit development. The book ends with detailed chapters on physiological disorders, pests, diseases and postharvest management.

A biotechnology chapter discusses the fact that jackfruit freely crosses with several species including *A. integer*, *A. lanceifolius* and *A. rigidus*, resulting in a number of hybrids. Biotechnology based tools such as marker assisted selection in conjunction with sound morphological indicators offer prospects for crop improvement once the challenge of confirming genes responsible for desirable and undesirable fruit quality traits is completed.

Despite extensive research and variety development in India, jackfruit selection outside of the Philippines, Vietnam, Malaysia and Thailand is relatively untapped. As a fresh fruit, variety abounds in aril colour from light yellow to deep orange/red, flavour, texture (soft and firm) and fruit size. Immature green fruits are used as a vegetable throughout India and South-East Asia. Jackfruit seeds, after boiling, can be consumed in a number of ways including fresh mashed and mixed with oil and herbs or dried, ground into flour or roasted and eaten as a salted nut. The chapter on "Processing and products" details the many unique postharvest processing options for various fruit components.

Additional information on different cultivation and management practices of jackfruit, in different parts of the world, would have been informative given the fact that the crop is commercially produced across a diverse range of environments and climatic conditions. I am sure it was not for lack of trying by Professor Mitra. Perhaps a new chapter for the 2nd edition of the book?

Congratulations to Professor Mitra and the contributing authors for an informative tome. Readers, both experienced with and those new to the fruit will gain considerable knowledge from the material presented in the book as well as the extensive references provided by the chapter authors. Given the increasing popularity of jackfruit in the temperate western word where it is favoured by vegetarians and vegans as a meat substitute, its consumption and hence commercial production is likely to increase.

Reviewed by Yan Diczbalis, Centre for Wet Tropics Agriculture, Department of Agriculture and Fisheries, Australia

› III International Symposium on Beverage Crops

Division Postharvest and Quality Assurance	#ishs_dphq
Division Horticulture for Human Health	#ishs_dhea
Division Temperate Tree Fruits	#ishs_dfru
Division Tropical and Subtropical Fruit and Nuts	#ishs_dtro
Division Vegetables, Roots and Tubers	#ishs_dveg
Division Vine and Berry Fruits	#ishs_dvin

Researchers from 13 countries took part in the III International Symposium on Beverage Crops, held in Murcia, Spain, from April 24-27, 2023, organised by the University of Murcia, the Murcia Institute for Agricultural and Environmental Research and Development (IMIDA), and the Spanish Research Council Centre at Murcia (CEBAS-CSIC) under the aegis of the International Society for Horticultural Science. Over 70 people attended the event, with 32 oral and 26 poster presenters from 20 different countries (Spain, Colombia, Italy, Australia, Portugal, USA, Thailand, South Africa, Canada, Mexico, Chile, Argentina, Norway, Slovenia, Japan, Kazakhstan, Virgin Islands, Korea, Romania and Hungary). Six plenary lectures were presented by Dr. Daniele del Rio (University of Parma, Italy), Dr. Bruno Holzapfel (Wagga Wagga Agricultural Institute, Australia), Dr. Katalina Muñoz (Vidarium, Health and Wellness Research Centre, Grupo Nutresa, Colombia), Dr. Julian Londoño (University of Antioquia, Colombia), Dr. Robert Soliva-Fortuny (University of Lleida, Spain) and Dr. Fernando Zamora (University of Tarragona, Spain).

› Symposium organizers. From left to right: Cristina Garcia-Viguera, Encarna Gómez-Plaza, Rocio Gil Muñoz and Sonia Medina.

The symposium was inaugurated by Mr. Pascual Cantos Gómez (Vice-rector of Internationalisation of the University of Murcia), Mr. Andrés Martínez Bastida (Director of IMIDA), Mr. Juan José Alarcón (Director of CEBAS-CSIC) and Dr. Encarna Gómez-Plaza (symposium convener).

The aim of the symposium was to bring together researchers, teachers, students and entrepreneurs from both applied and industrial research and development and innovation, as well as basic research in the areas of agri-food and health, related to horticulture, fruit growing, viticulture, agricultural and food sciences: including food, nutrition, bromatology and health.

This international event presented the latest research in fields related to plant-based beverages, the crops and raw materials for obtaining them, and provided a platform for interaction and strengthening of knowledge networks with colleagues and researchers from all over the world.

The programme of activities, organised for both the participants and their companions, consisted of a welcome wine tasting at the Molinos del Rio (a site of historic-artistic interest), presented by Mr. Jose Antonio Serrano Martínez (Mayor of Murcia) and Dr. Rocio Gil Muñoz (symposium convener). A guided tour of the city was also offered, followed by a complimentary dinner at La Bodeguita de Javier Gracia. A visit to the historic winery “Bodegas Luzón” at Jumilla was also undertaken.

During the gala dinner held at the Royal Casino of Murcia, two Young Minds Awards for junior scientists were presented by ISHS. Zobabalo Mina, a student from the University of Johannesburg, South Africa, was the

› Terence Bradshaw (left) and Bruno Holzapfel (second from left), Chair and former Chair of ISHS Working Group Beverage Crops, and María Dolores López-Belchí from the University of Concepcion, Chile (second from right) presenting the ISHS Young Minds Award for the best oral presentation to Zobabalo Mina (right).

› Terence Bradshaw (left), Chair of ISHS Working Group Beverage Crops, and María Dolores López-Belchí from the University of Concepcion, Chile (center) presenting the ISHS Young Minds Award for the best poster to Lorena Sánchez-Martínez (right).

winner for the best oral presentation entitled “Effect of freeze drying, oven drying and their combinations on energy conservation and quality of carrot slices”, and Lorena Sánchez-Martínez, a student from the University of Murcia, won the award for the best poster entitled “Role of (poly)phenols-rich products on oxidative stress and inflammatory biomarkers associated with cardiometabolic risk in postmenopausal women”. In addition, another prize was awarded to the second best oral presentation. The prize, a book donated by Burleigh Dodds Science Publishing (Cambridge, UK), was given to Paula Pérez-Porras, University of Murcia, for her presentation entitled “Study of the evolution of value-added red wine made from grapes treated with high-power ultrasounds”.

On the last day, the ISHS business meeting was held and the new Chair of ISHS Working Group Beverage Crops, Dr. Terence Bradshaw, was confirmed by the participants. It was decided that the IV International Symposium on Beverage Crops would be organized by Professor Olaniyi Amos Fawole in 2026 at the University of Johannesburg in Stellenbosch, South Africa. The symposium was closed by Dr. Bruno Holzapfel, former Chair of ISHS Working Group Beverage Crops, and Dr. Cristina García-Viguera, symposium convener.

Cristina Garcia-Viguera, Encarna Gómez-Plaza and Rocio Gil Muñoz

› Participants visiting the winery Bodegas Luzón at Jumilla, Murcia.

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VII International Conference Postharvest Unlimited and XII International Symposium on Postharvest Quality of Ornamental Plants

Division Postharvest and Quality Assurance #ishs_dphq
Division Ornamental Plants #ishs_dorn

On May 14-17, 2023, the VII International Conference Postharvest Unlimited and the XII International Symposium on Postharvest Quality of Ornamental Plants were held alongside each other (for the first time) in joint and parallel sessions. The event took place in Wageningen, The Netherlands, in the Omnia Congress Center at the Wageningen University and Research campus. The event attracted close to 300 participants from around 40 countries. The event was organized by Wageningen University and Research departments (Wageningen FBR – Postharvest Technology group; Wageningen Plant Sciences – Horticulture and Product Physiology group; and Wageningen Plant Sciences – Plant Breeding group) and kindly sponsored by Enza Seeds (gold sponsor), Photondelta, Janssen PMP, Chrysal International, Van Amerongen, Contronics (silver sponsors), Optiflux, perClass, PhenoVation, Umweltanalytische Produkte, Bareiss, AgroFair, FloraLife and Rijk Zwaan (bronze sponsors).

› Part of the Organizing Committee (from left to right: Ernst Woltering (Convener), Julian Verdonk, Suzan Gabriels) and Fisun Çelikel, Chair of ISHS Working Group Quality of Ornamentals.

› Students who helped organizing the symposia.

Excursions were organized at the campus of Wageningen University & Research to state-of-the-art research facilities in postharvest physiology, technology, vision and robotics (Phenomea), the newly constructed automated plant phenotyping facilities (NPEC) and the experimental greenhouses and Phytotrons (over 100 independently fully controlled compartments) (Unifarm).

Keynote and invited speakers in the plenary sessions discussed a variety of subjects such as the contribution of postharvest management to the prevention of fresh food losses in the value chain (Toine Timmermans); the universal role of programmed cell death in the postharvest senescence and deterioration of fruit, vegetables and flowers (Ernst Woltering); the use of big data and digital twins as a management tool to better predict the quality and remaining shelf life at

any time in the value chain (Thijs Defraeye); the latest developments and equipment in plant and product phenotyping (Rick van de Zedde); and kinetic pathway modelling integrating metabolomics as part of postharvest systems biology (Bart Nicolaï).

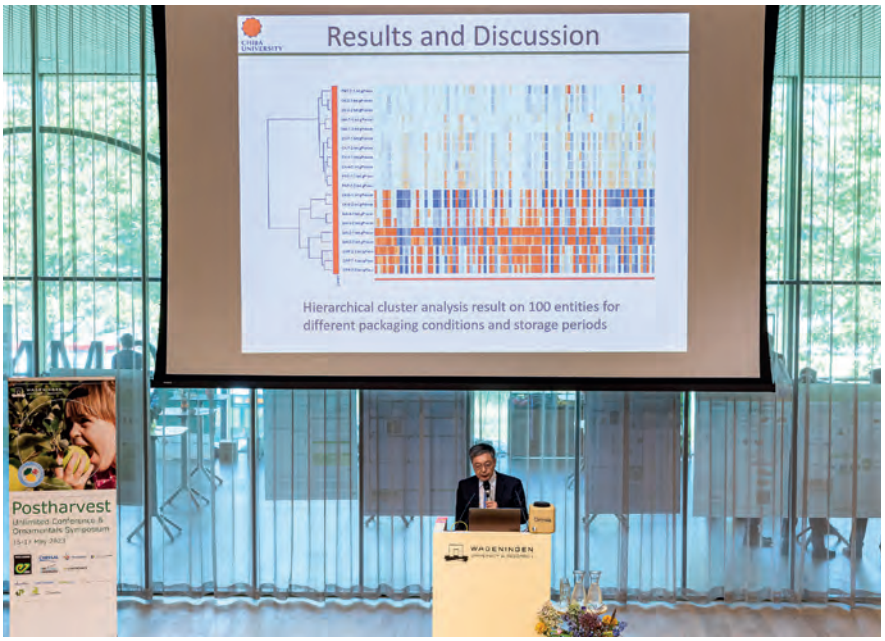
Postharvest Unlimited sessions discussed physiology of ripening and product deterioration; postharvest pathology; quality measurements; preharvest treatments; chilling injury and disorders; packaging and coatings; and storage and technology through 110 oral presentations. Some 25 papers discussed the Postharvest Quality of Ornamental Plants. In addition, some 75 posters were displayed.

ISHS Young Minds Awards for best oral and poster presentations were presented by Dr. Sukhvinder Pal Singh, Vice-Chair of ISHS Division Postharvest and Quality Assurance, and Prof. Dr. Fisun G. Çelikel, Chair of ISHS Working Group Quality of Ornamentals. Winners were Dr. Danielle Duanis-Assaf from the Hebrew University of Jerusalem, Israel, for 'dsRNA as a promising eco-friendly treatment to control postharvest diseases' (best oral presentation, postharvest unlimited); Dr. Alice Varaldo from the University of Turin, Italy, for 'Blueberry (*Vaccinium corymbosum* L.) postharvest UV-B treatments induce changes in bioactive compounds and reduce weight losses during cold storage' (best poster, postharvest unlimited); and Dr. Suong Tuyet Thi Ha from Andong National University, South Korea, for 'Roles of ethylene in regulating the susceptibility of cut roses to *Botrytis cinerea*' (best oral presentation, postharvest quality of ornamental plants). We extend our congratulations to the winners.

The Organising Committee would like to thank all participants for their excellent talks and amicable (networking) atmosphere. We also extend our thanks to the many PhD students from Wageningen who provided their assistance for the duration of the event.

The next International Conference Postharvest Unlimited and International Symposium on Postharvest Quality of Ornamental Plants will be organised in Bangkok, Thailand, in 2027. We look forward to seeing you there!

Ernst Woltering and Rob Schouten



› Takeo Shiina presented his findings in a lecture entitled "Transcriptome analysis of the effect of packaging conditions on the quality of edamame".

› Convener Ernst Woltering (right) and Suzan Gabriels from the Organizing Committee (center) presenting the ISHS Young Minds Award for the best oral presentation at the XII International Symposium on Postharvest Quality of Ornamental Plants to Suong Tuyet Thi Ha (left).

› Convener Ernst Woltering (right) and Co-convener Rob Schouten (center) presenting the ISHS Young Minds Award for the best oral presentation at the VII International Conference Postharvest Unlimited to Danielle Duanis-Assaf (left).

› Alice Varaldo, winner of the ISHS Young Minds Award for the best poster at the VII International Conference Postharvest Unlimited.

› Participants enjoying the symposium dinner.

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› VII International Symposium on Applications of Modelling as an Innovative Technology in the Horticultural Supply Chain (Model-IT 2023)

Division Postharvest and Quality Assurance **#ishs_dphq**

The VII International Symposium on Applications of Modelling as an Innovative Technology in the Horticultural Supply Chain (Model-IT 2023) was held from June 11-14, 2023, at the Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB) in Potsdam, Germany. The symposium covered a wide range of topics related to modelling, simulation, and digitization in horticulture including growth models and postharvest processes. Sessions were organized on production processes, sensor data analysis, digital transition, gas exchange models, simulation of packaging and storage conditions, non-destructive assessment in packaging, and model-based process control.

The symposium highlighted the importance of using modelling and simulation for optimizing yield, fruit quality, energy conservation, as well as advancing decision support systems in horticulture. The symposium showcased the economic potential of modelling as an innovative methodology in horticultural supply chains and emphasized the importance of integrating digital tools and techniques for improved productivity and sustainability in the horticulture industry. The event provided a platform for researchers, experts and industry professionals to exchange knowledge, present their findings, and discuss the latest advancements in the field.

The keynote speeches at the Model-IT symposium covered a range of fascinating topics. Dr. Reiner Jedermann focused on modelling for digital twins in horticulture and real-time prediction using live sensor data. Prof. Bodo Bookhagen explored the application of multi-

› Participants of the symposium.

› Convener Dr. Manuela Zude-Sasse (left) presenting the ISHS Young Minds Award for the best oral presentation to Raquel Lozano (right).

› Convener Dr. Pramod V. Mahajan (left) presenting the ISHS Young Minds Award for the best poster to Akshay Dagadu Sonawane (right).

scale point cloud data using LiDAR and structure-from-motion techniques in the environmental sciences. Prof. Bart Nicolaï discussed multiscale modelling of postharvest storage processes, aiming to optimize storage conditions and maintain product quality. Prof. Tsu Wei Chen delved into modelling canopy photosynthesis of greenhouse crops, exploring ways to optimize greenhouse environments and maximize crop yield. These keynote speeches provided valuable insights into data-driven decision-making, emerging technologies, and their applications in the horticultural supply chain, emphasizing the importance of optimization, sustainability, and improved productivity.

Forty oral communications and 28 poster presentations followed in eight sessions dedicated to different themes, ranging from models for postharvest processes to sensors and digital transition in horticulture, model-based process control, modelling and simulation of packaging and storage, and non-destructive assessment. Among the participants, 21 scientists applied for the ISHS Young Minds Awards. A jury awarded Ms. Raquel Lozano from the School of Food and Advanced Technology, Massey University, New Zealand, with the ISHS Young Minds Award for the best oral presentation for her work on the weight loss of kiwifruit in packaging systems using the Monte Carlo approach. Similarly, Mr. Akshay Dagadu Sonawane from ATB, Germany, was honoured for the best poster, which presented his work on modelling ethylene scavengers for fruit packaging. Both happily and proudly received their awards at an evening event, during which the participants were able to explore Potsdam by boat. On the last day, a tour of the ATB's research laboratories and pilot plants rounded off the intense discussions.

In relation to ISHS Working Group Modelling of Postharvest Processes, Prof. Giancarlo Colelli has officially concluded his tenure as Chair, whereas Dr. Manuela Zude-Sasse has been elected as the new Chair. Stellenbosch University in South Africa has been chosen to host the upcoming Model-IT 2027 symposium, with Dr. Oluwafemi James Caleb serving as the convener.

Pramod V. Mahajan

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› Mr. Akshay Dagadu Sonawane (left) explaining ethylene measurement and modelling to the symposium participants during the lab tour.

› Prof. Giancarlo Colelli, Chair of ISHS Division Postharvest and Quality Assurance, congratulating Dr. Oluwafemi James Caleb, Convener of Model-IT 2027 (left) and Dr. Manuela Zude-Sasse, new Chair of ISHS Working Group Modelling of Postharvest Processes (right).

First International Symposium on Growing Media, Compost Utilization and Substrate Analysis for Soilless Cultivation

Division Protected Cultivation and Soilless Culture #ishs_dpro
Division Vegetables, Roots and Tubers #ishs_dveg

The ISHS-IPS First International Symposium on Growing Media, Compost Utilization and Substrate Analysis for Soilless Cultivation was held in Québec city, Canada, from June 11-15, 2023, in parallel with the larger Reclaim, Restore, Rewild (RE3) symposium. The combined event brought together 807 participants from different organizations and international societies involved in peatland and wetland restoration, reclamation and rewilding. Eighty-seven participants attended the ISHS-IPS symposium, which had a general theme of 'Growing media for circular horticulture'. In addition to the three days of oral and poster presentations, three days of tours were organized, starting on June 11 with a tour on organic soil use and restoration for field vegetable production. A second tour on peatlands and restoration practices or on the general use of growing media in cannabis, green roof, filtering and strawberry production was held on June 14. On June 16, a third tour went to composting facilities in Lévis, near Québec city. A joint one-day symposium between the International Society for Horticultural Science (ISHS) and the International Peatland Society (IPS) was also organized to present the principles and processes in conserving and restoring peatlands and organic soils, to limit the impact on the use of peat by the growing media industry.

With respect to peat in growing media, two opposite trends were observed: in Europe, policies to ban the use of peat are increasing, with no clear alternative to peat and an increasing demand for growing media. In North America, although limited peat bogs are used for the manufacture of growing media, there is increasing pressure for peat-free products, and significant research efforts are being made to find alternatives and mitigate peat use. Very important efforts are being made also to restore the ecological functions in peat bogs and to maintain productive agricultural soils already intensively used. Among scientists, there was consensus on wood based alternative products, but

› James Altland (right), Chair of ISHS Working Group Substrate Analysis, presenting the ISHS medals to the Conveners, Jean Caron (center) and Jacynthe Dessureault-Rompré (left), at the closing ceremony.

› Some members of the scientific committee at the closing ceremony. From left to right: first row: Bart Vandecasteele, Steeve Pepin, Jean Caron, Jean-Charles Michel; second row: Youbin Zheng, Tommaso Barbagli, Chris Blok, Guillaume Grégoire, Martine Dorais, Jacynthe Dessureault-Rompré.

› Some of the attendees at the closing ceremony.

› Éric Beaudet (left) and Chris Blok (right) looking at different growing media for green roofing at Laval University.

› Dianna Kopansky from the Global Peatland Initiative presenting the ISHS Young Minds Awards to A) Stan Durand for the best oral presentation, B) Raphaël Deragon for the best poster.

promising alternatives such as miscanthus and biochar are also emerging. With respect to methodological developments, gold standards for soil physics and chemistry have been updated and are available, but there is still a lack of knowledge and standards on microbiological aspects and respiratory processes taking place in growing media. Alternative uses for growing media continue to be developed for use in green cities (Technosol) as well as for bio-filters and green roofing. The application of soilless growing techniques for new crops was also presented. Considerable discussion took place around the research needed on organic forms of nitrogen, phosphorus and potassium.

ISHS Young Minds Awards were given to Stan Durand from AgroCampus Ouest, France, for the best oral presentation entitled "Peat shrinkage during drying according to particle size", and Raphaël Deragon from Laval University, Québec, Canada, for the best poster entitled "Discriminating stratigraphic layers of cultivated organic soils using proximal sensors". The organizing committee also gave second and third place awards to Talal Asif (2nd place, oral presentation) and Adam Barrada (3rd place, oral presentation), both from Laval University, and to Florence Carrier (2nd place, poster) and Karolane Bourdon (3rd place, poster), also from Laval University.

The II International Symposium on Growing Media, Compost Utilization and Substrate Analysis for Soilless Cultivation is planned to be held on September 7-12, 2025, at Weihenstephan-Triesdorf University of Applied Sciences, in Freising, Germany, with Dr. Dieter Lohr convening. We look forward to seeing you there!

Jean Caron and
Jacynthe Dessureault-Rompré

› Contact

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› IX International Cherry Symposium

Division Temperate Tree Fruits #ishs_dfru

After having experienced the worldwide impact of the COVID-19 pandemic for the last three years, the IX International Cherry Symposium was successfully held in Beijing, China from May 21-25, 2023. In total, 277 participants attended the event, including 217 domestic and 60 international participants. Some 224 were present in-person with 53 virtual participants.

The topics of the symposium included the following aspects: international production, markets, and economics; breeding, genetics, and genomics; rootstock and variety evaluation; orchard production systems, management, and technologies; soil, nutrient, and water research, management and technologies; tree physiology and reproductive biology; pest and disease management; and postharvest technologies and processing. More than 160 abstracts were received resulting in 61 oral and 100 poster presentations. The papers presented the most recent progress in international cherry research and industry development, especially in the sessions "Breeding, genetics, and genomics", "Orchard production systems, management, and technologies", and "Tree physiology and reproductive biology".

The winners of the ISHS Young Minds Awards at the symposium were:

- Yan Wang from Sichuan Agricultural University, China, for the best oral presentation entitled "Integrated transcriptome and metabolome analyses provide insights into the coloring mechanism of red and yellow fruits in Chinese cherry [*Cerasus pseudocerasus* (Lindl.) G. Don]";
- Melissa Venturi from the University of Bologna, Italy, for the best poster entitled "*Prunus cerasus* and *Prunus avium*: a physiological comparison between the two species".

› The main venue of the IX International Cherry Symposium at Shunyi, Beijing.

This was the first time an International Cherry Symposium had been conducted in a hybrid way, with in-person and virtual participation. Despite the challenges presented by remote interaction and simultaneous translation, participants were able to communicate very effectively. The venue in Chengcheng County, Shaanxi Province, proved to be very attractive and brought a large audience to the symposium.

The symposium highlighted to the world the development of the Chinese cherry industry. China is the largest producer of cherry in the

› Winners of the ISHS Young Minds Awards: A) Yan Wang (best oral presentation), B) Melissa Venturi (best poster).

world in terms of not only cultivated area but also output. A technical tour of the Research Station of the Beijing Academy of Agriculture and Forest Science in Tongzhou District and three commercial cherry orchards in Shunyi District was arranged. Each of the visits demonstrated new cherry varieties and new technologies, especially unique greenhouse cultivation techniques.

Various activities such as the Beijing International Cherry Culture Festival, a cherry exhibition, and a cherry contest were also held during the symposium, which promoted the interaction between cherry producers, researchers and consumers, and popularized the cherry culture and knowledge, and vividly promoted the concept of "Horticulture makes life better".

The organizers and sponsors that contributed to the organization of the symposium included the Chinese Society for Horticultural Science (CSHS), Beijing Academy of Agriculture and Forest Sciences (BAAFS), Beijing Municipal Bureau of Landscapes and Forest, and Shunyi District Government and Chengcheng County Government of Shaanxi Province.

We look forward to seeing you at the X International Cherry Symposium in June 2025 in Wenatchee, WA, USA.

Kaichun Zhang

› A technical tour of the Research Station of the Beijing Academy of Agriculture and Forest Science.

› Contact

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› VIII International Symposium on Almonds and Pistachios

Division Temperate Tree Nuts #ishs_dnut

Over 120 almond and pistachio scientists and industry participants gathered between May 7 and 11, 2023, on the campus of the University of California Davis (UC Davis), USA, to deliver some 150 oral presentations and posters at the ISHS VIII International Symposium on Almonds and Pistachios. The meeting was convened by Drs. Tom Gradziel, Bruce Lampinen and Louise Ferguson, all members of the Department of Plant Sciences at UC Davis.

The simultaneous almond and pistachio symposium sessions included rootstock and scion improvement, physiology, irrigation and tree water use, and multiple orchard production sessions in a day designed specifically for California industry members to attend. Other topics included pest and disease management, orchard monitoring, modeling, and climate change.

› Conveners Dr. Louise Ferguson (second from left) and Dr. Bruce Lampinen (right) with major symposium sponsors, Dr. Robert Klein of the California Pistachio Research Board (left) and Dr. Sebastian Saa of the California Almond Board (second from right). Photo by Louise Ferguson.

› Participants of the symposium. Photo by Louise Ferguson.

A full day field tour included stops at pistachio and almond orchards including Dr. Lampinen's young pistachio tree training trial, and a major pistachio and almond producer, the Strain Ranch, where the manager, Jonathan Battig, explained their cultivar, rootstock, and canopy management investigations. Sierra Gold Nursery, a major producer of California pistachio and almond rootstocks, hosted a lunch prepared by their East Indian staff and organized a tour of their rootstock seed production, tissue culture and container production. The field tour concluded with a reception hosted by Tomra Sorting Solutions and a multi-screen demonstration of their newest postharvest sorting technology by Brendan O'Donnell, Global Director.

There were 24 competitors for the ISHS Young Minds Awards. The winners were Giorgio Gusella from the University of Catania, Italy, for the best oral presentation entitled "Compendium of pistachio diseases in Italy" and Emily Santos from UC Davis for the best poster presentation entitled "Impact of branch crop load on pistachio nut growth and ripening". Please read the summaries of their research in this issue.

The symposium concluded with a business meeting conducted by Dr. Giulia Marino, Chair of ISHS Division Temperate Tree Nuts. It was decided that the IX International Symposium on Almonds and Pistachios would be convened in 2026 by Dr. Xavier Miarnau and colleagues from the Department of Arboricultura Mediterrania at IRTA Centro Mas Bové in Lleida, Spain.

Dr. Maria Jose Rubio-Cabetas from CITA Aragon in Zaragoza, Spain, was appointed new Chair of ISHS Working Group Almond and Pistachio.

A final gala dinner was held outside under olives and stars where international friends and scientists from California, Spain, Australia, France, Portugal, Iran, and Armenia promised to meet again in 2026 in Lleida, Spain.

› Winners of the ISHS Young Minds Awards: A) Giorgio Gusella (best oral presentation), B) Emily Santos (best poster).

In concluding, we thank our generous symposium sponsors without whom this meeting would not have been possible.

Louise Ferguson

› Contact

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› Sierra Gold Nursery staff showing Maria Jose Rubio-Cabetas, new Chair of ISHS Working Group Almond and Pistachio, how pistachio rootstock seed is processed for germination. Photo by Louise Ferguson.

› Jonathan Battig, manager at the Strain Ranch, explaining their cultivar, rootstock, and canopy management investigations. Photo by Louise Ferguson.

› VII International Chestnut Symposium

Division Temperate Tree Nuts #ishs_dnut

› Dr. Marco Defrancesco, winner of the ISHS Young Minds Award for the best oral presentation.

› Clement Larue, winner of the ISHS Young Minds Award for the best poster.

The VII International Chestnut Symposium was convened on Campus Terra, Universidade de Santiago de Compostela (USC), Lugo, Spain, from June 26-29, 2023. In attendance were 109 researchers undertaking work on chestnuts from Austria, Chile, China, Italy, France, Georgia, Hungary, Japan, Malaysia, Portugal, Slovenia, Spain, Switzerland and the USA. Our sponsors were Campus Terra, Xunta de Galicia, TRAGSA, Fundación Juana de Vega and Hifas da Terra.

The Scientific Committee was composed of researchers from China, France, Italy, Japan, North Macedonia, Portugal, Spain, Switzerland, Turkey and the USA. The program was organized around eight key topics. The first session: Chestnut and Climate Change, was chaired by Dr. Giovanni Gamba, University of Turin (UNITO), Italy, and included studies on precision farming, phenoclimatic modelling, osmoprotective compounds on freezing tolerance, on-farm evaluation of genotypes, and estimation of carbon stock. The second session: Chestnut Genomics, was chaired by Dr. Claudia Mattioni, National Research Council (CNR), Italy, and included studies on the identification of genes such as CmAP1, the homologous gene APETALA1, and Ginkbilobin2-like, and a new QTL for ink disease resistance. Other presentations discussed genomes, transcriptomic analysis, and a molecular diagnostic test. In the third session, chaired by Dr. Andrea Vannini, University of Tuscia (UNITUS), Italy, and Dr. Francois Lefort, Geneva *School* of Landscape, Engineering and Architecture (HEPIA), Switzerland, presentations discussed ink and blight diseases, brown rot (*Gnomoniopsis castaneae*), wasps and weevils, two new pathogenic fungi, *Neofusicoccum parvum* and *Neopestalotiopsis* sp., chestnut mosaic virus, and the fungal community associated with the ambrosia beetle (*Xylosandrus germanus)*.

The fourth session: Biodiversity and Conservation, chaired by Dr. Ángela Martín, University of Cordoba (UCO), Spain, included studies on chestnut heritage, biocultural biodiversity, ancient trees, genetic resources, and traceability.

In the fifth session on chestnut propagation, chaired by Dr. Beatriz Cuenca Valera, TRAGSA, Spain, the last advances in grafting, micropropagation, regeneration protocol, and certification were presented.

Dr. Jose Gomes Laranjo, University of Trás-os-Montes and Alto Douro (UTAD), Portugal, chaired the sixth session on population genetics and landscape conservation. Presenters discussed the introgression of foreign species, ancestry and parental analysis, the adaptation of trees to new agro-environments and tolerance to water stress and ink disease.

In the seventh session: Chestnut Breeding, chaired by Dr. Luca Dondini, University of Bologna (UNIBO), Italy, papers discussed the evolutionary rescue of American chestnut, improved selections for climate change, the performance of elite cultivars, conservation of the Ozark chinquapin through biotechnology, and the application of CRISPR/cas9 technology to chestnut breeding.

Finally, in the eighth session: Management or Physiology, chaired by Dr. Burak Akyuz, Ondokuz Mayis University (OMU), Turkey, and Dr. Gabriele Beccaro, UNITO, Italy, presenters discussed microbial biostimulants, burr growth, the evaluation of commercial products for the control of *Gnomoniopsis smithogilvyi* and *Cydia splendana*, the productivity of male-sterile chestnut trees, the phenolic profile of nuts, the impact of SiK in promoting tolerance against blight, thermohydrotherapy against gall wasp, and the impact of the cooking process, chemical and enzymatic methods on the sensory characteristics of chestnut.

The opening ceremony was celebrated with the presence of Prof. Emilio Carral Vilariño, Deputy Director of the Higher Polytechnic School of Engineering, USC, Mr. José Luis Chan Rodríguez, General Director of Forest Planning and Management of Xunta de Galicia, Prof. José Gomes Laranjo, Chair of ISHS Working Group Chestnuts, and Prof. Santiago Pereira-Lorenzo, Vice-Chair of ISHS Division Temperate Tree Nuts.

Three plenary lectures were delivered by Prof. José Gomes Laranjo, UTAD, Portugal, on "The world chestnut sector"; by Prof. Andrea Vaninnim, UNITUS, Italy, on "How the integration of different innovative solutions can improve the sustainability of chestnut fruit production and quality"; and by Prof. Burak Akyüz, OMU, Turkey, on the "Present and Future of Chestnut Production in Turkey".

The ISHS representative, together with the Convener, established a Special Committee to select the best oral and the best poster presentations by junior scientists. The ISHS Young Minds Awards were given to Dr. Marco Defrancesco, UNIBO, Italy, for the best oral presentation entitled "Development of a regeneration protocol for chestnut Italian cultivar 'Marrone di Zocca'" and to Dr. Clement Larue, INRAE, France, for the best poster entitled "Chestnuts are (entirely) insect-pollinated".

For the symposium tour, the participants visited TRAGSA's nursery in Maceda, Ourense, to observe the last updates on chestnut propagation and plant materials. On June 29, there was a second field trip to the valley "O Courel", organized by Mr. Orlando Álvarez with the Asociación Fonte do Milagro, the Fundación Uxío Novoneyra, the Rural Development Group and the Folgoso do Caurel Council. Participants visited the largest giant chestnut tree in the Iberian Peninsula (Horta Dorden), which is about 21 m of perimeter. In addition, they walked to the chestnut stand at Fundación Uxío Novoneyra. Later on, they visited the buildings ("sequeiros") where chestnuts are dried in Parada; and they attended a presentation on the "pisa da castaña" (removal of the pericarp after drying) by Asociación Fonte do Milagro. The field trip finished in Seceda, where the Rural Development Group and the Mayor of the Folgoso do Caurel Council received the participants. The main conclusion of the VII International Chestnut Symposium was that, even though considerable research on chestnuts has been undertaken, more efforts are still needed to secure the future of this species with climate change.

› Participants visiting the giant chestnut tree 'Dorden' (21 m of perimeter) in the valley O Courel.

In the business meeting, the University of Torino (Italy) was selected to hold the VIII International Chestnut Symposium.

Santiago Pereira-Lorenzo and Ana María Ramos-Cabrer

› Contact

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› Participants received by the Rural Development Group and the Mayor of the Folgoso do Caurel Council at the end of the field trip to the valley O Courel.

X International Pineapple Symposium

Division Tropical and Subtropical Fruit and Nuts #ishs_dtro

› Participants of the symposium.

The X International Pineapple Symposium was held in Uvero Alto, La Altagracia province, in the east of the Dominican Republic, from May 15-19, 2023. The symposium was organized by the Association of Pineapple Producers of Monte Plata (ASOPROPIMOP-LA), the Dominican Agricultural and Forestry Research Institute (IDIAF) and the German Corporation for International Cooperation (GIZ), under the auspices of the International Society for Horticultural Science (ISHS).

Some 200 participants from 26 countries and five continents provided an active audience during the symposium held at the convention center of the Ocean El Faro Hotel.

The central theme of the event was "Protection and management of biodiversity: a 21st century agriculture concern". Several presentations and some special panels addressed the value of biodiversity as a business strategy and its importance for innovations in the value chain of pineapple production, the agro environmental techniques, and the challenges and opportunities of using the *Ananas*-associated microbiome for crop management and diversity conservation. In this context, the importance of soil conservation management and the use of bio inputs were also emphasized. In the final session, a manual on ecological pineapple production for the Dominican production areas was launched.

Biotechnology, breeding, plant physiology, nutrition and protection were other areas addressed. Most of the work focused on MD-2 pineapples, but some dealt with varieties from the Queen and Pérola groups. In addition, it was shown that some new varieties of pineapple are in the final stages of development. Many of these have been

› Invited authorities and participants at the opening ceremony.

› Local folkloric dance at the opening ceremony.

developed for cultivation in semiarid and subhumid biomes in Brazil.

Several new products with potential to mitigate abiotic stresses of pineapple plants were described. However, many presentations were directed towards biotic stresses, mostly pests and diseases. Some talks presented new insights into the biology and control measures of traditional pests and diseases, such as mealybug associated wilt, nematodes and fruitlet core rot. Other studies focused on new pests, their importance, biology and potential control measures, showing the dynamics involved in the environments of pineapple fields.

Even though most of the studies referred to conventional pineapple crop management practices, enhanced with the use of synthetic inputs where the focus was on increasing productivity and fruit quality, there were some talks on agroecological and organic production systems being developed in some countries. These issues are likely to attract more attention in future symposia.

A different and rather opportune proposal was done in the opening lecture. Members of ISHS Working Group Pineapple, after discussion and a survey carried out online, demonstrated the importance, objectives and possible ways of constructing a network to increase, accelerate and intensify support and interactions between individuals and institutions for development and innovation in the pineapple industry. The authors know well the difficulties involved in transforming this proposal into reality, but are also enthusiastic. They mentioned the MusaNet as an example to follow, but are conscious that pineapple is not considered a staple food as is banana. However, it should be emphasized that the pineapple industry is present in more than 80 countries in all continents. With more than 28 million tons of fruit produced every year, the production value is worth billions of dollars and the industry provides employment for millions of people, especially those in the lower income classes.

› Proposal of AnanasNet being presented.

ISHS Working Group Pineapple held its traditional business meeting during the symposium. Obeying the criteria for alternating symposia among countries and continents, the XI International Pineapple Symposium will be held in Zhanjiyang city, Guangdong province, China, in 2026, by the South Subtropical Crops Research Center (SSCRI) of the Chinese Academy of Tropical Agricultural Sciences (CATAS).

Joelin Santos Contreras and Domingo Haroldo Reinhardt

› Contact

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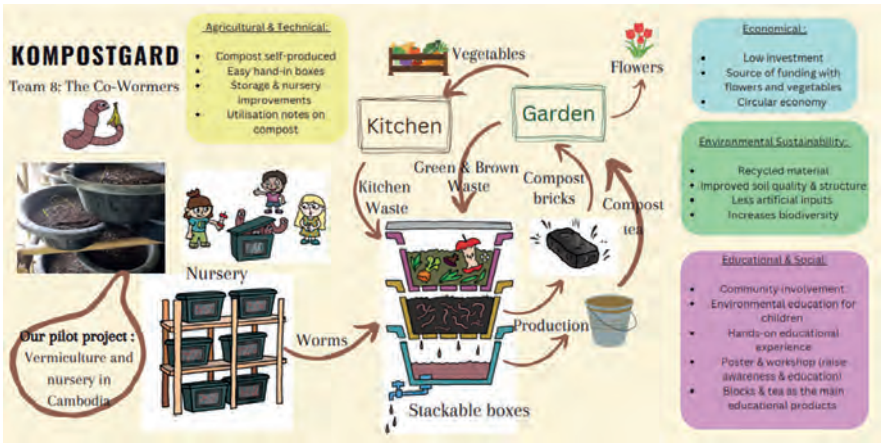
› UrbanFarm2023 – International Student Challenge

Division Landscape and Urban Horticulture **#ishs_durb**
Division Protected Cultivation and Soilless Culture **#ishs_dpro**

The fifth edition of the International Student Challenge, UrbanFarm, organized by the University of Bologna, recently concluded. Interdisciplinary teams of university students were invited to participate in the challenge. The project aims to build and promote a “Think Global, Eat Local” mentality, with the goal of accelerating the emergence of sustainable and resilient City/Region Food Systems (CRFS). These systems ensure food security, stimulate local economies and encourage environmental sustainability. In this edition, the teams focused on redesigning the Botildenborg area in Malmö, Sweden, with the collaboration of local organizations. UrbanFarm2023 was launched on March 23, 2023, with the final stage of the competition taking place at the SLU (Swedish Universi-

› Students taking part in the grand finale of the UrbanFarm2023 International Student Challenge.

ty of Agricultural Sciences, Alnarp, Sweden) campus, in Malmö on May 16, 2023. The eight interdisciplinary student teams registered for this challenge came from university courses in urban agriculture, smart horticulture, urban farming and urban agriculture with social interactions. In the first stages, the teams redesigned new functions for existing spaces in the peri-urban context of Botildenborg, focusing on agricultural, environmental and social sustainability, ensuring circular flows of the resources used for food production. The teams that qualified for the final event were invited to the SLU campus to present their final project. The teams could choose for themselves how to organize the presentation (through videos, slides or interactive discussions). Each team presented their project to the audience and the jury, followed by a 5-minute question and answer session. The scientific committee evaluated the teams based on the quality of their projects (including innovation, feasibility and sustainability), their presentations and their ability to answer questions. The points in this final stage were added to the scores obtained in the previous competition stages. The international scientific jury consisted of Anna María Pálsdóttir, Marie Larsson and Love Silow (from SLU – Swedish University of Agricultural Sciences), and Giuseppina Pennisi and Francesco Orsini (from DISTAL – University of Bologna, Italy). The jury assessed the projects by considering the student groups' performance and the overall scores obtained throughout the competition. After careful analysis, the jury awarded first place to the Co-Wormers team, composed of Gaia Besate, Georgia Chaniotaki, Héctor Leandro Fernández Colino, Pauline Crouiller, Bruno Burke (Alma Mater Studiorum, University of Bologna, Italy), and Thea Jönsson (Swedish Agricultural University). Their project focused on the realization of efficient composting units with a vermiculture system. The system maximizes self-produced compost on the farm, while also serving as a pedagogical tool for the groups working in the garden. The members of the winning team all received a Young Minds Award from the International Society for Horticultural Sciences (ISHS). The award included a complementary one-year membership to the ISHS for each team member. Additionally, the Botildenborg project awarded symbolic prizes to the winning team.



› Chart elaborated by the winning team.

› Co-Wormers team, winner of the UrbanFarm2023 challenge. From left to right: Gaia Besate, Georgia Chaniotaki, Pauline Crouiller, Bruno Burke, Héctor Leandro Fernández Colino and Thea Jönsson.

› Representatives of the winning team: Georgia Chaniotaki, Gaia Besate and Bruno Burke.

The UrbanFarm2023 organizing committee would like to express their sincere thanks to Botildenborg and the SLU campus for hosting the final event, as well as to all the participants and members of the international jury, who contributed to this wonderful and invaluable experience.

Matteo Landolfo, Giuseppina Pennisi, Anna María Pálsdóttir and Marie Larsson

› Contact

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Anna María Pálsdóttir and Marie Larsson, Swedish University of Agricultural Sciences, Malmö, Sweden, e-mail: anna.maria.palsdottir@slu.se and marie.larsson@slu.se

From the Secretariat

› New ISHS members

ISHS is pleased to welcome the following new members:

New Individual Members

Australia: Ms. Naomi Abbott, Dr. Carlos Ballester, Dr. Bikram Banerjee, Dale Bennett, Dr. Tim Bleby, Mr. Jian Cao, Erin Conza, Mr. Paul Dydula, Ms. Philippa French, Dr. Sicong Gao, Mr. Glenn Hale, Dr. Liqi Han, Ken Hawkins, Dr. Bernard McCarthy, Mr. Kieran Murphy, Mr. John Norwood, Dr. Ryan Orr, Dr. Daniel Pelliccia, Dr. Paul Petrie, Mr. Tim Plozza, Dr. Tomas Poblete, Dr. Renee Prokopavicius, Dr. Priyanka Reddy, Dr. Gerhard Rossouw, Mr. Naveen Valluri, Ms. Yue Wang, Ms. WWM Upendra Wijesundara, Mr. Stephen Williams; **Austria:** Prof. Dr. Sandra Mühlböck, Prof. Dr. Claudia Probst; **Belgium:** Willem Goossens, Ms. Katrien Schaepdryver, Marc Vandesande, Dr. Sarah Verbeke; **Bosnia and Herzegovina:** Ms. Jelisaveta Seka Cvijanovic; **Brazil:** Ms. Conny Maria de Wit, Bruno Telli Ceccato; **Chile:** Mr. Manuel Apablaza, Omar Inostroza, Dr. Jose Luis Pizarro Theiler; **China:** Assoc. Prof. Na An, Dr. Sonhao An, Dr. Danying Cai, JianFei Cai, Linqi Cai, Prof. Yune Cao, Gongmin Chang, Hao Chen, Long Chen, Dr. Fei Cheng, HeHe Cheng, Yujie Cheng, ZhaoHu Chu, Dongdong Cui, Dr. Haonan Cui, Dr. Yu Dong, Dr. Chen Feng, Xia Gao, Yao Gao, Yuhao Gao, Ms. Xiaojiao Gu, QingQing Guo, Li Hong, Dr. Hantang Huang, Liu Jin, Mr. Jerry Li, Jing Li, Dr. Ming Li, TianZhong Li, Dr. Xiongwei Li, Xiaofei Liang, Assist. Prof. Cuihua Liu, LiJun Lu, Prof. Feishi Luan, Hui Ma, Qingzhou Ma, Assoc. Prof. Jiangping Mao, Yang Ni, Dr. Fengrong Pan, Assoc. Prof. Jian Pan, Dr. Li Ren, DongQian Shan, David Smith, Yongbo Song, Hongyan Su, YongQiang Tian, Ms. Bingjie Wang, Jian Wang, JianZu Wang, Lei Wang, Mr. Yuan Wang, YunXiang Wang, Mr. Zhe Wang, Ziran Wang, Derek Dylan Way, Benye Xi, Rong Xiong, Kai Xu, Jiye Yan, Yinghong Yang, Fushun Yu, Li Yuan, Dr. Yanlei Zhai, Assoc. Prof. Jing Zhang, Wei Zhang, Dr. Xin Zhang, Xu Zhang, Yong Zhang, Dr. Zeshan Zhang, Hui Zhao, Xiaoning Zhao, Yong Zhao, Jindong Zhen, Chenming Zheng, Assoc. Prof. Wei Zheng, Dr. Wei Zheng, Dr. Fan Zhiyi, Jiahua Zhou, QiaoHong Zhou, Prof. Dr. Yongfeng Zhou, Prof. Dr. Xiaobo Zou, Dr. Xiya Zuo; **Czech Republic:** Ms. Vera Forejtova, Prof. Dr. Boris Krska, Kamila Pluharova; **Dominican Republic:** Ms. Cándida Batista, Daysi Margarita Martich Sosa; **Finland:** Dr. Zuosinan Chen, Ms. Xin Zhuang; **France:** Véronique Charroin, Ms. Lyda Chin, Dr. Amandine Cornille, Ms. Romane Lapous, Ms. Chloé Leclerc, Dr. Syliva Salgon, Dr. Arnaud Thabuis, Mr. François Villeneuve; **Germany:** Luisa Baader, Mr. Luciano de Melo Silva, Dr. Lena Frenzke, Dr. Imme Gerke, Dr.

Ixchel Hernandez Ochoa, Mr. Stefan Hölzl, Dr. Ali Jalali, Martin Maag, Dr. Marcel Moll, Mr. Buist Muçaj, Matthias Pfeifer, Dr. Joerg Plieske, Marios Psarianos, Bettina Scherrer, Dr. Carel Windt; **India:** Mr. Spandan S B, Dr. Venkatraman Srinivasan; **Indonesia:** Mr. Budi Djohar; **Iran:** Mr. Jafarzadeh Ali, Dr. Mehrnaz Falaki, Ms. Shidak Rahbarian; **Israel:** Mr. Patrick Mdemba, Dr. Amir Sherman; **Italy:** Dr. Shahla Asgharinia, Mr. Lorenzo Bergonzoni, Dr. Lorenzo Bonzi, Dr. Valeria De Rosa, Dr. Rafael Dreux Miranda Fernandes, Dr. Silvia Farinati, Dr. Luca Ferretti, Dr. Daniela Hey, Dr. Rossella Manganiello, Mr. Luca Masiero, Dr. Dario Mengoli, Carmen Morales-Rodriguez, Dr. Luca Nerva, Valeria Pergolotti, Mr. Mirko Piani, Dr. Mohsen Pourmohammad Shahvar, Dr. Dario Scuderi, Dr. Tito Spaldi; **Japan:** Ms. Ayano Horiuchi, Prof. Kazuo Ishii, Mr. Taketo Kogire, Rin Miura, Ms. Yoko Nishimoto, Mr. Nethone Samba, Ms. Hiromi Ueyama, Hiroyuki Yamashita, Yasuyuki Yokoyama; **Kazakhstan:** Dr. Balnur Kabylbekova; **Korea (Republic of):** Mr. GangHyeok Ha, Mr. Kidong Hwang, Ms. Yeon Jin Jang, Ms. Young Eun Jeon, Prof. Junghoon Lee, Prof. Dr. Hyo-Hoon Park, Juhyeon Park, Assist. Prof. Donghwa Shon; **Latvia:** Dr. Laila Ikase; **Mexico:** Mr. Arturo Gonzalez, Domingo Montalvo, Dr. Eduardo Ríos Urbán, Maria Angeles Rodriguez Elizalde, Oliver Zárraga Vargas; **Morocco:** Ms. Kawtar Mahrach; **Netherlands:** Yongfan Chen, Lex Oosterveld, Katarina Smolenova; **New Zealand:** Will Barrett, Mr. Pete Bennie, Ms. Brydie Craven, Dr. Bruce Dudley, Nigel Gapper, Bouche Jacques-Joseph, Teruko Kaneko, Olivia Kelly, Dr. Cate Macinnis-Ng, Dr. Irena Obadovic, Mr. Richard Oliver, Mr. Matthew Rennie, Dr. James Robinson, Francisco Rojo, Dr. Damien Sellier, Mr. Patrick Snelgar, Dr. Robert Valkenburg, Moari West, Dr. Donald White, Dr. David Whitehead; **Norway:** Ms. Namrah Azmi; **Philippines:** Paul Robb; **Poland:** Grzegorz Miazga, Dr. Bozena Szewczyk-Taranek; **Romania:** Lorentz Emanuela Diana, Nicolae Gheorghiu, Mr. Rares Pandaru, Ms. Luiza Stupariu, Mr. Cristian Tudor; **Senegal:** Prof. Dr. Birane Dieng; **Slovenia:** Dr. Anastazija Jež Krebelj; **South Africa:** Xander Botha, Mr. Paul Clark, Mr. Willem Eigenhuis, Dr. Keanu Martin, Ms. Zobabalo Mina, Assoc. Prof. Felix Nchu; **Spain:** Ms. Tania Dorta, Ms. Maria Gomez, Sebastien Guery, Victoria Ibanez, Assoc. Prof. Concepción Muñoz Diez, Angela Polo Oltra, Ms. Lorena Sánchez Martínez; **Spain - Canary Islands:** Dr. M. Gloria Lobo, Mr. Víctor Moreno; **Sweden:** Elisabet Henriksson; **Switzerland:** Aline von Jüchen, Dr. Helga Willer, Francesca Zuffa; **Thailand:** Dr. Parichart Burns, Mr. Jan Erik Wild; **Turkey:** Dr. Yildiz Dilly, Mr. Okan Gundemir, Prof. Dr. Yucel Karaman, Assoc. Prof. Ilknur Polat, Ms. Mehmet Hasim Simsek; **United Kingdom:** Ms. Josephine Atkinson, Ms. Jocelyn Bosse, Mr. Edward Burroughs, Mr. George Long, Mr. Adrian Wallbridge; **United States of America:** Mr. Daniel Aviles, Mr. Eduardo Barragan, Mr. Luis Borquez, Kelly Chapman, Xiating Chen, Ms. Natalia Espinoza, Dr. Angel Vicente Fernandez Marti, Aline Priscilla Gomes da Silva, Christopher Greer, Seth Hansen, Ms. Tony Hargrove, Ms. Aimee Hudon, Heather Johnson, Dr. Manoj Karkee, Dr. Eve Laroche-Pinel, Christina Lilligren, Mr. Ernesto Magaña Lopez, Mr. Steve Mantle, Ms. Madison Meagher, Mr. Sinsuke Naito, Dr. Juan Polari, Dr. Marcia Ribeiro, Dr. Anderson Safre, Vikrant Sakhalkar, Dr. Christine Scoffoni, Dr. Daniele Trebbi, Kurt Wedegaertner, Lena Wilson, Mr. Devon Yurosek

› In memoriam

Dr. John Possingham, former ISHS Board Member and Honorary Member

We were greatly saddened by the passing of Dr. John Possingham, in April 2023, our dear friend for more than 30 years.

We keep very good memories of him within ISHS but also beyond since John was a man of the world. Although he adored Australia, he was an extensive traveller as Australia was simply too small for him. He was an outstanding viticulture scientist with a worldwide reputation and a dedicated member of ISHS, making significant contributions to our Society. His departure will leave a permanent hollow space in our lives and in the Society. John was unique in the clarity of his vision of the scientific world, the horticulture industry and his constructive, although sometimes radical, proposals.

Within ISHS we could not imagine John Possingham without his beloved wife Carol Summers, to whom he married in 1977. They lived together for about 50 years as a merry and elegant couple. He will also be fondly remembered by his sons Tony and Marcus and daughter Sarah.

John Possingham was born at Barmera, South Australia, on October 28,1929, to Albert Victor and Hilda Doris Possingham. He grew up on his parents' small irrigated horticultural property and attended the local primary and high school. Later on, an older student friend convinced him to attend university and after one year at Adelaide High School he commenced studying for a Degree in Agriculture Science at Adelaide University.

His first work after graduation was a posting with the Commonwealth Science and Industrial Research Organisation (CSIRO) in the Division of Plant Industry, Canberra. His research focused on the function and role of the minor elements in plant growth and metabolism and it turned up some interesting findings, which he submitted back to Adelaide University for a Master's degree, which subsequently enabled him to receive a CSIRO scholarship to study at the University of Oxford. He studied the effects of iron deficiency on plant roots and earned a Doctor of Philosophy from Oxford University.

Before returning to Canberra to continue his work on plant nutrition, he attended, as a member of the British Atomic Weapons Team, the atomic bomb trials held in Australia because they needed a biological expert. After 3 years in Canberra, CSIRO asked him to take charge of a small research station at Merbein, Victoria, and they agreed to build a small horticultural laboratory and to allow the team to work on wine grapes. John Possingham considers this was the point at which he became a horticulturist. Merbein Station was the embryo of his innovative work in viticulture, which was focused on the adoption of new grape varieties from Europe,

pruning and training systems, rootstock testing for nematode tolerance, and pioneering studies on the mechanical harvesting of wine grapes. John believed that the only way the Australian wine grape industry could remain competitive in the increasingly modern world was to establish a vine improvement program covering both cultivars and rootstocks and to mechanise as many steps in the production cycle as possible.

This was also a period of John's intense travelling to famous wine growing regions in Europe and elsewhere, and bringing in visiting viticulturists from overseas who contributed to the advancement of the Australian grape and wine industry. His natural empathy and innovative spirit promoted the establishment of an informal international viticulture network that was fundamental later on when John brought viticulture into ISHS.

At CSIRO, John Possingham led a diversified program of horticultural research stretching over 30 years. Among many relevant studies, John said he derived great personal satisfaction in contributing to the role manganese plays in the oxygen-evolving reactions of chloroplasts. This work and many studies of the ultrastructure and DNA of chloroplasts provided sufficient research output for him to be awarded a DSc from Oxford University to partner his previous Doctor of Philosophy.

His leadership was recognised by some prestigious awards: Fellow of the Australian Academy of Technological Sciences and Engineering (1979), Member of the Order of Australia (1990), CSIRO medal for Research Achievement (1992), member of the Russian Academy of Sciences (1992), Sir Ian McLennan Achievement for Industry Award (1994), and Fellow of the Australian Institute of Agricultural Science (1997).

His most important scientific achievements are published in some 250 papers. However, John regretted never having written a book, which was a pity, because talking with him about horticultural science and viticulture was like reading a book, except it was much better because we could apprehend the significant knowledge scientific papers could not provide.

John retired from CSIRO in 1993, but some 10 years before, he decided to return to his roots and bought a vineyard with his wife Carol at Blewett Springs in McLaren Vale, about a half hour's drive from their home in Adelaide. He became a very successful *vigneron* because he was able to put into practice his vast viticulture experience. The 1980s were the beginning of the "wine boom" in Australia and more land was added to the initial vineyard and finally a small winery.

By the time John retired, the small vineyard had become quite a large enterprise. Selling wine to overseas countries required extensive travelling, which also provided an opportunity to interact with international wine organisations such as the International Wine Office and the FAO. Possum Vineyards, as the wine business was named, was successfully sold after 20 years of intense and innovative activity, after which John and Carol could travel just for pleasure, visiting their countless friends all over the world.

John Possingham's first contact with the ISHS was in 1974 when he attended the 19th International Horticultural Congress (IHC) in Israel. He continued to be involved with ISHS because the 20th IHC was held in Sydney, Australia. After that, he attended every IHC until 2014 in Brisbane, in all, a total of 11 Congresses, giving presentations at most of them. He was also a Council member representing Australia from 1988 to 2001.

Differently from the opinion of many viticulturists John considered Viticulture to be part of Horticulture, as he clearly demonstrated as head of Merbein Station. He moved mountains to create a Viticulture embryo within ISHS, which at that time was only concerned with fruit, vegetables and ornamentals. The result of John's efforts came to fruition in 1992 when ISHS established a Section Viticulture with John Possingham as its first chairperson.

The 24th IHC in Kyoto, Japan, in 1994, was a very important Congress for John Possingham for he was elected as a Board member. The Council meeting held during this Congress was a turning point for the Society. New statutes were approved and the Society was saved from bankruptcy by the newly elected Board. John was in charge of publications, a core activity of ISHS, and made an important contribution to its reorganisation. The visible changes were a new colourful cover for *Acta Horticulturae* and a new layout for *Chronica Horticulturae,* but the back office also started a new publication model for *Acta Horticulturae* benefiting from the emerging IT tools. John was re-elected for a second term as Board member during which time he served as Vice-President. At the end of his term as a Board member he was awarded Honorary Membership in recognition of his exceptional service to the Society.

During John's term as a Board member, the ISHS Board, Executive Committee and Council members, as well as his fellow colleagues of ISHS Section Viticulture, enjoyed many wine tastings where John widened our wine horizons and instructed us on oenology science. His wife Carol was an essential part of these so called 'social events'.

ISHS has greatly benefited from John's experience in the horticultural world. He was a brilliant scientist who could also understand the benefits of a close interaction between science and the horticulture industry and realised that ISHS could only be prosperous if it engaged all stakeholders.

John, we will miss you...

Antonio Monteiro, former ISHS President
Jozef van Assche,
former ISHS Executive Director

› Calendar of ISHS events

For updates and more information go to www.ishs.org › calendar of events. For a comprehensive list of meetings in each Division or Working Group use the "science" option from the website navigation menu. To claim reduced registration for ISHS members, your personal membership number is required when registering - ensure your ISHS membership is current before registering. When in doubt sign in to your membership account and check/renew your membership status first: www.actahort.org or www.ishs.org

Year 2023

NEW

- September 10-14, 2023, Davis, CA (United States of America): **IX International Olive Symposium.** Info: Dr. Giulia Marino, Department of Plant Sciences, University of California, Davis, 1 Shields Ave., Davis, CA 95616, United States of America. Phone: (1)5303044509, E-mail: giumarino@ucdavis.edu or Dr. Selina Wang, Department of Food Science and Technology, University of California, Davis, 1 Shields Ave., Davis, CA 95616, United States of America. Phone: (1)5307525018, E-mail: scwang@ucdavis.edu or Prof. Reza Ehsani, Department of Mechanical Engineering, University of California, Merced, 5200 N. Lake Road, Merced, CA 95343, United States of America. Phone: (1)2092283613, Fax: (1)2092284047, E-mail: rehsani@ucmerced.edu Web: https://na.eventscloud.com/website/55590/home/
- September 11-16, 2023, Dresden-Pillnitz (Germany): **XVI EUCARPIA Symposium on Fruit Breeding and Genetics.** Info: Prof. Dr. Henryk Flachowsky, Pillnitzer Platz 3a, 01326 Dresden, Germany. E-mail: henryk.flachowsky@julius-kuehn.de or Dr. Jiri Sedlák, Res. &Breeding Inst. of Pomology Holovousy, Holovousy, 50801 Horice, Czech Republic. Phone: (420) 435 692 821, Fax: (420) 435 69 33, E-mail: sedlak@vsuo.cz Web: https://eucarpia-fruit2023.julius-kuehn.de/
- September 24-28, 2023, Bucharest (Romania): **VI International Jujube Symposium.** Info: Prof. Dr. Florin Stanica, University of Agronomic Sciences, Faculty of Horticulture, B-dul Marasti, 59, Sector 1, 011464, Bucuresti, Romania. Phone: (40)722641795, Fax: (40)213182888, E-mail: flstanica@yahoo.co.uk or Prof. Dr. Mengjun Liu, Research Center of Chinese Jujube, Agricultural University of Hebei, Baoding, Hebei, 71001, China. Phone: (86)312754342, Fax: (86)3127521251, E-mail: lmj1234567@aliyun.com E-mail symposium: jujube@usamv.ro Web: http://www.jujube.usamv.ro
- September 29 - October 3, 2023, Malaga (Spain): **XIII International Mango Symposium.** Info: Dr. J. Ignacio Hormaza, EE. La Mayora - CSIC, 29750 Algarrobo-Costa, Malaga, Spain. Phone: (34)952552656, Fax: (34)952552677, E-mail: ihormaza@eelm.csic.es or Dr. Víctor Galán Sauco, Isaac Albéniz 17, 38208 La Laguna, Tenerife, Canary islands, Spain. Phone: (34)922261647, E-mail: vgalan46@gmail.com E-mail symposium: mango2020@ihsm.uma-csic.es Web: https://en.mango2023.es/
- October 2-5, 2023, York (United Kingdom): **III International Symposium on Carrot and Other Apiaceae.** Info: Ms. Coral Russell, BGA House, Nottingham Road, LN110WB Louth, United Kingdom. Phone: (44)7792893336, E-mail: pauline.sutton@britishgrowers.org or Rosemary Collier, Warwick Crop Centre, School of Life Science, The University of Warwick, Wellesbourne, United Kingdom. E-mail: rosemary.collier@warwick.ac.uk E-mail symposium: info@carrotsymposium.comWeb:http://www.carrotsymposium.com
- October 22-27, 2023, Cancun (Mexico): **IV International Symposium on Organic Greenhouse Horticulture.** Info: Dr. Irineo Lopez Cruz, Postgrado en Ingeniería Agrícola, Universidad Autónoma Chapingo, KM 38.5 Carretera Mexico Texcoco, 56230 Chapingo, Mexico. Phone: (52)5959521551, Fax: (52)5959521551, E-mail: ilopez@correo.chapingo.mx or Prof. Dr. Efrén Fitz-Rodríguez, Universidad Autónoma Chapingo, Ing. Mecánica Agrícola/Posgrado IAUIA, km 38.5 Carretera México-Texcoco S/N, Texcoco, Edo. de México C.P. 56230, Mexico. Phone: (52)5959521500x6252, E-mail: efitzr@chapingo.mx or Prof. Martine Dorais, Centre de recherche & d'innovation-végétaux, Laval University, Envirotron Bldg, Room 2120, Quebec G1K 7P4, Canada. Phone: (1)418-6562131, Fax: (1)418-6563515, E-mail: martine.dorais@fsaa.ulaval.ca E-mail symposium: greensys2023@gmail.com Web: https://www.greensys2023.org/
- October 22-27, 2023, Cancun (Mexico): **GreenSys2023: International Symposium on New Technologies for Sustainable Greenhouse Systems.** Info: Dr. Irineo Lopez Cruz, Postgrado en Ingeniería Agrícola, Universidad Autónoma Chapingo, KM 38.5 Carretera Mexico Texcoco, 56230 Chapingo, Mexico. Phone: (52)5959521551, Fax: (52)5959521551, E-mail: ilopez@correo.chapingo.mx or Prof. Dr. Efrén Fitz-Rodríguez, Universidad Autónoma Chapingo, Ing. Mecánica Agrícola/Posgrado IAUIA, km 38.5 Carretera México-Texcoco S/N, Texcoco, Edo. de México C.P. 56230, Mexico. Phone: (52)5959521500x6252, E-mail: efitzr@chapingo.mx E-mail symposium: greensys2023@gmail.com Web: https://www.greensys2023.org/
- October 31 - November 3, 2023, Rotorua (New Zealand): **XII International Workshop on Sap Flow.** Info: Dr. Michael Clearwater, Department of Biological Sciences, University of Waikato, Private Bag 3105, 3240 Waikato Hamilton, New Zealand. Phone: (64)7-8384613, Fax: (64)78384324, E-mail: m.clearwater@waikato.ac.nz E-mail symposium: sapflow2023@confer.co.nz Web: https://confer.eventsair.com/sapflow2023
- November 8-10, 2023, Aracaju, Sergipe (Brazil): **III International Symposium on Moringa.** Info: Arthur Begliomini, chacara 11 Núcleo CAUB I, 71884-690 Brasília-DF, Brazil. Phone: (55)61999990031, E-mail: ahb.agro@outlook.com or Prof. Dr. Gabriel Francisco da Silva, Rua Pastor Jason Oliveira dos Anjos, 435, 49046090 Aracaju-SE, Brazil. Phone: (55)7931946556, Fax: (55)7931946556, E-mail: gabrieldasilva1961@gmail.com Web: https://ism2023.com/
- December 3-8, 2023, Tatura, Victoria (Australia): **II International Symposium on Precision Management of Orchards and Vineyards.** Info: Dr. Mark O'Connell, DJPR, Agriculture Victoria, 255 Ferguson Road, Tatura, VIC 3616, Australia. Phone: (61)354831101, Fax: (61)358335299, E-mail: mark.oconnell@agriculture.vic.gov.au E-mail symposium: bradley@ccem.com.auWeb:https://ccem.eventsair.com/pmov2023/

Year 2024

- January 16-19, 2024, Bologna (Italy): **VertiFarm2024: III International Workshop on Vertical Farming.** Info: Dr. Francesco Orsini, University of Bologna, Viale fanin, 44, Bologna 40127, Italy. Phone: (39)0512096677, Fax: (39)0512096241, E-mail: f.orsini@unibo.it or Dr. Giuseppina Pennisi, University of Bologna, Viale Giuseppe Fanin 44, 40127 Bologna, Italy. E-mail: giuseppina.pennisi@unibo.it E-mail symposium: vertifarm2024@unibo.it Web: https://site.unibo.it/vertifarm2024/
- February 11-15, 2024, Sde Boker (Israel): **II International Symposium on Reproductive Biology of Fruit Tree Species.** Info: Prof. 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 or Prof.

Noemi Tel-Zur, Ben-Gurion University of the Negev, Beersheba, Israel. E-mail: telzur@bgu.ac.il Web: https://www.reproductive-biologyfruittree.org.il/

- February 20-24, 2024, Mount Maunganui (New Zealand): **XI International Symposium on Kiwifruit.** Info: Dr. Sarah Pilkington, 120 Mt Albert Road, Mt Albert, 1025 Auckland, New Zealand. Phone: (64)21-809645, E-mail: sarah.pilkington@plantandfood.co.nz or Dr. Juliet Ansell, 400 Maunganui Road, Mt Maunganui, 3116 Tauranga, New Zealand. E-mail: juliet.ansell@zespri.com Web: https://events.zespri.com/ishs-kiwifruit2024 NEW
- February 26 - March 1, 2024, Marrakech (Morocco): **V All Africa Horticultural Congress - AAHC2024.** Info: Prof. Dr. Abdelhaq Hanafi, 14 Residence Naama, Agadir 80100, Morocco. Phone: (1)7866781552, E-mail: hanafi.abdelhaq1@gmail.com E-mail symposium: secretariat@aahc2024.com Web: https://www.aahc2024.com/

Symposium at AAHC2024:

- February 26 - March 1, 2024, Marrakech (Morocco): **III International Symposium on Jackfruit and Other Moraceae.** Info: Prof. Dr. Sisir Kumar Mitra, B-12/48, Kalyani, Nadia, West Bengal 741235, India. Phone: (91)9432174249, Fax: (91)3325828460, E-mail: sisirm55@gmail.com or Prof. Dr. Abdelhaq Hanafi, 14 Residence Naama, Agadir 80100, Morocco. Phone: (1)7866781552, E-mail: hanafi.abdelhaq1@gmail.com or Prof. Dr. Mohamed El-Otmani, Institut Agronomique et Vét. Hassan II, Complexe Horticole d"Agadir, B.P. 728, 80 000 Agadir, Morocco. Phone: (212)661386216, Fax: (212)528240558, E-mail: elotmani.mohamed@gmail.com E-mail symposium: a.hanafi@aahc2024.com Web: https://www.aahc2024.com/ NEW
- April 14-17, 2024, Warsaw (Poland): **XIV International Symposium on Flower Bulbs and Herbaceous Perennials.** Info: Dr. Dariusz Sochacki, Warsaw University of Life Sciences, Dept of Ornamental Plants, Nowoursynowska 166, 02-787 Warsaw, Poland. E-mail: dariusz_sochacki@sggw.edu.pl E-mail symposium: info@flowerbulb2024.pl Web: http://www.flowerbulbs2024.pl NEW
- April 21-25, 2024, Matsue, Shimane (Japan): **V International Symposium on Woody Ornamentals of the Temperate Zone.** Info: Prof. Dr. Nobuo Kobayashi, Faculty of Life and Environmental Science, Shimane University, Nishikawatsu, Matsue 690-8504, Japan. Phone: (81)852-32-6506, Fax: (81)852-32-6506, E-mail: nkobayashi@life.shimane-u.ac.jp or Dr. Takashi Handa, Meiji University, School of Agriculture, Higashimita 1-1-1, Tama-ku, Kawasaki, 214-8571 Kanagawa, Japan. Phone: (81)449347814, Fax: (81)449347814, E-mail: thanda@meiji.ac.jp Web: http://wotz2024.jshs.jp/ NEW
- April 22-25, 2024, Avignon (France): **I International Symposium on Apricot and Plum.** Info: Jean-Marc Audergon, INRA Centre PACA, UR1052 GAFL, Domaine St Maurice - 67 Allée des Chênes, CS60094, F84143 Montfavet, France. Phone: (33)4.32722668, Fax: (33)4.32722702, E-mail: jean-marc.audergon@inrae.fr or Dr. Bénédicte Quilot-Turion, INRAE, GAFL, Allée des Chênes, 84143 Montfavet, France. E-mail: benedicte.quilot-turion@inrae.fr Web: https://ishs-plum-apricot-2024.colloque.inrae.fr/ NEW
- May 12-16, 2024, Bucharest (Romania): **V European Horticultural Congress - EHC2024 (SHE2024).** Info: Prof. Dr. Florin Stanica, University of Agronomic Sciences, Faculty of Horticulture, B-dul Marasti, 59, Sector 1, 011464, Bucuresti, Romania. Phone: (40)722641795, Fax: (40)213182888, E-mail: flstanica@yahoo.co.uk E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/ NEW

Symposia at EHC2024:

- May 12-16, 2024, Bucharest (Romania): **International Symposium on History of Horticulture in Europe.** Info: Ms. Ana Cornelia Butcaru, Sector 3, str.Branduselor nr.9, bl.G4, Bucharest, Romania. E-mail: anabutcaru@gmail.com or Dr. Michael Blanke, Institut Obstbau Bonn, Auf dem Hugel 6, 53121 Bonn, Germany. Phone: (49)228735142, Fax: (49)228735764, E-mail: mmblanke@uni-bonn.de or Dr. Luca Dondini, Università di Bologna, Dip. Scienze e Tecnologie Agro-Alimentari, Via Fanin 46, 40127 Bologna, Italy. Phone: (39)0512096400, Fax: (39)0512096401, E-mail: luca.dondini@unibo.it E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/ NEW
- May 12-16, 2024, Bucharest (Romania): **International Symposium on Sustainable Vegetable Production from Seed to Health Booster Sources.** Info: Prof. Dr. Silvana Nicola, University of Turin, Dept. of Agric., Forest and Food Sciences, Leonardo Da Vinci 44 (L.Paolo Braccini, 2), 10095 Grugliasco (TO), Italy. Phone: (39)0116708773, Fax: (39)0112368773, E-mail: silvana.nicola@unito.it or Prof. Dr. Yüksel Tüzel, Ege University, Agriculture Faculty, Department of Horticulture, 35100 Bornova Izmir, Turkey. Phone: (90)2323111398, Fax: (90)2323881865, E-mail: yuksel.tuzel@ege.edu.tr or Prof. Dr. Vasile Stoleru, Iasi, M. Sadoveanu 6, Romania. E-mail: vstoleru@uaiasi.ro E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/ NEW
- May 12-16, 2024, Bucharest (Romania): **International Symposium on Fruit Production Systems for a Sustainable and Resilient Development.** Info: Prof. Dr. Florin Stanica, University of Agronomic Sciences, Faculty of Horticulture, B-dul Marasti, 59, Sector 1, 011464, Bucuresti, Romania. Phone: (40)722641795, Fax: (40)213182888, E-mail: flstanica@yahoo.co.uk or Prof. Luca Corelli Grappadelli, Department of Agricultural Sciences, Università di Bologna, Via Fanin 46, 40127 Bologna, Italy. Phone: (39)0512096434, Fax: (39)0512096401, E-mail: luca.corelli@unibo.it or Prof. Dr. Mekjell Meland, Nibio Ullensvang, Norwegian Institute of Bioeconomy Research, N-5781 Lofthus, Norway. E-mail: mekjell.meland@nibio.no E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/ NEW
- May 12-16, 2024, Bucharest (Romania): **International Symposium on Viticulture and Winemaking between Tradition and Innovation.** Info: Prof. Dr. Oana Arina Antoce, Univ. of Agronomical Sci. & Veterinary Medicine of Bucharest, 59, Marasti Ave., Sector 1, 011464 Bucharest, Sector 1, Romania. E-mail: aantoce@yahoo.com or Assist. Prof. Darko Preiner, Department of Viticulture and Enology, University of Zagreb Faculty of Agriculture, Centre of Excellence for Biodiversity and M, Svetosimunska 25, Croatia. E-mail: dpreiner@agr.hr or Prof. Gregorio Muñoz Organero, Autovía de Aragón Km, 38.2, Finca El Encí, 28800 Madrid, Spain. E-mail: gregorio.munoz@madrid.org E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/ NEW
- May 12-16, 2024, Bucharest (Romania): **International Symposium on Berries in Europe between Opportunities and Challenges.** Info: Prof. Dr. Adrian Asanica, Facutly of Horticulture Bucharest, Bd Marasti 59 sector 1, 011464 Bucharest, Romania. E-mail: asanica@gmail.com or Prof. Dr. Bruno Mezzetti, Dip.Sci. Agrarie, Alimentari ed Ambientali, Università Politecnica delle Marche, Via Brecce Bianche, Ancona 60100, Italy. Phone: (39)0712204933, Fax: (39)0712204856, E-mail: b.mezzetti@univpm.it or Prof. Dr. Nesibe Ebru Kafkas, Department of Horticulture, Faculty of Agriculture, TR-01330 Adana Balcali, Turkey. Phone: (90)5365227774, E-mail: ebruyasakafkas@gmail.com E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/ NEW
- May 12-16, 2024, Bucharest (Romania): **International Symposium on Ornamental Horticulture at the Service of the European Society.** Info: Dr. Margherita Beruto, Vicolo Barbarossa, 13, 18038 San Remo (Imperia), Italy. Phone: (39) 0184670781, E-mail: margheberuto@gmail.com or Dr. Erzsebet Buta, 3-5 Manastur Street, 400372 Cluj - Napoca, Romania. E-mail: ebuta2008@yahoo.com or Sandra Gonçalves, University of

Algarve, Fac. of Sciences &Tech., Campus de Gambelas, 8005-139 Faro, Portugal. E-mail: smgoncalves@ualg.pt E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/

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NEW ■ May 12-16, 2024, Bucharest (Romania): **International Symposium on Genetic Resources in Horticulture: Screening, Propagation, Use and Conservation.** Info: Dr. Dorin-Ioan Sumedrea, NRDIBH Stefanesti, General Director, Bucureşti-Pitesti Str, 37, Stefanesti, Stefanesti 117715, Romania. Phone: (40)248266838, Fax: (40)248266808, E-mail: dsumedrea@yahoo.com or Dr. Emmanuel Geoffriau, Agrocampus Ouest - IRHS, Institute Research Horticulture Seeds, 2, rue le Notre, 49045 Angers, France. Phone: (33)241225431, E-mail: emmanuel.geoffriau@agrocampus-ouest.fr E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/

NEW ■ May 12-16, 2024, Bucharest (Romania): **International Symposium on Robotics, Mechanization and Smart Horticulture.** Info: Dr. Luigi Manfrini, Università di Bologna, 40127 Bologna, Italy. E-mail: luigi.manfrini@unibo.it or Konni Biegert, Kompetenzzentrum Obstbau-Bodensee, KOB, Schuhmacherhof 6, D-88213 Ravensburg, Germany. Phone: (49)751 7903-343, E-mail: konni.biegert@kob-bavendorf.de or Mihai Gidea, 59 M259r259351ti Boulevard, District 1, 011464 Bucharest, Romania. E-mail: gideam@yahoo.com E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/

NEW ■ May 12-16, 2024, Bucharest (Romania): **International Symposium on Postharvest and Horticultural Products Quality.** Info: Prof. Dr. Liliana Aurelia Badulescu, Bd Marasti nr 59, 011464 Bucharest Bucharest, Romania. Phone: (40)745368989, E-mail: liliana.badulescu@usamv.ro or Dr. Dirk Köpcke, Chamber of Agriculture in Lower Saxony, Fruit Research Station Jork (OVA), Moorende 53, 21635 Jork, Germany. Phone: (49) 4162 6016 120, E-mail: dirk.koepcke@lwk-niedersachsen.de or Dr. Krzysztof Rutkowski, Research Institute of Horticulture, Konstytucji 3 Maja 1/3, 96-100 Skierniewice, Poland. Phone: (48) 468345363, E-mail: krzysztof.rutkowski@inhort.pl E-mail symposium: secretariat@ehc.usamv.ro Web: https://ehc.usamv.ro/

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